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ALLAWUNA FARM LANDFILL

Geotechnical Investigations for Landfill Development

Submitted to:
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REPORT



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1.0 INTRODUCTION

1.1 Overview

Golder Associates Pty Ltd (Golder) has been engaged by SITA Australia Pty Ltd (SITA) to undertake design studies in support of a Works Approval application (WAA) for a new Class II landfill site known as the Allawuna Farm Landfill (Allawuna Landfill).

The proposed landfill is located south of the Great Southern Highway, approximately 20 km west of the town of York (Figure 1 in Appendix A).

This report summarises the finding of geotechnical field investigations undertaken at the proposed site location. Four test pit and two cone penetration testing field investigations have been undertaken to support the design of the landfill at the proposed site.

1.2 Purpose

The purpose of this document is to provide sufficient geotechnical information in support of the design of the Allawuna Landfill.

The field investigations have been used to optimise the siting of the landfill, characterise the soils beneath the landfill and available for its construction, and verify that suitable borrow material is present within the farm.

1.3 Objectives

The geotechnical field investigations were undertaken to satisfy the following key objectives:

- Assess the site subsurface conditions
- Assess the presence of shallow groundwater beneath and around the proposed landfill footprint
- Assess the suitability of the excavated material for use as construction material
- Assess excavatability of the subsurface material utilising conventional construction equipment and depth to refusal
- Identify borrow material suitable for landfill construction and operations within the farm
- Provide input into recommended specifications for the materials available at the site

1.4 Scope

The scope of work carried out and covered in this report to satisfy the objectives of the study is as follows:

- Interpretation of piezocone penetration testing with pore pressure measurement:
 - CPTu field investigation undertaken on 20 May 2013
- Development and interpretation of piezocone penetration testing with pore pressure measurement:
 - CPTu field investigation undertaken from 16 February 2015 to 17 February 2015
- Development and interpretation of test pit field investigations:
 - Test pit field investigation undertaken from 25 August 2014 to 27 August 2014
 - Test pit field investigation undertaken on 9 September 2014
 - Test pit field investigation undertaken from 18 November 2014 to 21 November 2014
 - Test pit field investigation undertaken from 5 February 2015 to 10 February 2015



2.0 ABBREVIATIONS AND DEFINITIONS

The acronyms and abbreviations used in this document are defined in Table 1.

Table 1: Acronyms, Abbreviations and their Meanings

Name/Acronym	Definition
Allawuna Landfill	Allawuna Farm Landfill located south of the Great Southern Highway, approximately 20 km west from the town of York.
AS	Australian Standard
BA	Bowman & Associates Pty Ltd
CEC	Cation Exchangeable Capacity
CIU	Isotropically consolidated undrained triaxial test
CPTu	Piezocone penetration testing with pore pressure measurements
DER	Department of Environment and Regulation
EC	Electrical conductivity
EPRI	Electrical Power Research Institute
GCL	Geosynthetic Clay Liner
Golder	Golder Associates Pty Ltd
HDPE	High Density Polyethylene
Microanalysis	Microanalysis Pty Ltd
NMI	Australian Government National Measurement Institute (NMI)
Probedrill	Probedrill Pty Ltd
PSD	Particle Size Distribution
SAR	Sodium absorption ratio
SBT	Soil behaviour type from CPT testing
SITA	SITA Australia Pty Ltd
Trilab	Trilab Pty Ltd
USCS	Unified Soil Classification System
Victoria BPEM	Victoria Best Practice Environmental Management
WAA	Works Approval Application

3.0 SITE DESCRIPTION

3.1 Regional geological setting

This section summarises the regional geology of the site described in Golder's hydrogeological study report (Reference [1]). The regional geological setting is presented in Figure 2 in Appendix A.

The Allawuna Farm is located on the Darling Plateau, to the east of the Darling Fault, and over Archaean granitic and gneissic rocks that form part of the Yilgarn Block. Developed over these Archaean rocks are extensive areas of laterite (Czl) of uncertain age, but assumed to have developed during the Tertiary period. The laterite has formed *in situ* from the weathering of the underlying granitic rock and forms part of a classic regolith saprolitic profile, developed during previous wet and/or humid tropical climatic conditions.

The laterite is generally massive and cemented and may be pisolitic or vesicular. It averages 4 m in thickness and the upper portions may consist locally of uncemented pisolites. The laterite passes down through a pallid zone of variable thickness into weathered bedrock. Only local redistribution has occurred. A number of deposits have formed on colluvial slopes above alluvium and are chiefly laterised sands (Reference [2]).



Overlying the laterite are deposits of yellow, grey or white sand of variable thickness (Czs). There has been some redistribution of this material into eolian dunes. Where it overlies the massive laterite of the Darling Range, the unit is much less extensive, is grey or white but not yellow, and is invariably associated with drainage courses (Reference [2]).

Within the vicinity of the proposed landfill site, the Quaternary colluvium (Qrc) consists of shallow dipping sheets of sand on the valley sides, upslope from alluvial and below rock or laterite outcrops. In areas of active erosion, colluvium occurs between valley alluvium and the rock outcrop (separated from both by a marked change of slope) and also occurs as scree deposits in valleys that are actively incising the laterite surface.

Throughout Western Australia, and associated with periods of elevated wet climatic conditions, extensive drainage systems were active which developed palaeovalley drainage networks which are now typically obscured by present day surficial deposits and may not necessarily align with present day drainage patterns. Figure 2 shows an identified primary palaeovalley approximately 10 km west south-west of the proposed landfill footprint, within the Helena River Catchment (Reference [3]).

Tholeiitic quartz dolerite dykes intrude all Archean rocks throughout the sheet area. They are particularly prominent in the granitic terrain but often obscured by surficial deposits. The dykes are generally around 2 m to 10 m thick, but range up to 200 m maximum thickness. The closest dyke to the site indicated on the 1:250 000 sheet is located approximately 3.4 km to the north-east of the landfill.

Few definite faults were recognized in the Precambrian rock of the sheet area, but it is likely that many more exist but none are indicated in the vicinity of the landfill. Most of the faults have a north-east to north-west trend, but directions of displacement are hard to determine.

3.2 Local geology

This section summarises the local geology of the site described in Golder's hydrogeological study report (Reference [1]). The local geology at the proposed landfill site is presented in Figure 3 in Appendix A.

The geological description of the area is based on information obtained from the Perth 1:250:000 Geological Series map and shows interpreted granite as bedrock but in reality it is substantially obscured by the regolith profile.

The local geology presents predominantly porphyritic granite beneath the footprint of the landfill, with patches of laterite and colluvium on the north-eastern side of Thirteen Mile Creek, while the laterite is indicated on the south-western side of the creek. The residual regolith profile is laterally variable due to the details of weathering of parent rock types; however the overall weathered residual profile is consistent with a classical lateritic profile. For example, coarse grain quartz rich zones within the granite may weather to generate a quartz sand dominated profile in the upper portions of profile, while finer grained zones in the parent granite would result in silt dominated profile. Feldspars within the parent rock weather to kaolinite clay such that the original amount of feldspar in the rock may govern the amount of clay within the profile. The clay colloids (particles) can be quite mobile in the groundwater environment such that with prolonged flushing with seasonal rainfall and groundwater movement, the residual profile can become quartz sand rich, within a matrix of clay of varying percentages.

3.3 Hydrogeology

This section summarises the local hydrogeology of the site described in Golder's hydrogeological study report (Reference [1]).

Groundwater at the site is present as a predominantly phreatic (water table) aquifer that can be locally perched or semi confined, with some lateral variation, depending upon the point of observation within the residual profile.



Rain falling on sandier more permeable materials will infiltrate readily down to the water table whereas rain falling on clayey materials will infiltrate more slowly or perch on the less permeable material, possibly move laterally depending on the local groundwater gradient conditions. As a result, after rainfall, some locations on the site may appear damp or boggy until the transient shallow groundwater level attenuates through a combination of infiltration and lateral migration.

Below the regolith profile, fresh bedrock provides a fractured rock setting where groundwater storage and movement is within fractures and defects within the rock.

3.4 Groundwater chemistry

This section summarises the local groundwater chemistry described in Golder's hydrogeological study report (Reference [1]).

Available groundwater quality data indicates the groundwater at the site has a low pH, ranging between 3.2 to 5.6. This is consistent with dryland salinity affected catchments throughout the Wheat Belt. Groundwater electrical conductivity (EC) measurements are highly variable, ranging from 4000 $\mu\text{S}/\text{cm}$ to 30 000 $\mu\text{S}/\text{cm}$. This variability is due to the varying flow paths and mixing histories of the individual water sources sampled, with fresher water (lower EC measurements) reflecting more contact with recent infiltrating rainwater, whilst higher ECs may indicate mixing with groundwater exposed to stored salt because of rising water levels in response to clearing, or evaporative concentration processes near the ground surface. Measured ECs in surface water in creeks on the site ranged from 9000 $\mu\text{S}/\text{cm}$ to 14 000 $\mu\text{S}/\text{cm}$. The EC within the creek water will vary seasonally as a function of the amount of potentially saline groundwater discharging to the creek directly, and the amount of salt picked up by overland flow in response to rainfall events.

4.0 FIELDWORK

4.1 Piezocone penetration testing field investigations

The CPTu testing on 20 May 2013 was planned and overseen by BA in consultation with SITA. CPTu were undertaken at eight locations by Probedrill, subcontracted to BA, using a 22 tonne truck mounted CPT rig. The locations of the CPTs undertaken by BA are outside of the proposed landfill footprint location, as it was previously undertaken as part of a different scope of work for a larger landfill footprint. The outcomes of these CPTu tests have been subsequently interpreted by Golder and utilised to infer the typical geotechnical setting at the site.

Additional CPTu testing was organised and overseen by Golder in consultation with SITA within the proposed landfill location during February 2015. The CPTu were undertaken at 25 locations by subcontractor Probedrill using a 25 tonne truck mounted CPT rig. This testing has been undertaken as part of the hydrogeological characterisation of the site (Reference [1]). This additional testing has also assisted in confirming the findings of the previously undertaken field investigations and strengthens the geotechnical understanding of the proposed landfill site.

The CPTu locations are illustrated in Figure 4 attached in Appendix A.

4.2 Test pit field investigations

Test pit field investigation plans were prepared prior to site mobilisation by Golder and approved by SITA.

The August and November test pit field investigations (test pits number TP1 to TP27 and TP83 to TP119) were undertaken to assess the subsurface conditions and identify the presence of shallow groundwater from beneath and around the proposed landfill footprint.

The 9 September test pit field investigation (test pits number TP28 to TP32) was undertaken while the DER was conducting a site visit to provide further information on subsurface conditions encountered on and around the proposed landfill location.

The February 2015 field investigation (test pits number BA1 to BA45) was undertaken to identify suitable borrow areas and material for the construction of the landfill, and daily and final cover material. Three potential borrow sources were identified within the farm, as illustrated in Figure 4 (Appendix A).



The test pit field investigations comprised the following activities:

- Excavation of a total of 114 test pits within the farm: 69 in proximity of the footprint of the landfill; 45 as part of the identification of suitable borrow areas. These test pits extended to depths ranging from approximately 0.5 m to approximately 6.0 m.
- Collection of selected bulk disturbed and undisturbed samples for geotechnical and geochemical laboratory testing.
- A general site walk-over to assess the surrounding settings for geotechnical purposes.

An engineer from Golder established the test pit locations, logged the material encountered in the test pits and collected soil samples for laboratory testing. The test pit locations were adjusted in the field as required by using a hand held GPS, typically accurate to about ± 5 m in a horizontal direction. The test pit locations are illustrated in Figure 4 (Appendix A).

The test pits were excavated using a 30 tonne Volvo EC290BLC (25-27 August 2014), 25 tonne Kobelco SK250LC (9 September 2014) and a 25 tonne Caterpillar 325C (18-21 November 2014 and 5-10 February 2015) hydraulic excavator fitted with a 900 mm wide toothed bucket.

5.0 LABORATORY TESTING PROGRAMME

Soil samples were collected from selected test pit locations and transported from site to the Golder NATA accredited laboratory in Osborne Park. Golder in consultation with SITA selected samples from 21 test pit locations earmarked for geotechnical and geochemical laboratory testing.

The locations were selected with the intent to gather an understanding of the geotechnical and geochemical properties of the *in situ* material and to assess their variability across the site.

The geotechnical and geochemical laboratory testing were undertaken at the NATA accredited laboratories of Golder, Microanalysis, Trilab and NMI, respectively.

The geotechnical and geochemical testing programme is summarised in Table 2 and Table 3, respectively.

Table 2: Geochemical testing programme

Property	Testing
Characterisation of pore water	pH and EC
Capacity to Exchange Cations	CEC

Table 3: Geotechnical testing programme

Property	Testing
Characterisation	Field moisture content
	Particle density of fines and coarse fraction
	PSD by Sedigraph™ and sieving
	Atterberg limits
Dispersion	Emerson Crumb
	Pinhole
Compaction	Moisture – density relationship testing in a <i>standard</i> mould size
Permeability	Flexible wall permeameter testing using distilled water and 50 000 ppm NaCl solution
Strength	Isotropically Consolidated Undrained (CIU) Triaxial testing

The locations of the test pits selected for laboratory testing, the approximate sampling depths and allocated suite of laboratory testing for each sample are summarised in Appendix B.



6.0 INTERPRETATION

6.1 Subsurface conditions based on cone penetration testing

Eight CPTu tests were undertaken by Probedrill on 20 May 2013. BA prepared the investigation plan, oversaw the CPTu works and provided directions to the CPT rig operator during the period of the investigation. In addition, 25 CPTu tests were performed by Probedrill during the follow-up hydrogeological investigation in February 2015, which was supervised by a Golder engineer.

Golder has reviewed the CPTu data from both investigations and interpreted the results (presented in Appendix C).

The CPTu results indicate that:

- Based on Robertson' soil behaviour type (SBT) (Reference [4]), the material is generally classified as "very stiff sand to clayey sand" to "very stiff fine grained". Despite the Robertson' SBT classification, typically being based on sedimentary soils and not residual materials, the classification for the material is generally in agreement with the laboratory testing and observations during logging of the test pits (refer to Sections 6.2 and 6.4).
- Based on EPRI classification for cohesive soils (Reference [5]) the consistency of the clayey material classifies as "hard" ($q_t > 6$ MPa) to "very stiff" ($6 \text{ MPa} > q_t > 3 \text{ MPa}$) to "stiff" ($3 \text{ MPa} > q_t > 1.5 \text{ MPa}$). The consistency of the clay material in accordance with EPRI classification system is generally in agreement with the observations during logging of the test pits (refer to Section 6.2).
- A well-defined hydrostatic phreatic surface across the test locations could not be inferred from the CPTu results. This was in part due to the shallow refusal depths at most locations, and the presence of very stiff clays exhibiting very high (up to 5000 kPa) dynamic pore pressure response. Dissipation testing at CPTu6 (February 2015) suggests presence of hydraulic connection between layers (clay mixtures) from 1.5 m to 14 m depth. In general the CPT pore pressure measurements indicate that the stiff clay material is likely near saturation, dilative, and heavily over-consolidated.
- Interpretation of the CPTu results suggests that the *in situ* material has peak undrained shear strength (s_u) generally greater than 150 kPa. Material of this strength is classified as very stiff to hard according to the AS1726 classification system (Reference [6]) for fine grained cohesive soils.
- A generally shallow loose sand layer of various depths was encountered on top of the very stiff fine grained material. The depth of this layer was found to increase on the creek areas. A maximum depth of approximately 3.5 m of interpreted sand material was found in CPTu6.3, located in proximity of test pit TP94 (refer to Section 6.2).
- Refusal was encountered below 4 m at most locations. At CPT2 and CPT9 (May 2013) refusal was encountered at approximately 7 m and 10 m, respectively. The only test during the 2015 investigation to reach depths greater than 4 m was CPTu6 (14.5 m), between TP94 and TP2.

In summary based on the CPTu testing, the proposed landfill is located above a very stiff fine grained material, which is considered a competent foundation material. This material is not expected to significantly consolidate once loaded with waste and by compacted fill material. Where practicable, the construction specification should require that foundation materials characterised by loose sand material should be replaced with compacted clayey material.



6.2 Subsurface conditions based on the test pit investigations

Based on 114 test pits excavated, the subsurface conditions encountered at the site are typical lateritic regolith derived from weathering of granite.

A schematic representation of a typical lateritic profile is illustrated in Figure 5 (Appendix A) with a photograph of a typical test pit encountered at the site. The schematic representation is taken from the report prepared by the CSIRO/AMIRA in 1991 (Reference [7]).

Based on the geology and hydrogeology of the site, in conjunction with the test pit logging and laboratory testing, there are significant similarities between the schematic representation presented by CSIRO/AMIRA and the regolith system encountered.

Based on the test pits excavated within the farm, subsurface conditions generally follow the profile described in Table 4.

Table 4: Typical lateritic regolith profile encountered.

Thickness (m)	USCS*	Description
0.2-0.4	-	■ Topsoil
0.5-1.0	GC/SC	■ Clayey GRAVEL (GC) ; fine to medium grained gravel (red-brown pea-sized), rounded to sub-rounded particles, pale brown, with low plasticity fines. The material was generally moist and of loose consistency. ■ Clayey SAND (SC) ; fine to coarse grained sand, pale brown or yellow with some white and red staining, low to medium plasticity fines. The material was generally moist and of loose consistency.
0.0-1.3	GC/SC	■ DURICRUST – Clayey GRAVEL/clayey SAND (GC/SC) weakly to moderately cemented material with pisolites were observed in some of the test pits.
0.5-5.5	SC/CI	■ Silty Clayey SAND/Sandy Silty CLAY (SC/CI) ; fine to coarse grained sand to medium plasticity clay, yellow and white or only white with red staining reducing at depth (mottled and bleached zone), extending to depths below 4.0 m. The material was generally moist to wet and of very stiff consistency.

*USCS – Unified Soil Classification System

The test pit investigations and laboratory testing have shown that the materials from the identified borrow areas do not differ from the materials characterised beneath and in proximity of the landfill.

In summary, the site is characterised by a loose to medium density layer of clayey GRAVEL (GC) or clayey SAND (SC) material overlaying a layer of very stiff SC to medium plasticity CLAY (CI) material (mottled and pallid horizons). The sand is generally predominant on the creek lines and the gravel is dominant on the ridges lines. Generally the presence of a layer of pisolitic gravel coincided also with the presence of an underlain layer of weakly to moderately cemented (duricrust) material (laterite or ferricrete layer).

We have described the mottled and pallid horizon as a SC-CI type of material for simplicity. However, due to significant variability in the proportion of the quartzitic gravel, sand and silt, and clay fractions, this layer could significantly vary, as described below (refer Section 6.4):

- Clayey GRAVEL (GC) to Clayey SAND (SC)
- Silty GRAVEL (GM) to Silty SAND (SM)
- Medium plasticity CLAY (CI) to high plasticity CLAY (CH)
- Low plasticity SILT (ML) to high plasticity SILT (MH)



The variability described above is the result of different degrees of chemical weathering of the parent rock material.

Fell (Reference [8]) describes the plasticity of the lateritic “soil” system as generally plotting below the A-line, which is generally consistent with the plasticity of the material tested in the laboratory. The plasticity of the material encountered at the site was generally close to the A-Line (slightly above or slightly below it); the plasticity index was generally between 15 and 30 and the liquid limit generally between 30 and 60 (medium to high plasticity fines) (refer Section 6.4).

Refusal was encountered in 57 of the 114 test pits excavated. Depth to refusal varied between 0.7 m (TP28) to approximately 4.2 m (TP101 and BA23). At refusal Saprolite (typically more than 20% weatherable minerals altered) and Saprock (typically less than 20% weatherable minerals altered) and fresh Granite was generally encountered.

Weathered dolerite was encountered in TP103, TP113, TP115 and BA07. The presence of dolerite dikes can affect the excavatability of the material for use in the construction of the landfill as weathered dolerite is generally of harder consistency than weathered granite.

Roots and rootlets were observed up to the bottom of the test pit within all test pits excavated. The presence of roots can result in zones of higher hydraulic conductivity (preferential water path) within the low permeability stiff clayey layer.

Vertical fissures were observed in all the test pits logged. Visual observations would suggest that these fissures could have been caused by the presence of fractures within the parent rock material prior to chemical weathering or presence of roots.

The material excavated from test pit TP94 differed from the other test pits. In this test pit the soil was classified according to the USCS as a poorly graded sand material. This material could be colluvium formed as a result of transportation of material by gravity and water (mass wasting) from the surrounding hills to eroded gullies that developed into the clayey material or granite. In order to understand the provenience of the material encountered in TP94, additional drilling and borehole installation, and a geophysical survey was undertaken to explore whether this material could represent a palaeovalley system. The geophysical investigation was undertaken also with the intent to identify the extent of the dolerite dikes (Reference [1]). Further investigation indicated that the material encountered in TP94 does not represent a paleochannel.

Figure 4 (Appendix A) and the test pit summary table presented in Appendix D show the locations and coordinates of the test pits where refusal was encountered and the approximate depths.

The test pit logs are presented in Appendix E.

6.3 Groundwater conditions based on the test pit investigations

Groundwater was encountered in 20 of the 114 test pits excavated. The test pits where groundwater was encountered are located in the creek lines within the proposed landfill footprint. No groundwater was encountered in the identified borrow areas.

It is important to note that the test pit investigations were undertaken during two separate periods: end of winter and during spring. As groundwater is seasonally dependent, the groundwater conditions encountered during the site investigations undertaken in August and September are more likely to be representative of typical wet conditions. The groundwater conditions encountered during the November and February test pit investigation are more likely to represent the start of the transition to dry season water level conditions.

Figure 4 (Appendix A) and the test pit summary table presented in Appendix D show the locations and coordinates of the test pits where groundwater was encountered.



6.4 Soil properties based on the laboratory testing

Based on the laboratory test results and engineering judgment the data was interpreted to provide an understanding of the subsoil conditions on the site. The interpretation of the testing undertaken on the materials is presented in Appendix F. The laboratory test certificates are attached in Appendix G.

The results of the geochemical and geotechnical laboratory testing indicate that:

■ Geochemical characterisation:

- Material appears to be from circum-neutral ($\text{pH} \approx 6$) (with EC below $40 \mu\text{S}/\text{cm}$) to acidic (pH below 5.5 with higher EC). The low EC is possibly maintained through adsorption of any free ions onto the clay surface. At acidic pH, metal ions are commonly released from the surface of the soil particles (they are desorbed leading to a higher EC in the solution than the solid it is in contact with).
- The average CEC of the material is approximately 3, which is at the low end of the typical range for kaolinite (between 3 meq/100 gr and 15 meq/100 gr).
- The ESP and SAR are above 6% and 3, respectively. This implies that the *in situ* soil is classified as sodic and potentially dispersive. In spite of high ESP and high SAR, clays in contact with high sodicity solutions may be very stable (flocculate) under an acid environment (below 5.0) but could disperse under a basic environment with low salts concentration (e.g. rainfall infiltrating through the soil or runoff). Rainfall or runoff increases the swelling of sodic clay minerals enhancing its mobility. Nevertheless, considering that the clay has shown low CEC values, its propensity to disperse under a rainfall/runoff event is considered to be low because the propensity of the material to swell and become mobile is reduced.

■ Geotechnical characterisation:

- Generally, the top 1.0 m of material can be classified as either a low plasticity clayey GRAVEL (GC) or a low plasticity clayey SAND (SC) in accordance with the Unified Soil Classification System (USCS).
- This low plasticity clayey GRAVEL/SAND layer generally overlays a material with medium to high plasticity fines and variable amount of gravel, sand and fines size fractions. According to the material PSD and plasticity characteristics, this layer can vary from a clayey GRAVEL/SAND with medium to high plasticity fines (SC), to a medium to high plasticity CLAY (CI-CH), to a low to high plasticity SILT (ML-MH), therefore showing significant variability. This behaviour is typical of a weathering lateritic profile from granite derived soils.
- Soils excavated from TP94 are different compared to soils excavated from the other test pits. In this test pit the soil is classified according to the USCS as a poorly graded sand material. This material could be of colluvium origin.
- The particle density of the fine fraction material varies between $2.6 \text{ t}/\text{m}^3$ to $2.7 \text{ t}/\text{m}^3$. A significant amount of coarse size particles was detected in 2 of the 9 samples tested. The particle density of this coarse size material varies between $2.2 \text{ t}/\text{m}^3$ to $2.4 \text{ t}/\text{m}^3$. The particle densities detected for the fine and coarse materials fall within the typical particle density range found for lateritic profile derived from granite soils.
- The linear shrinkage is generally between 3% and 10%. This is typical of material with a relatively high percentage of sand (as encountered) with medium plasticity fines (such as kaolinite). Material with this linear shrinkage indicates a low to medium propensity to shrink/swell and form surface cracks when exposed to air drying cycles typical of a semi-arid climate such as the Allawuna Landfill site.



- Based on the Emerson Crumb test, only one sample out of six tested dispersive. The material tested dispersive is from TP5 at a depth of 0.3 m to 0.8 m, which classified as a Class 3 material (typical of illite clay minerals) according to the Emerson test classification. The remaining material all tested as Class 6 (typical of kaolinite and chlorite), which is considered non-dispersive according to the Emerson Crumb test.
- Based on the pinhole tests, one test result out of the three samples tested indicated that the material could potentially be dispersive (PD2) (TP86 2.0-6.0 m depth). This material is classified as clayey SAND (SC) according to the USCS. The amount of clay size fraction present in this material is approximately 9%, which is considered low. Therefore, the potential dispersive behaviour could be due to instability of the soil matrix rather than dispersion of the clay minerals. The remaining two samples contained more than 20% clay size fraction and classified not dispersive (ND1 and ND2).
- Based on the results of the standard compaction testing, the standard maximum dry density (SMDD) and optimum moisture content (OMC) of TP10, TP14 and TP116 are similar, approximately 1.75 t/m^3 and 16% to 17% respectively. The material sampled from TP2 presents the lowest SMDD (1.65 t/m^3) and highest OMC (20%). The material from TP86 and TP102 presents the highest SMDD (1.9 t/m^3) and lowest OMC (12%), which is typical of gravel and sand material.
- Based on comparison between the OMC of the material and the *in situ* moisture content, the material may not require a significant amount of water for construction.
- The saturated hydraulic conductivity of samples compacted to 95% SMDD at OMC at 20°C using tap water is generally below $1 \times 10^{-9} \text{ m/s}$. However, using 50 000 ppm NaCl solution, the permeability increased by approximately one order of magnitude ($1 \times 10^{-8} \text{ m/s}$).
- Based on isotropically consolidated undrained (CIU) triaxial tests undertaken on bulk samples from TP14 (1.3 m to 2.8 m depth) and TP20 (1.0 m to 3.8 m depth), and a remoulded sample from TP86 (2.0 m to 6.0 m depth) representative of foundation and embankment materials, the following observations can be made:
 - Material from TP14 dilated while shearing
 - Material from TP20 contracted while shearing
 - TP86 dilated while shearing at 100 kPa; at approximately 250 kPa the material is contracting slightly while shearing; at 500 kPa the material is contracting while shearing
 - Material from TP14, TP20 and TP86 indicate good correlation in terms of drained friction angle
 - The material indicates a peak drained friction angle of 28° and cohesion of approximately 5 kPa
 - Testing of material from TP14 suggests an undrained strength ratio between approximately 1.0 (at 100 kPa effective stress) to approximately 0.6 (above 250 kPa effective stress).
 - Material from TP20 and TP86 suggests a normally consolidated peak undrained strength ratio of 0.35 (at 500 kPa effective stress).
- Based on the CIU triaxial testing and acknowledging the variability of the material at the site, a peak drained friction angle of maximum 28° with 5 kPa cohesion is recommended for the slope stability analysis under drained conditions. A peak undrained shear strength ratio of 0.35 is recommended in slope stability analyses under undrained conditions for clay layers that are at, or approaching, its normally consolidated state. Based on the CPTu investigation, the minimum peak undrained strength of the material could be conservatively assumed equal to 150 kPa.



7.0 LANDFILL CONSTRUCTION

7.1 Material properties and use

7.1.1 Embankment and base construction material

Lateritic materials are usually considered suitable materials for earthfill construction, and have been used in the construction of several dams internationally. Lateritic materials are usually easy to compact and have medium to low permeability (Reference [8]).

The lateritic regolith profile present at the Allawuna site presents suitable compaction characteristics for the works. The material compacts to a relatively high maximum dry density and the plasticity characteristic shows that material compaction could be easily achieved during construction. The natural moisture content is generally close to OMC, which means that the material may not require a significant additional amount of water for compaction. The shrinkage limit test indicates that the material has a low propensity for cracking. Therefore, the material is considered suitable for use in the construction of the perimeter embankment wall.

The material encountered between the stiff clayey soil and the topsoil is generally a pale brown gravel or sand material with low plasticity fines. On average, it represents approximately 15% of the total material thickness. This material classifies as potentially dispersive according to the Emerson Crumb classification system. This material is considered suitable as embankment construction material if mixed with the underlying clayey material. However, due to the coarse nature of the material its use is not recommended at the base of the landfill.

Cemented laterite could be found during excavation. This material can be used as embankment fill but not at the base of the landfill. This material could be easily broken down during compaction using a sheep-foot roller or a dozer. However, compaction should be undertaken in thin lifts (e.g. lifts not greater than 0.2 m) to reduce the possibility of creating preferential water paths.

7.1.2 Liner material

Based on the CEC tests and permeability tests undertaken using 50 000 ppm NaCl solution, the material does not meet Victoria BPEM requirements for use as compacted clay liner (Reference [9]). The material has a low CEC value (below 10 meq/100 g) and hydraulic conductivity of samples compacted to 95% SMDD at OMC using Perth tap water are generally below 1×10^{-9} m/s. However, using 50 000 ppm NaCl solution, the hydraulic conductivity of the material increased by approximately one order of magnitude (1×10^{-8} m/s).

The clayey material on the site is not suitable for use as a clay liner material due to the relatively high permeability (when tested with a saline solution) and low CEC value. The clayey material can however be used in conjunction with a geosynthetic clay liner (GCL) to form a system with similar performance to a 1.0 m thick compacted clay liner. This will be used with a geomembrane layer to form a composite liner system that will have a similar performance to the liner system suggested by the Victoria BPEM (Reference [9]).

7.1.3 Material dispersivity

The material shows low susceptibility to dispersivity. However, due to the sodic nature of the soil, the material could slowly disperse over time if in contact with water above circum-neutral pH conditions and low in salt concentration (due to rainfall or runoff).

The presence of the landfill will minimise the possibility of *in situ* soils being in contact with rainfall and runoff, hence removing the principal source of the dispersion process. Additionally, the groundwater is likely to be characterised by an acidic environment, therefore the clay material is likely to be structurally stable.

The embankment of the landfill will be constructed using material excavated from the site. It will be well compacted, therefore, its relatively low hydraulic conductivity will minimise the potential for tunnelling or piping through the embankment. Engineering measures should however be considered to prevent erosion of the toe of the embankment where groundwater is shallow and could daylight to the natural ground (evident as seepage or boggy areas). This could entail installation of groundwater pressure release subsoil drains. If, required, based on monitoring additional rock armouring may be installed at the embankment toe.



Exposed embankment slopes should be vegetated to reduce sedimentation and the likelihood of erosion caused by dispersion. Repairs may be required if signs of erosion become evident during the operational phase of the landfill.

Erosion of stormwater diversion drains could be minimised by lining the channel bed using local vegetation, earthen material, concrete, lime or gypsum amendment, or adopting a geosynthetic material solution.

7.1.4 Borrow material

7.1.4.1 Embankment construction material

The material excavated from the test pits located within the identified borrow areas is considered a suitable embankment construction material. The borrow materials present particle size distribution and plasticity characteristics similar to the materials excavated from the other test pits within the location of the landfill footprint. Consequently, the materials will have similar geotechnical properties (i.e. dispersivity, hydraulic conductivity and shear strength).

7.1.4.2 Cover material

The material excavated from the test pits located within the identified borrow areas is considered a suitable cover material. The hydraulic conductivity of the identified borrow material will be similar to the one excavated from the other test pits and its permeability value will likely depend on the soil pore water chemistry.

Considering that the water in contact with the cover material will be more likely characterised by rainfall infiltration and runoff, the pore water will likely not be saline and therefore once compacted the soil hydraulic conductivity may be below 10^{-9} m/s (refer to Section 6.4). This implies that the material from the identified borrow areas could also be used as a final cover material.

The primary containment cover system could consist of a low stiffness geomembrane (e.g. low linear density polyethylene – LLDPE), to withstand strains due to waste settlement, overlying a geosynthetic clay liner (GCL). The borrow material can be used in conjunction with the geosynthetic cover as a liner protection or moisture retention layer for the establishment of vegetation.

Comparison studies between the performances of compacted clay liner (CCL) and GCL subjected to differential settlement has shown that the GCL can withstand higher differential settlement than CCL. Differential settlement on waste can strain a liner to values greater than 10%. The tensile strain at failure of CCL is typically between 0.1 and 4%, where the GCL has been shown to resist strain greater than 10% and still maintaining a low hydraulic conductivity (1×10^{-9} m/s or less) (Reference [10]). Therefore, the use of GCL in the cover system for the Allawuna Landfill will allow reducing the size of the required borrow and limiting infiltration of rainfall/runoff in the waste.

A drainage layer, consisting of a sand layer or geocomposite drain, could be installed on top of the containment system to reduce the build-up of water head on top of the containment system.

7.1.4.3 Availability

A minimum of 0.92 Mm^3 of borrow material can be excavated from the combined borrow areas identified within the boundaries of the farm. Assuming a bulking factor (to convert volume of excavated material to volume of compacted material) of 1.1, approximately 1 Mm^3 of material would be available for construction activities and cover placement.

The breakdown of material likely available at the identified borrow areas is presented in Table 5.



Table 5: Available volumes of materials.

Borrow Area	Area (ha)	Volume Excavated (m ³)	Volume Compacted (m ³)*
1	8.8	420 000	462 000
2	7.2	320 000	352 000
3	4.0	180 000	198 000
Total	20	920 000	1 012 000

Volumes based on an assumed bulk factor of 1.1

7.2 Construction recommendations

The following construction procedures are recommended:

- *Removal of topsoil and unsuitable materials.* Remove topsoil and grub out tree roots and any unsuitable foundation material of loose consistency and/or high permeability prior to fill placement. The nominal topsoil stripping depth is approximately 0.20 m across the site; however topsoil may be deeper in places and require further stripping. Topsoil materials are considered unsuitable for re-use as structural fill. However, topsoil may be suitable for re-use as cover material or for landscaping applications. Topsoil should be stockpiled in accordance with a topsoil management plan for later re-use.
- *Bulk excavations.* Carry out excavations where required to design elevations. Refusal may be encountered at shallow depths in some locations; conventional construction equipment may not be suitable for excavation in these locations. Should refusal be encountered, the material should be removed using a rock breaker or the floor design should be adjusted to account for this material.
- *Groundwater during excavation.* Shallow groundwater could be found in proximity of the creek lines. Depending on the construction period and depth to excavation, consideration should be given to safely manage groundwater during construction.
- *Base preparation to receive geosynthetic liner.* The foundation material is likely very variable. Additionally, tree roots have been found at depth within all test pits excavated. Any protrusion should be removed prior to placement of the geosynthetic liners to limit the risk of puncturing the liner, either during construction or during the placement of waste. If the foundation material appears to be significantly heterogeneous in terms of permeability, or is characterised by unsuitable loose material, this unsuitable foundation material should be removed and additional suitable material imported from the stockpile or borrow area, properly moisture conditioned, and compacted. In zones where refusal is encountered or limited amount of fill is required to achieve the design elevations additional low permeability material may be required to be placed as a low permeability fill and geosynthetic liner puncturing protection layer.
- *Proof rolling of exposed surface.* Following removal of topsoil and unsuitable material, the foundation should be proof rolled with a smooth drum roller and *in situ* density testing undertaken to ensure that the compaction requirements are satisfied.
- *Fill placement.* Suitable material should be compacted in layers as per the specification. Density, moisture, and cracking should be monitored during placement of the materials. Cemented laterite could be found during excavation. This material could be easily broken down during compaction using a sheep-foot roller or a dozer. If this material is encountered and used as embankment fill, compaction in lifts greater than 0.25 m should be avoided to reduce the possibility of creating a heterogeneous fill with presence of preferential water paths.



- *Construction quality assurance and control.* The material is likely to be variable; therefore care should be taken while undertaking *in situ* density testing. Laboratory testing for assessing the materials' maximum dry density and optimum moisture content should be undertaken at each location where an *in situ* density testing is undertaken, to allow for proper comparison between laboratory testing and compaction achieved during construction.

8.0 SUMMARY AND CONCLUSIONS

Geotechnical field investigations have been undertaken at the proposed Allawuna Farm Landfill as part of the design studies in support of a works approval application for the future construction of the landfill. On the basis of these field investigations the following conclusions are summarised:

8.1 Cone penetration testing

- Based on Robertson' soil behaviour type (SBT) (Reference [4]), the material is generally classified as "very stiff sand to clayey sand" to "very stiff fine grained". Despite the Robertson' SBT classification, typically being based on sedimentary soils and not residual materials, the classification for the material is generally in agreement with the laboratory testing and observations during logging of the test pits.
- Based on the EPRI classification system (Reference [5]) the consistency of the clayey material classifies as "hard" ($q_t > 6$ MPa) to "very stiff" ($6 \text{ MPa} > q_t > 3 \text{ MPa}$) to "stiff" ($3 \text{ MPa} > q_t > 1.5 \text{ MPa}$). The consistency of the clay material in accordance with EPRI classification system is generally in agreement with the observations during logging of the test pits.
- A well-defined hydrostatic phreatic surface across the test locations could not be inferred from the CPTu results. This was in part due to the shallow refusal depths at most locations, and the presence of very stiff clays exhibiting very high (up to 5000 kPa) dynamic pore pressure response. However, dissipation testing at CPTu6 (February 2015) suggests presence of hydraulic connection between layers (clay mixtures) from 1.5 m to 14 m depth. In general the CPT pore pressure measurements indicate that the stiff clay material is likely near saturation, dilative, and heavily over-consolidated.
- Interpretation of the CPTu results suggests that the *in situ* material has peak undrained shear strength (s_u) generally greater than 150 kPa. Material of this strength is classified as very stiff to hard according to the AS 1726 classification system (Reference [6]) for fine grained cohesive soils.
- The existing material is likely to be dilative rather than contractive. Therefore, drained strength parameters are more likely to dictate a slope stability mechanism of failure than undrained conditions. However, undrained conditions should be also assessed under static (subsequent to embankment construction) and seismic loading conditions.
- A generally shallow loose sand layer of various depths was encountered on top of the very stiff fine grained material. The depth of this layer was found to increase in the creek areas. A maximum depth of approximately 3.5 m of interpreted sand material was found in CPTu6.3, located in proximity to test pit TP94. Where practicable this loose sand layer should be removed and replaced with compacted clayey material.
- Refusal was encountered below 4 m at most locations. At CPT2 and CPT9 (May 2013) refusal was encountered at approximately 7 m and 10 m, respectively. The only test during the 2015 investigation to reach depths greater than 4 m was CPTu6 (14.5 m), between TP94 and TP2.

In summary, the CPTu testing suggests that the proposed landfill is located above a very stiff fine grained material, which is considered a competent foundation material that is not expected to significantly consolidate once loaded with waste and compacted fill material.



8.2 Test pit field investigations

- 114 test pits have been excavated within the boundaries of the farm and samples obtained from various locations and lithology. Based on the test pit logging and laboratory testing the material encountered at the site is characterised by a loose to medium density layer of clayey GRAVEL or clayey SAND material overlaying a layer of stiff to very stiff sandy/gravelly CLAY or SILT of generally medium plasticity. Depending on the degree of the chemical weathering of the parent rock, sand and gravel could be the predominant particle size fraction. Therefore this layer could also be classified as a silty clayey GRAVEL or SAND. Zones of weakly to moderately cemented material was observed within these two main layers in some of the test pits (laterite or ferricrete layer).
- Refusal was encountered in 57 of the 114 test pits excavated. Depth to refusal varied between 0.7 m to approximately 4.2 m. At refusal Saprolite (typically more than 20% weatherable minerals altered) and Saprock (typically less than 20% weatherable minerals altered) and fresh Granite was generally encountered. Weathered dolerite was however encountered in 4 of the test pits excavated. The presence of dolerite dikes can affect the excavatability of the material for use in the construction of the landfill as weathered dolerite is generally of harder consistency than weathered granite.
- The material excavated from one of the test pits (TP94) differed from the other test pits. In this test pit the soil is classified according to the USCS as a poorly graded sand material. This material could be colluvium formed as a result of transportation of material by gravity and water (mass wasting) from the surrounding hills to eroded gullies that developed into the clayey material or granite due to erosion.
- Roots and rootlets were observed within all test pits excavated at different depths. The presence of roots can result in zones of high hydraulic conductivity (preferential water path) within the low permeability stiff clayey materials.
- Groundwater was encountered in 20 of the 114 test pits excavated. The test pits where groundwater was encountered are located in the creek lines within the proposed landfill footprint.
- Vertical fissures were observed in all the test pits logged. Visual observations would suggest that these fissures could have been caused by the presence of fractures within the parent rock material prior to chemical weathering or presence of roots.

In summary, the test pit investigations suggest that the proposed landfill is located above a very stiff clayey material, which is considered a competent foundation material for the construction of the proposed landfill.

8.3 Material properties and use

- Based on the testing the material presents suitable compaction characteristics for use as construction material. The material compacts to a relative high maximum dry density and the plasticity characteristic shows that material compaction could be easily achieved during construction. The natural moisture content is generally close to OMC, which means that the material may not require a significant additional amount of water for compaction. The shrinkage limit test indicates that the material has a low to medium propensity for cracking when exposed to wet and air drying cycles typical of a semi-arid climate such as the Allawuna Landfill site.
- The hydraulic conductivity of samples compacted to 95% SMDD at OMC using Perth tap water is generally low (below 1×10^{-9} m/s) despite showing a low CEC value (below 10 meq/100 g), however it increases with about an order of magnitude if a solution 50 000 ppm NaCl is used in the testing. This implies that the material does not meet Victoria BPEM requirements for use as compacted clay liner. The material will however provide attenuation if leakage occurs through the primary containment barrier. A double geosynthetic liner comprising of at least a geosynthetic clay liner (GCL) and a geomembrane overlying a 500 mm layer of compacted clayey soil, would be required to comply with Victoria BPEM guidelines (Reference [9]).



- The ESP and SAR are above 6% and 3, respectively. This implies that the *in situ* soil is classified as sodic and potentially dispersive. In spite of high ESP and high SAR, clays in contact with high sodicity solutions may be very stable (flocculate) under an acid environment (below 5.0) but could disperse under a basic environment with low salts concentration (rainfall infiltrating through the soil or runoff). Rainfall or runoff increases the swelling of sodic clay minerals enhancing its mobility. Nevertheless, considering that the clay has shown low CEC values, its propensity to disperse under a rainfall/runoff event is considered to be low because the propensity of the material to swell and become mobile is reduced.
- Based on the CIU triaxial testing and acknowledging the variability of the material at the site, a peak drained friction angle of maximum 28° with 5 kPa cohesion is recommended for the slope stability analysis under drained conditions. A peak undrained shear strength ratio of 0.35 is recommended in slope stability analyses under undrained conditions for clay layers that are at, or approaching, its normally consolidated state. Based on the CPTu investigation, the minimum peak undrained strength of the material could be conservatively assumed equal to 150 kPa.
- The material excavated from the test pits located within the identified borrow areas is considered a suitable embankment construction and daily cover material, and if required a suitable final cover material (refer to Section 7.1).
- A minimum of 0.92 Mm³ of borrow material can be excavated from the combined borrow areas identified within the boundaries of the farm. Assuming a bulking factor (to convert volume of excavated material to volume of compacted material) of 1.1, approximately 1 Mm³ of material would then be available for landfill construction or cover materials.

8.4 Construction requirements

- The topsoil is generally to a nominal depth of 0.25 m. The construction specification should require removal of at least 0.2 m of topsoil, with additional material removed in the areas where it is required. Topsoil materials are considered unsuitable for re-use as structural fill. However, topsoil may be suitable for re-use as cover material or for landscaping applications.
- Refusal was encountered at shallow depths in some locations. Conventional construction equipment may not be suitable for excavation in these locations.
- Shallow groundwater could be found in proximity of the creek lines. Depending on the construction period and depth to excavation consideration should be given to safely manage groundwater during construction.
- Tree roots were generally found in all test pits excavated. Once the sub-base is graded to design elevations, any protrusions from trees should be carefully removed in order to not compromise the basal liner.
- Foundation characterised by loose material should be replaced with compacted clayey fill.
- In zones where refusal is encountered additional fill material may be required to be placed as a geosynthetic liner puncturing protection layer.
- The material shows to have low susceptibility to dispersion. The embankment of the landfill will be constructed using material excavated from the site. It will be well compacted, therefore, its relatively low hydraulic conductivity will minimise further the potential for tunnelling or piping through the embankment.
- Engineering measures are recommended to prevent erosion of the toe of the embankment where groundwater is shallow and daylights to the natural ground. This could entail installing groundwater pressure release subsoil drains and placing rock armouring at the embankment toe.



- Exposed embankment slopes should be vegetated to reduce sedimentation and the likelihood of erosion caused by dispersion. Repairs may be required if signs of erosion become evident during the operational phase of the landfill.
- Erosion of stormwater diversion drains could be minimised by lining the channel bed using local vegetation, earthen material, concrete, lime or gypsum amendment, or adopting a geosynthetic material solution.

9.0 LIMITATIONS

Your attention is drawn to the document "Limitations", which is included as Appendix H to this report. This document is intended to assist you in ensuring that your expectations of this report are realistic, and that you understand the inherent limitations of a report of this nature. If you are uncertain as to whether this report is appropriate for any particular purpose please discuss this issue with us.

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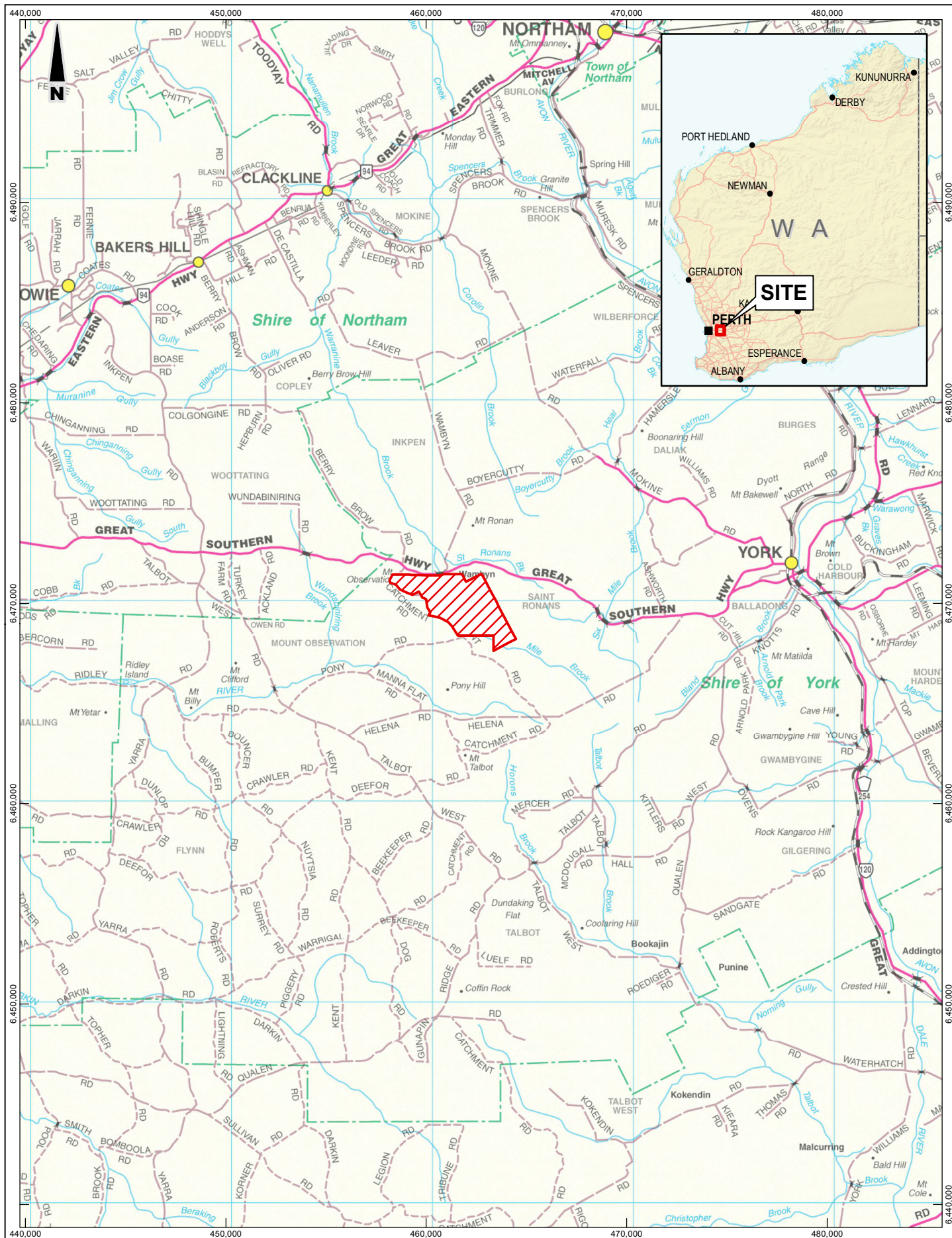
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APPENDIX A

Figures

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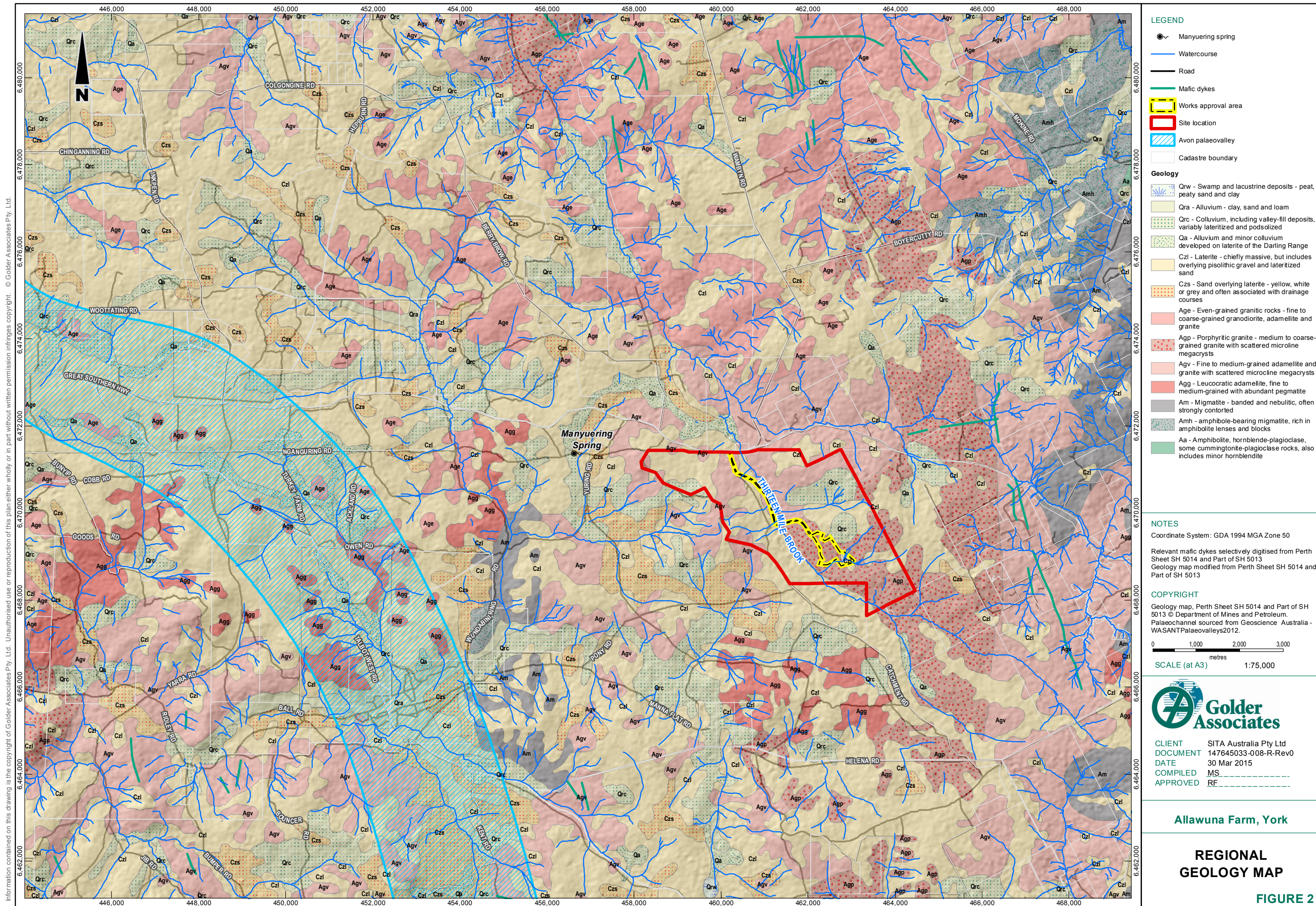
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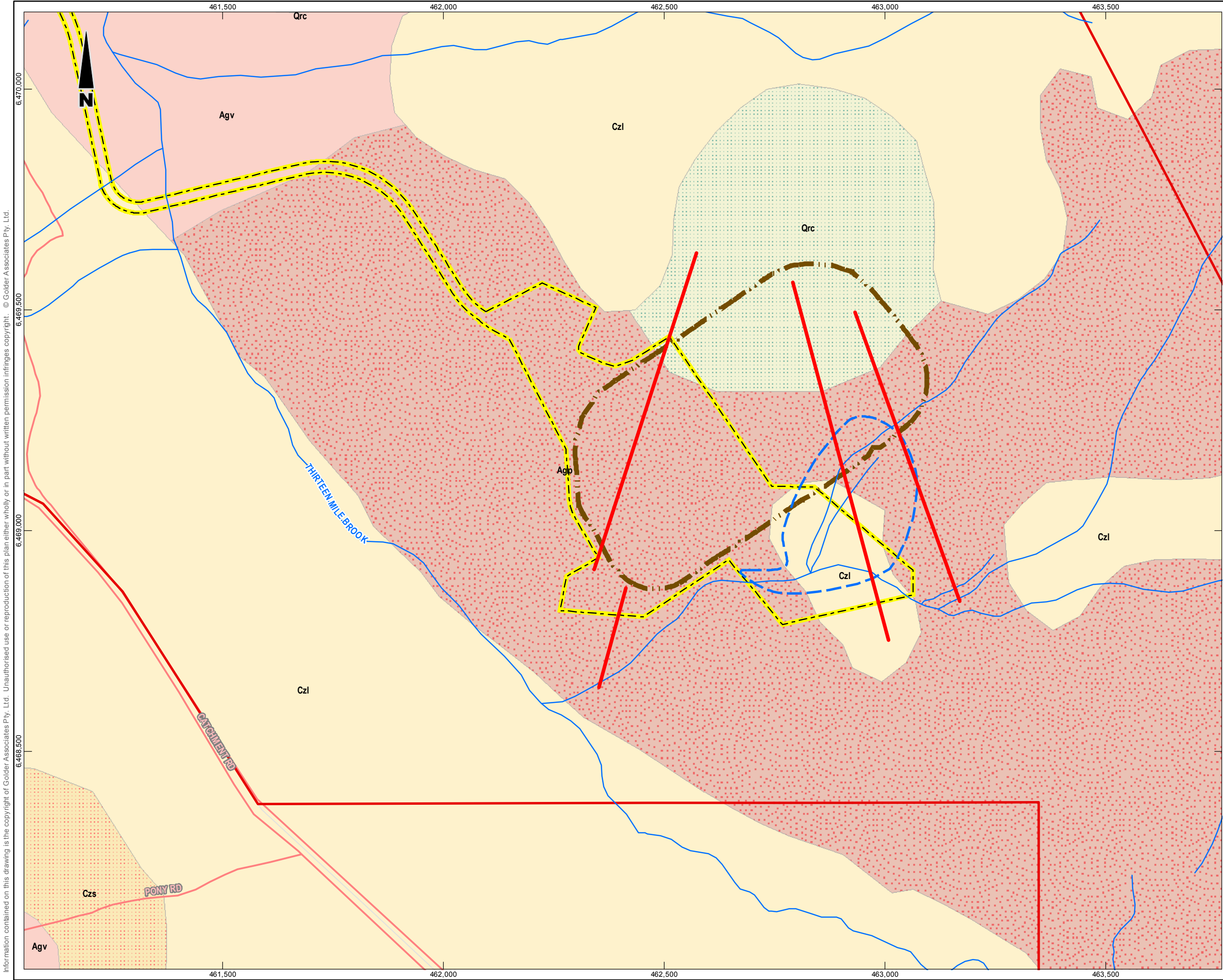
LEGEND
 Site location

Allawuna Farm, York

SITE LOCATION

FIGURE 1





LEGEND

- Dyke
 - Watercourse
 - Seepage area approximate boundary
 - Landfill ultimate boundary
 - Road
 - Site location
 - Works approval area
 - Cadastre boundary
- Geology**
- Qrc - Colluvium, including valley-fill deposits, variably lateritized and podsolized
 - Czl - Laterite - chiefly massive, but includes overlying pisolithic gravel and lateritized sand
 - Czs - Sand overlying laterite - yellow, white or grey and often associated with drainage courses
 - Agp - Porphyritic granite - medium to coarse-grained granite with scattered microcline megacrysts
 - Agv - Fine to medium-grained adamellite and granite with scattered microcline megacrysts

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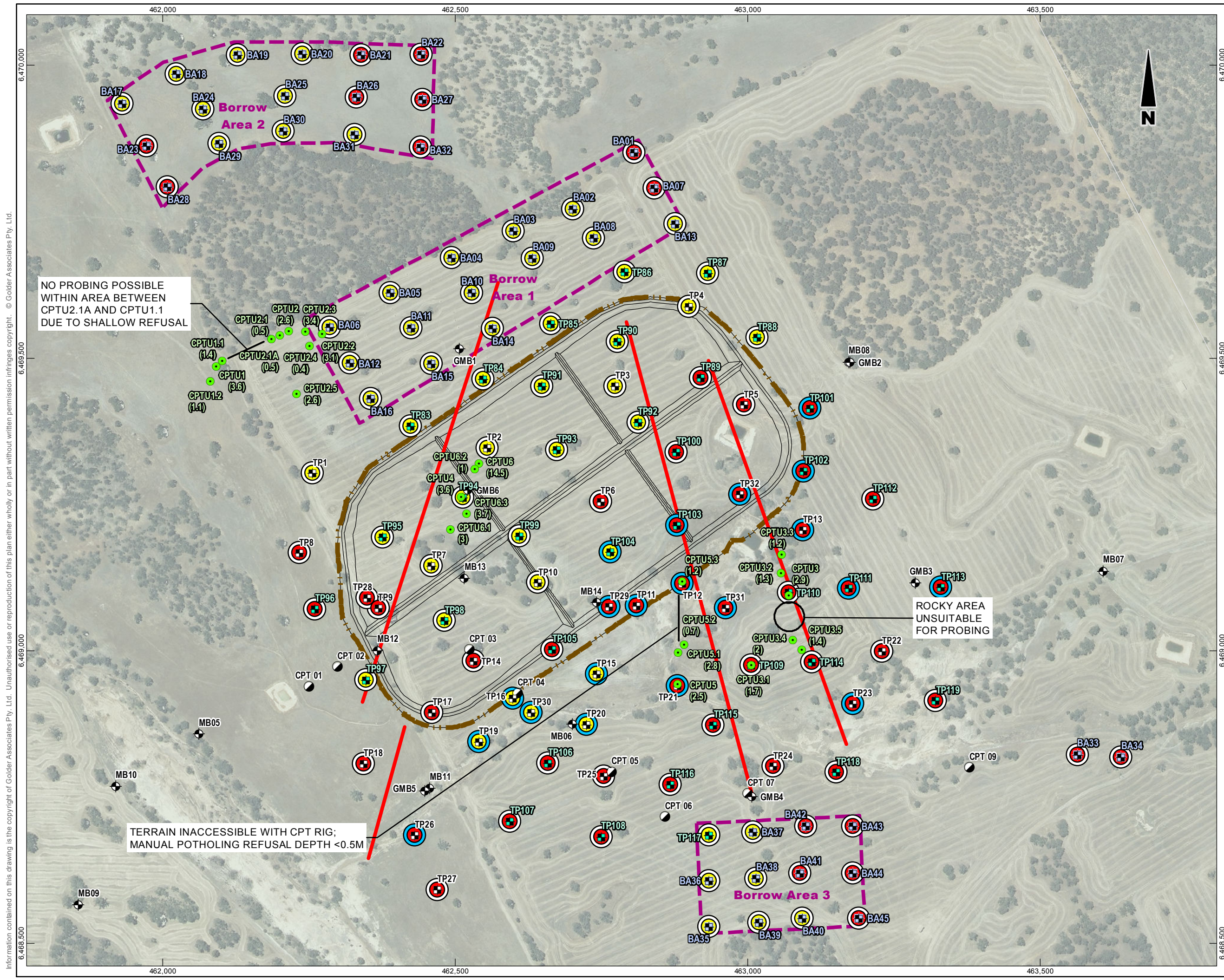
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Allawuna Farm, York

LOCAL GEOLOGY

FIGURE 3

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LEGEND

- Test pit (Feb 2015)
- Test pit (Nov 2014)
- Test pit (Aug-Sep 2014)
- Cone penetrometer test and refusal depth (Feb 2015)
- Cone penetrometer test (May 2013)
- Monitoring bore

Test Pit Refusal

- No
- Yes

Test Pit Groundwater

- No
- Yes

Candidate borrow area
Cadastre boundary
Landfill design bunds
Landfill ultimate boundary
Dyke

NOTES

Coordinate System: GDA 1994 MGA Zone 50

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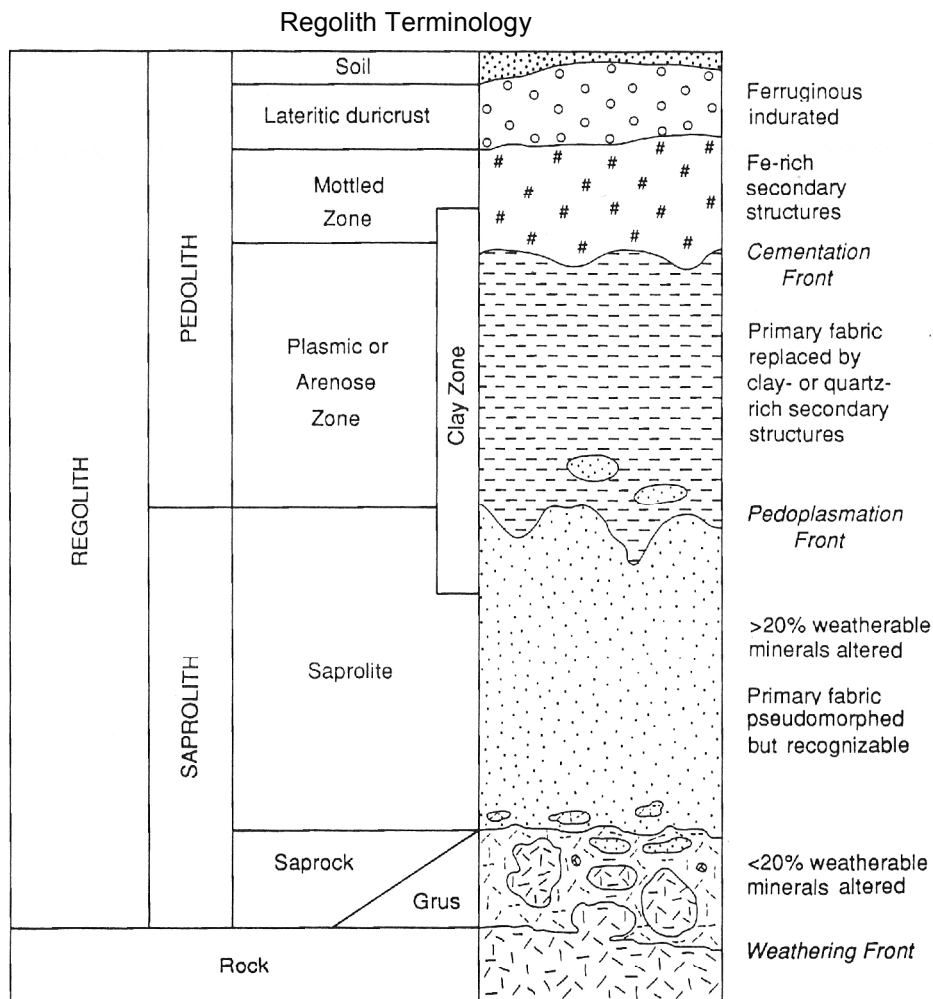
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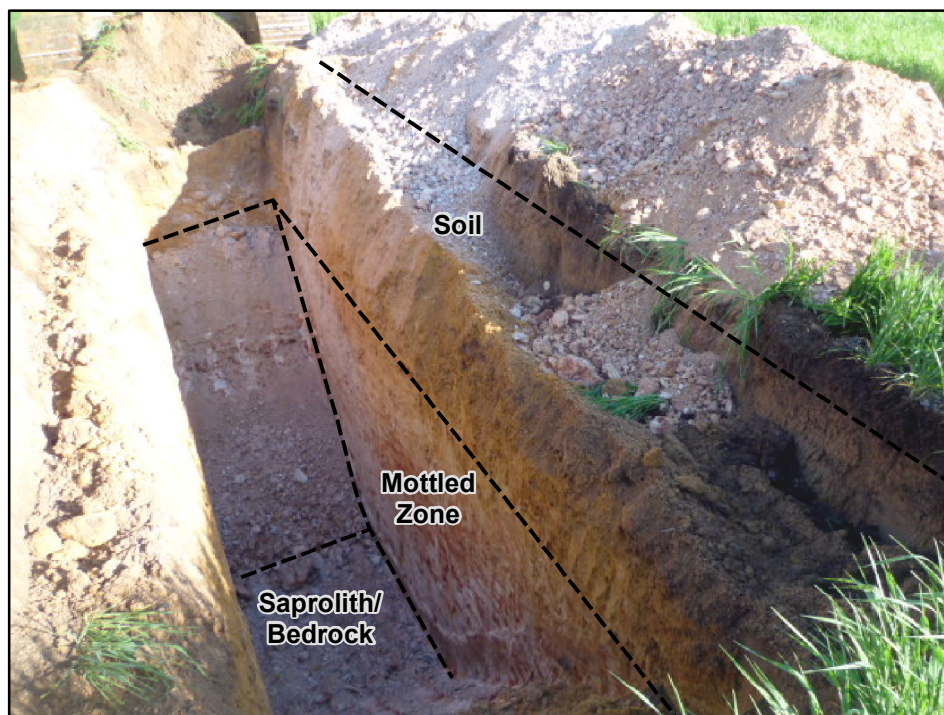
INVESTIGATION SUMMARY

FIGURE 4

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Test Pit 17



Note: Plasmic zone absent.



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Profile source: C.R.M Butt, D.J. Gray, M.J. Lintern,
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Allawuna Farm, York

**TYPICAL LATERITIC
REGOLITH PROFILE**

FIGURE 5



APPENDIX B

Testing Programme



APPENDIX B

Laboratory Testing Programme

Testing	Name	TP2	TP5		TP10			TP14	TP20	TP22	TP85		
	Depth (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0	1.3-2.8	1.0-3.8	0.9-1.9	0.3-1.0	1.0-2.9	2.9-4.9
Geochemical													
Characterisation		X	X	X	X	X	X	X	X	X	-	-	-
CEC		X	X	X	X	X	X	X	X	X	-	-	-
Geotechnical													
Characterisation		X	X	X	X	X	X	X	X	X	X	X	X
Dispersion (Emerson Crumb)		X	X	X	X	X	X	X	X	X			
Compaction		X	-	-	-	-	X	X	-	-			
Permeability		X	-	-	-	-	X	X	-	-			
Strength		X	-	-	-	-	X	X	-	-			

Testing	Name	TP86			TP94		TP102			TP104				TP116	
	Depth (m)	0.3-0.9	1.1-2.0	2.0-6.0	0.2-1.8	1.8-4.2	0.2-0.8	0.8-1.4	1.4-2.8	0.2-0.7	0.7-1.5	1.5-2.5	2.5-4.2	0.3-0.8	0.8-3.6
Geochemical															
Characterisation		-	X	X	-	-	-	X	X	-	-	-	-	-	X
CEC		-	X	X	-	-	-	X	X	-	-	-	-	-	X
Geotechnical															
Characterisation		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dispersion (Pinhole)		-	X	X*	-	-	-	X	X*	-	-	-	-	-	X*
Compaction		-	X	X	-	-	-	X	X	-	-	-	-	-	X
Permeability		-	-	X	-	-	-	-	X	-	-	-	-	-	X
Strength		-	-	X	-	-	-	-	-	-	-	-	-	-	-

Notes: X indicates the samples selected for undertaking the testing; * Pinhole testing undertaken using both 50 000ppm NaCl solution and distilled water (remaining pinhole testing were undertaken using a 50 000ppm NaCl solution)



APPENDIX B

Laboratory Testing Programme

Testing	Name	BA03	BA10		BA12		BA20		BA23	BA24	BA35		BA38	BA41
	Depth (m)	1.8-5.0	1.0-2.0	2.0-4.8	0.5-2.5	3.0-5.0	0.5-2.5	3.0-5.0	1.4-4.0	1.0-5.0	1.2-4.0	4.0-5.0	1.8-5.0	1.5-4.2
Geotechnical														
Characterisation		X	X	X	X	X	X	X	X	X	X	X	X	X

Borrow area 1: BA03, BA10 and BA12

Borrow area 2: BA20, BA23 and BA24

Borrow area 3: BA35, BA38 and BA41



APPENDIX C

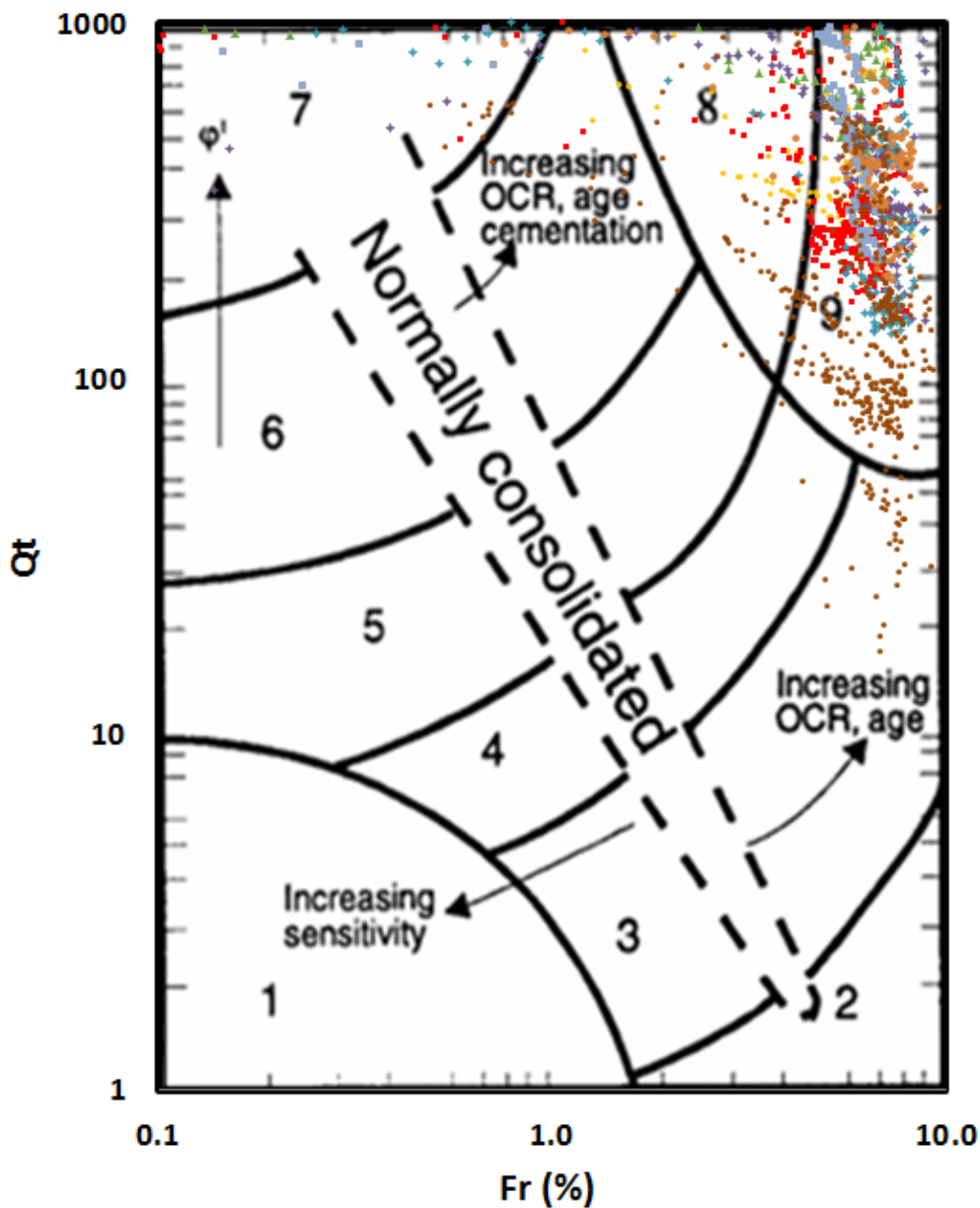
Cone Penetration Testing – Interpretation



APPENDIX C


Cone Penetration Testing - Interpretation

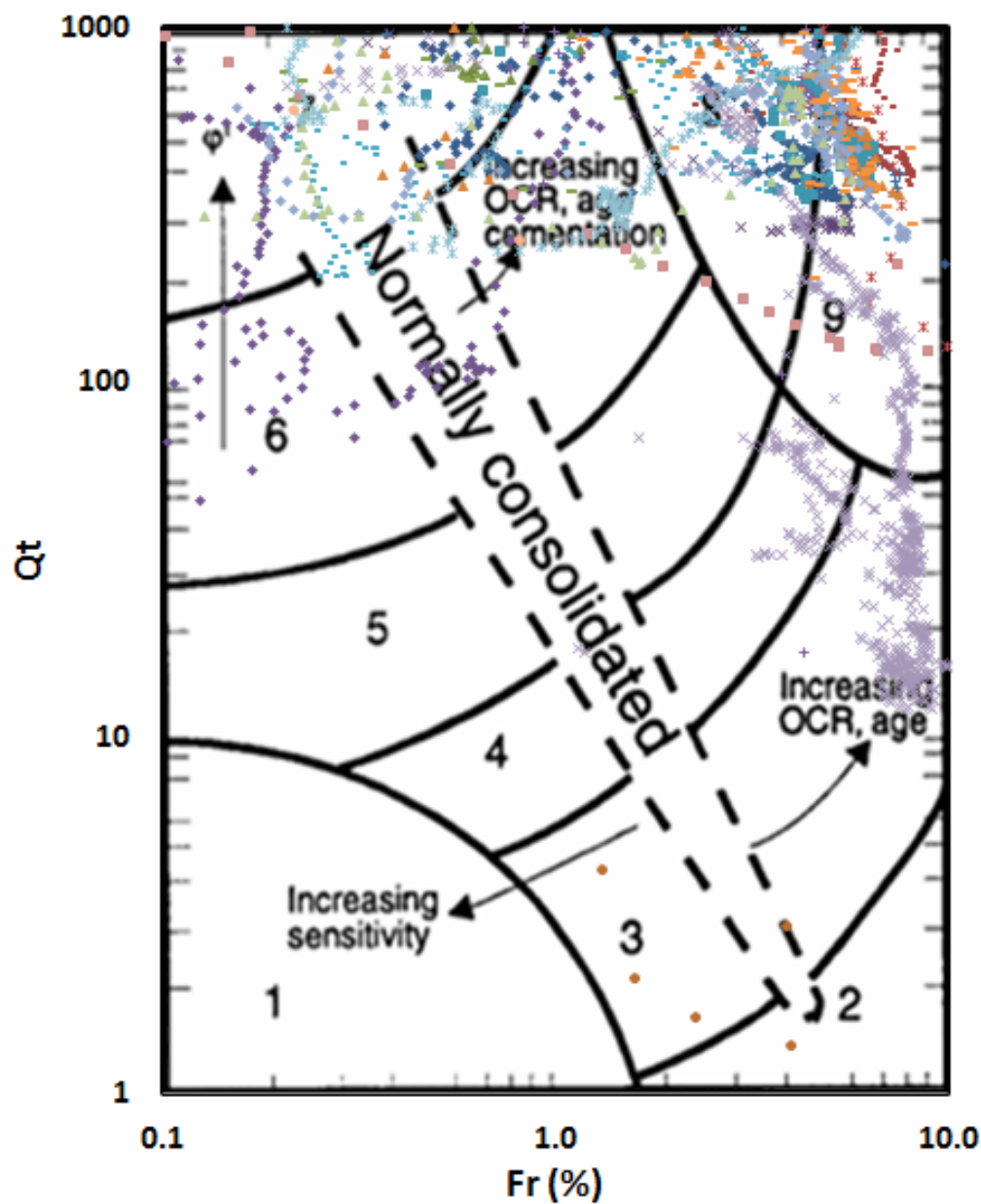
Figures



Zone	Soil behavior type
1	Sensitive, fine grained
2	Organic soils-peats
3	Clays-clay to silty clay
4	Silty mixtures: clayey silt to silty clay
5	Sand mixtures: silty sand to sandy silt
6	Sands: clean sands to silty sands
7	Gravelly sand to sand
8	Very stiff sand to clayey sand
9	Very stiff fine grained

Normalised soil behaviour type chart (after Robertson, 1990)


	CLIENT SITA AUSTRALIA Pty Ltd		PROJECT ALLAWUNA LANDFILL FARM	
	DRAWN RF	DATE FEBRUARY 2015	TITLE SOIL BEHAVIOUR TYPE MAY 2013	
	CHECKED RF	DATE FEBRUARY 2015		
	SCALE NTS	A4	PROJECT No 147645033-008-R-Rev0	FIGURE No Figure C-1

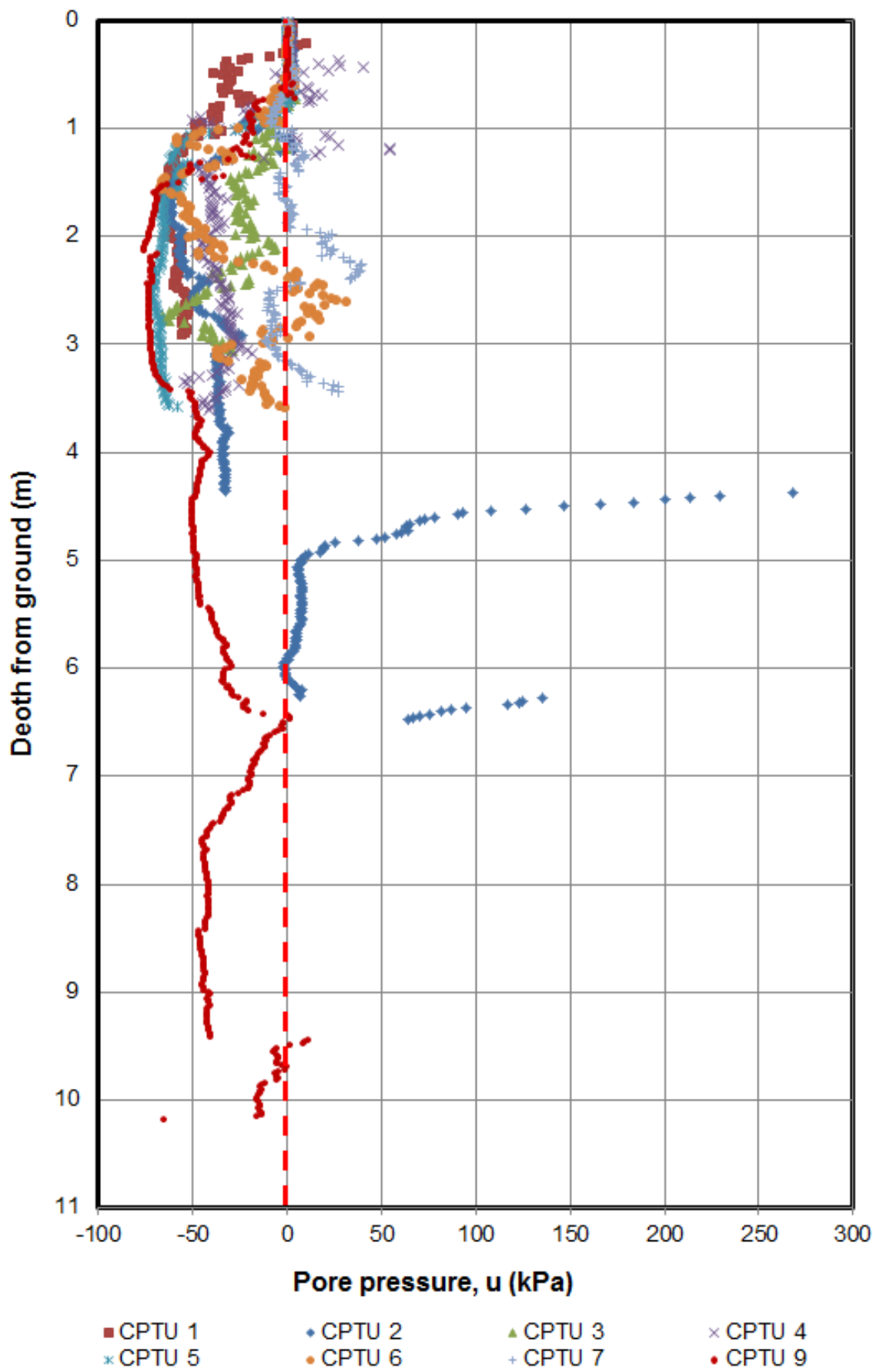



Note: Zones 6 and 7 are representative of the top soil layers (below the topsoil)

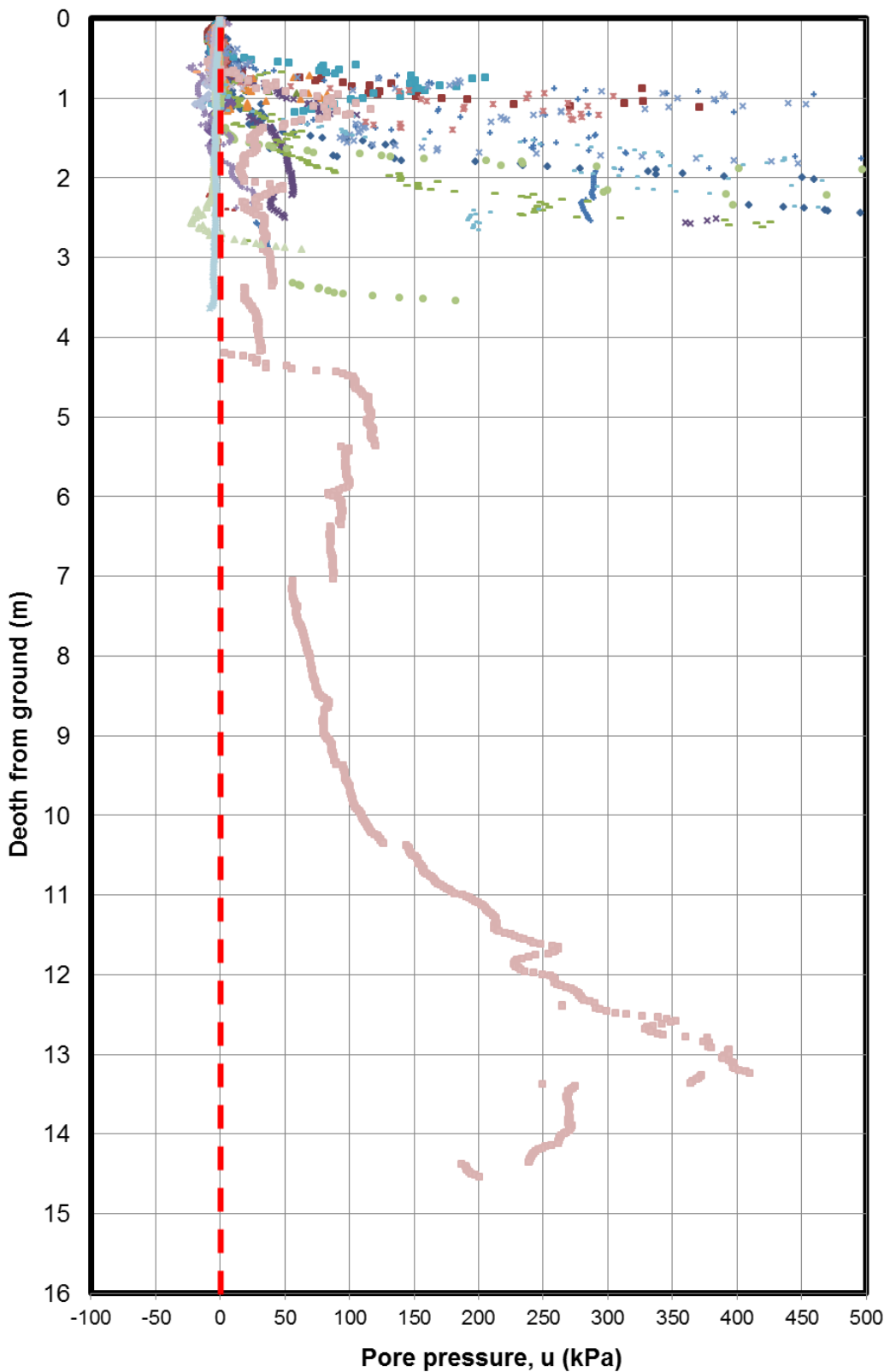
Zone	Soil behavior type
1	Sensitive, fine grained
2	Organic soils-peats
3	Clays-clay to silty clay
4	Silty mixtures: clayey silt to silty clay
5	Sand mixtures: silty sand to sandy silt
6	Sands: clean sands to silty sands
7	Gravelly sand to sand
8	Very stiff sand to clayey sand
9	Very stiff fine grained


Normalised soil behaviour type chart (after Robertson, 1990)

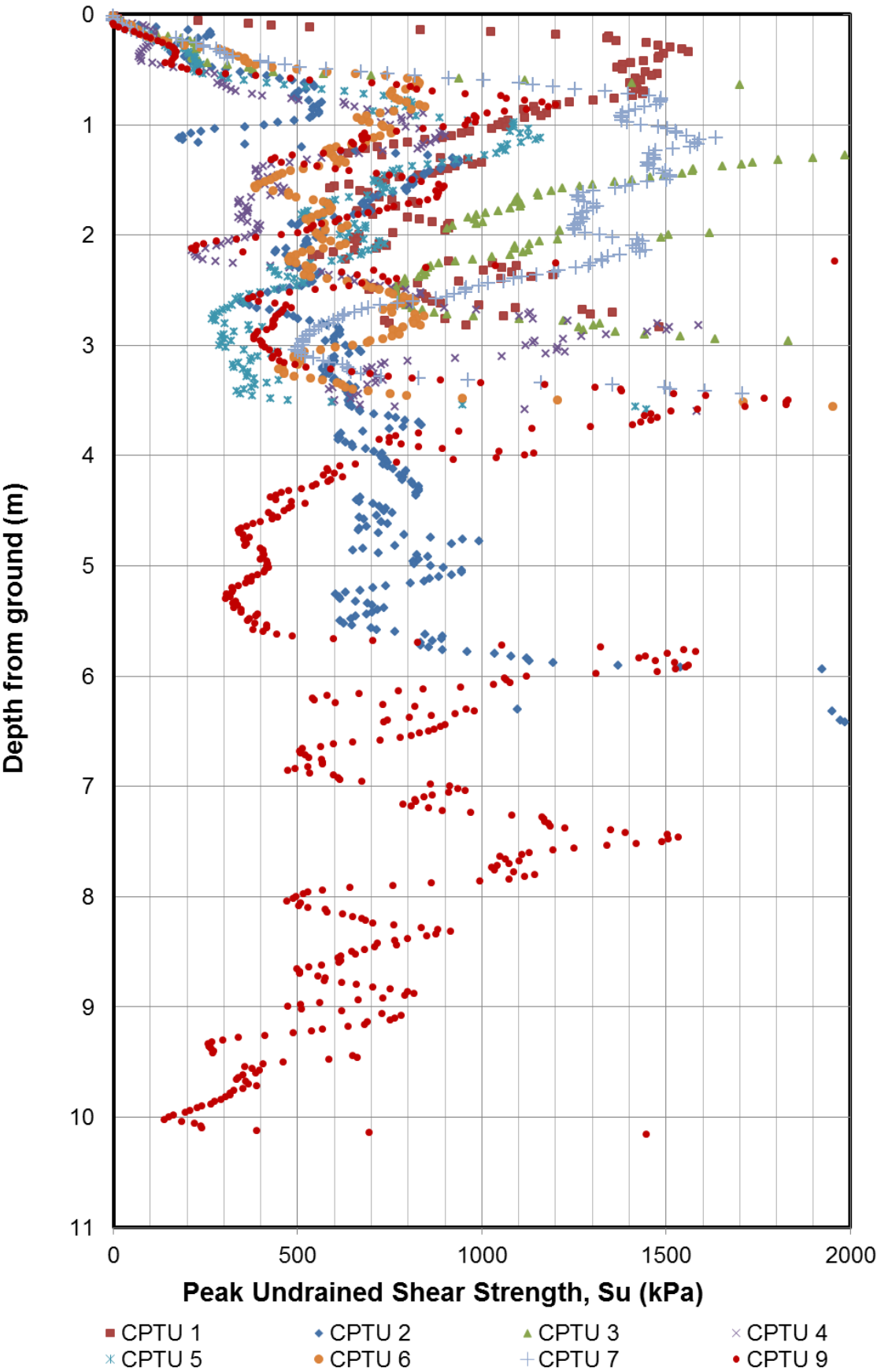
	CLIENT SITA AUSTRALIA Pty Ltd		PROJECT ALLAWUNA LANDFILL FARM	
	DRAWN RF	DATE FEBRUARY 2015	TITLE SOIL BEHAVIOUR TYPE FEBRUARY 2015	
	CHECKED RF	DATE FEBRUARY 2015		
	SCALE NTS	A4	PROJECT No 147645033-008-R-Rev0	FIGURE No Figure C-2




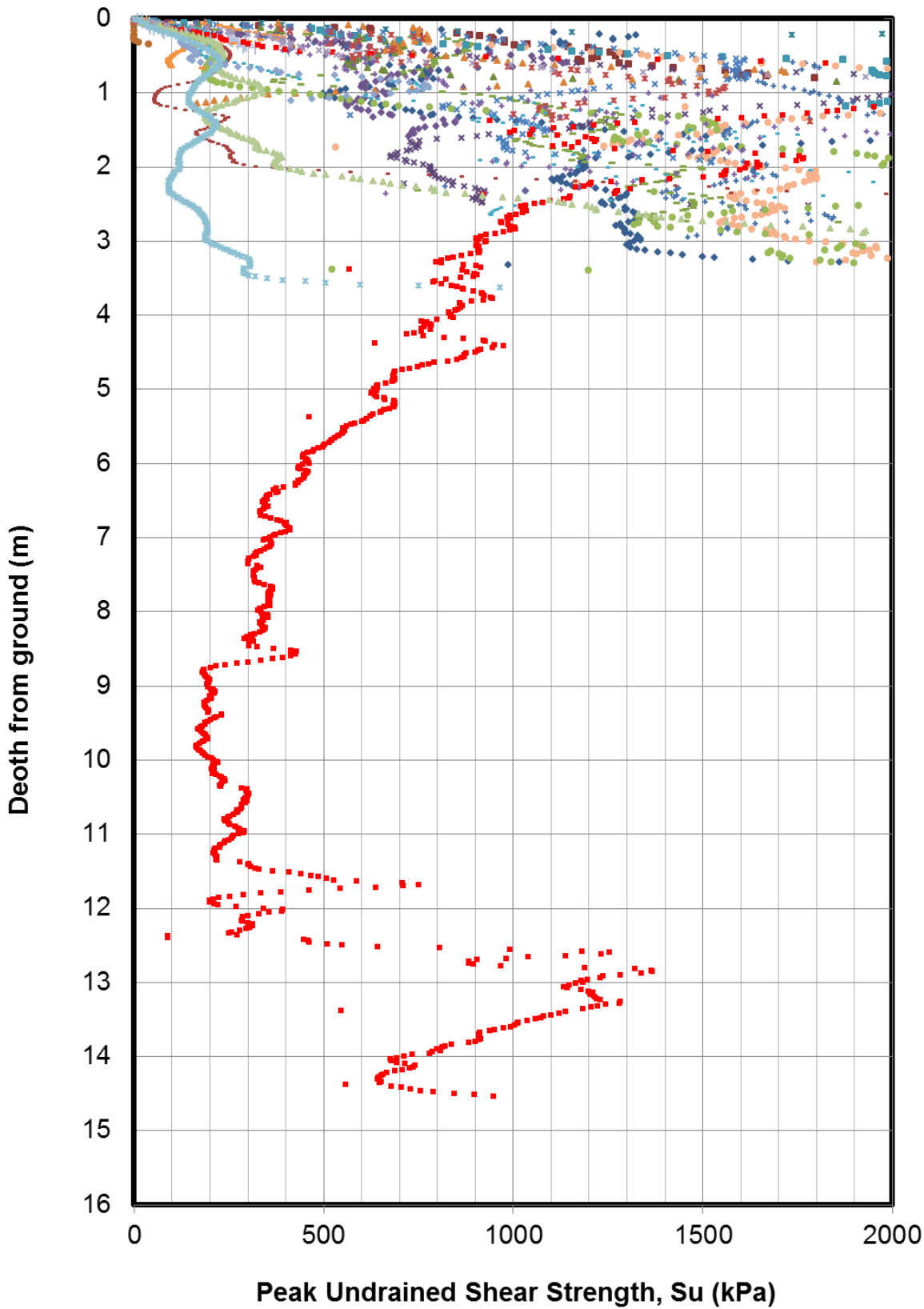
	CLIENT SITA AUSTRALIA Pty Ltd		PROJECT ALLAWUNA LANDFILL FARM	
	DRAWN RF	DATE FEBRUARY 2015	TITLE PENETRATION PORE PRESSURE MAY 2013	
	CHECKED RF	DATE FEBRUARY 2015		
	SCALE NTS	A4	PROJECT No 147645033-008-R-Rev0	FIGURE No Figure C-3



	CLIENT SITA AUSTRALIA Pty Ltd		PROJECT ALLAWUNA LANDFILL FARM	
	DRAWN RF	DATE FEBRUARY 2015	TITLE PENETRATION PORE PRESSURE FEBRUARY 2015	
	CHECKED RF	DATE FEBRUARY 2015		
	SCALE NTS	A4	PROJECT No 147645033-008-R-Rev0	FIGURE No Figure C-4



	CLIENT SITA AUSTRALIA Pty Ltd		PROJECT ALLAWUNA LANDFILL FARM	
	DRAWN RF	DATE FEBRUARY 2015	TITLE PEAK UNDRAINED SHEAR STRENGTH MAY 2013	
	CHECKED RF	DATE FEBRUARY 2015		
	SCALE NTS	A4	PROJECT No 147645033-008-R-Rev0	FIGURE No Figure C-5



- CPTU 1

• CPTU 2.1A

- CPTU 3

× CPTU 3.5

• CPTU 5.3
- CPTU 1.1

+ CPTU 2.2

• CPTU 3.1

• CPTU 4

■ CPTU 6
- ▲ CPTU 1.2

• CPTU 2.3

■ CPTU 3.2

+ CPTU 5

▲ CPTU 6.1
- × CPTU 2

+ CPTU 2.4

▲ CPTU 3.3

- CPTU 5.1


× CPTU 6.2
- × CPTU 2.1

- CPTU 2.5

× CPTU 3.4

- CPTU 5.2

× CPTU 6.3

	CLIENT SITA AUSTRALIA Pty Ltd		PROJECT ALLAWUNA LANDFILL FARM	
	DRAWN RF	DATE FEBRUARY 2015	TITLE PEAK UNDRAINED SHEAR STRENGTH FEBRUARY 2015	
	CHECKED RF	DATE FEBRUARY 2015		
	SCALE NTS	A4	PROJECT No 147645033-008-R-Rev0	FIGURE No Figure C-6



APPENDIX C

Cone Penetration Testing - Interpretation

CPTu Field Investigations: 20 May 2013

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

Date: 20/5/13

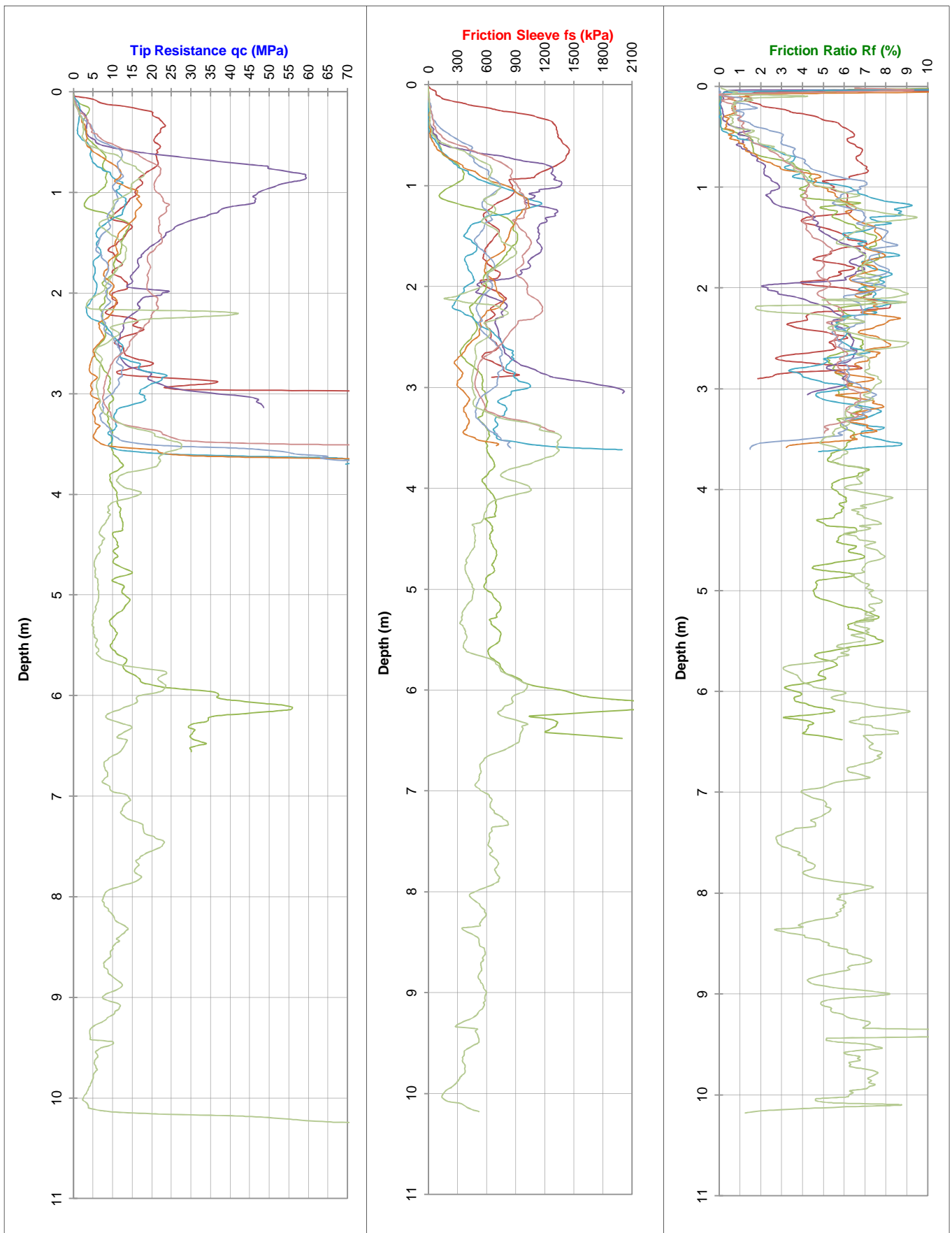
PROJECT: Allawuna Farm Landfill

Probe No.: All Data

LOCATION: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m):

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

Refusal:

File:

Dummy probe to (m):

Cone I.D. :

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

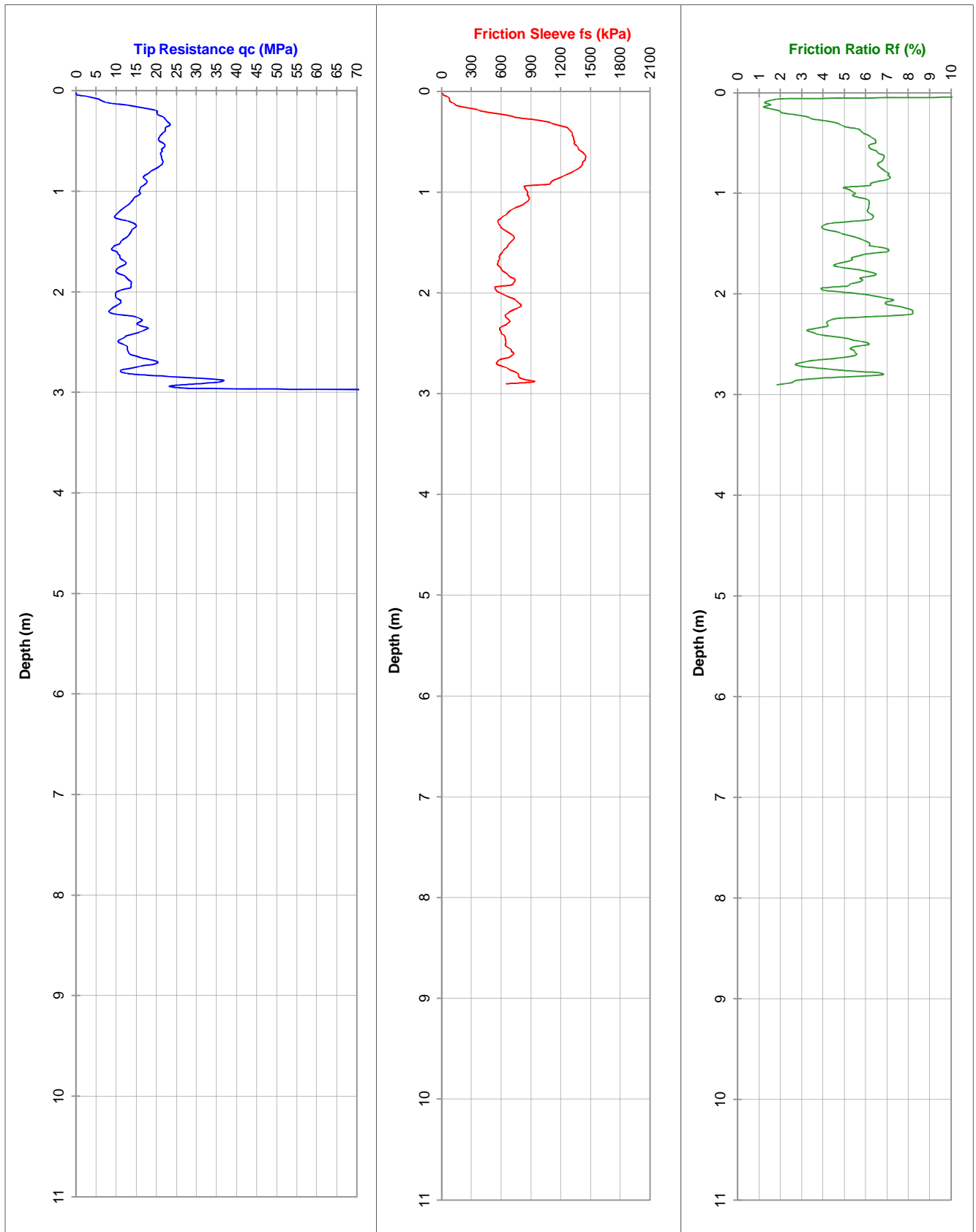
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 1

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 2.8

Refusal: 100MPa + Inc.

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0001G

Dummy probe to (m):

Cone I.D. : EC23GM

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

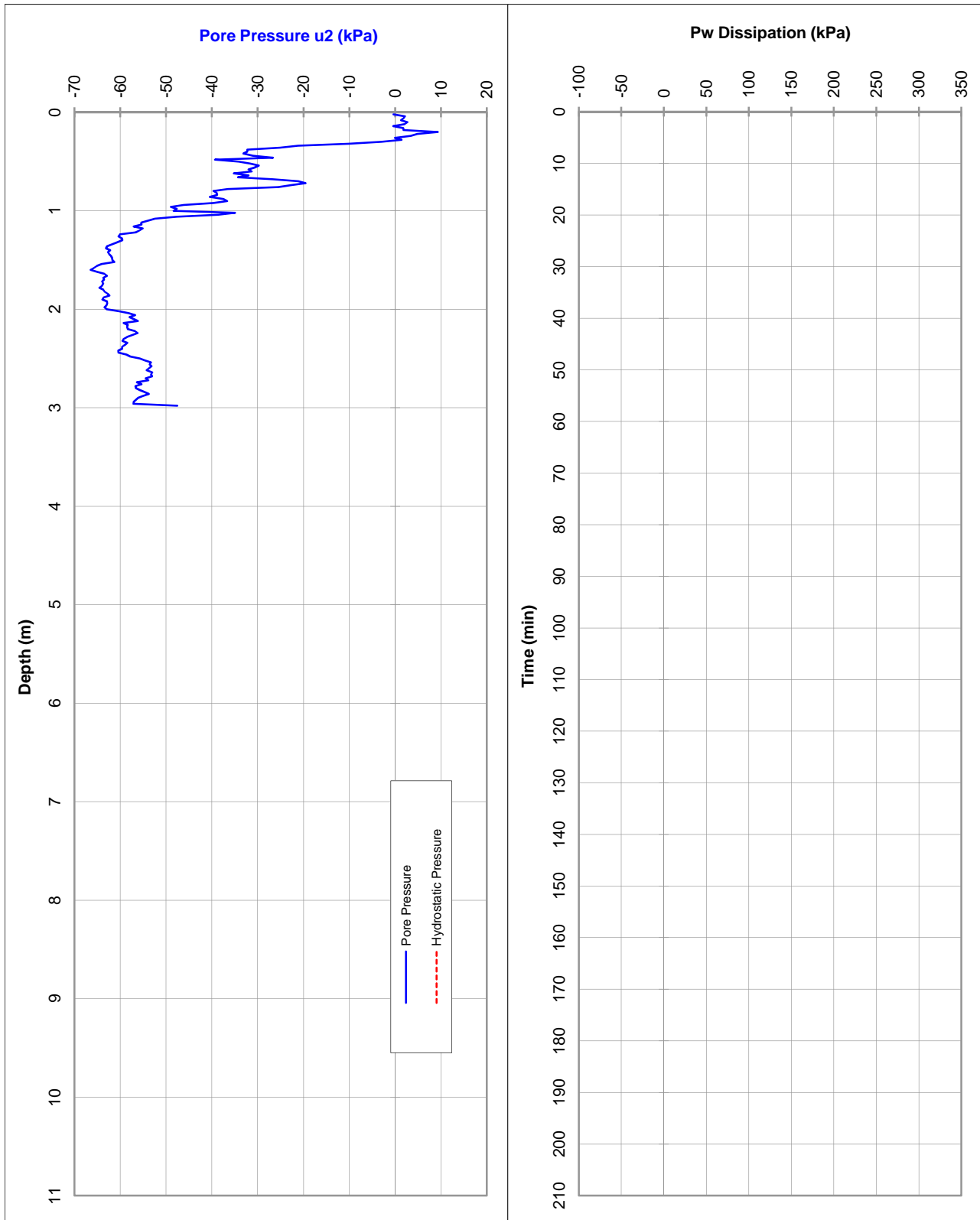
Project: Allawuna Farm Landfill

Probe No.: CPTU 1

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

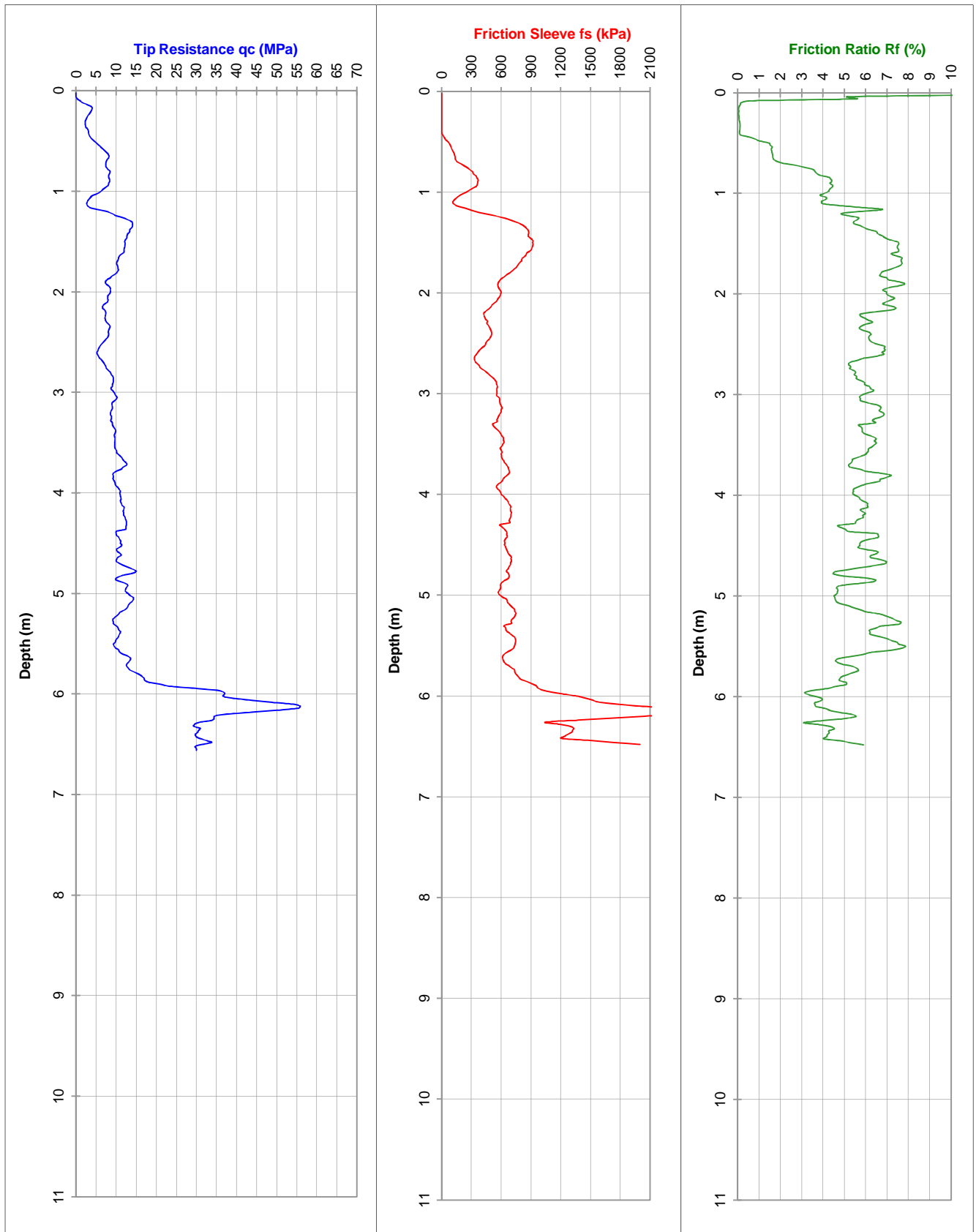
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 2

Job Number: ALLA-CPT-01

Co-ordinates:



File: BA0002G

Dummy probe to (m):

Water (m): Dry to 6.4

Refusal: 2000kPa

Cone I.D. : EC23GM

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

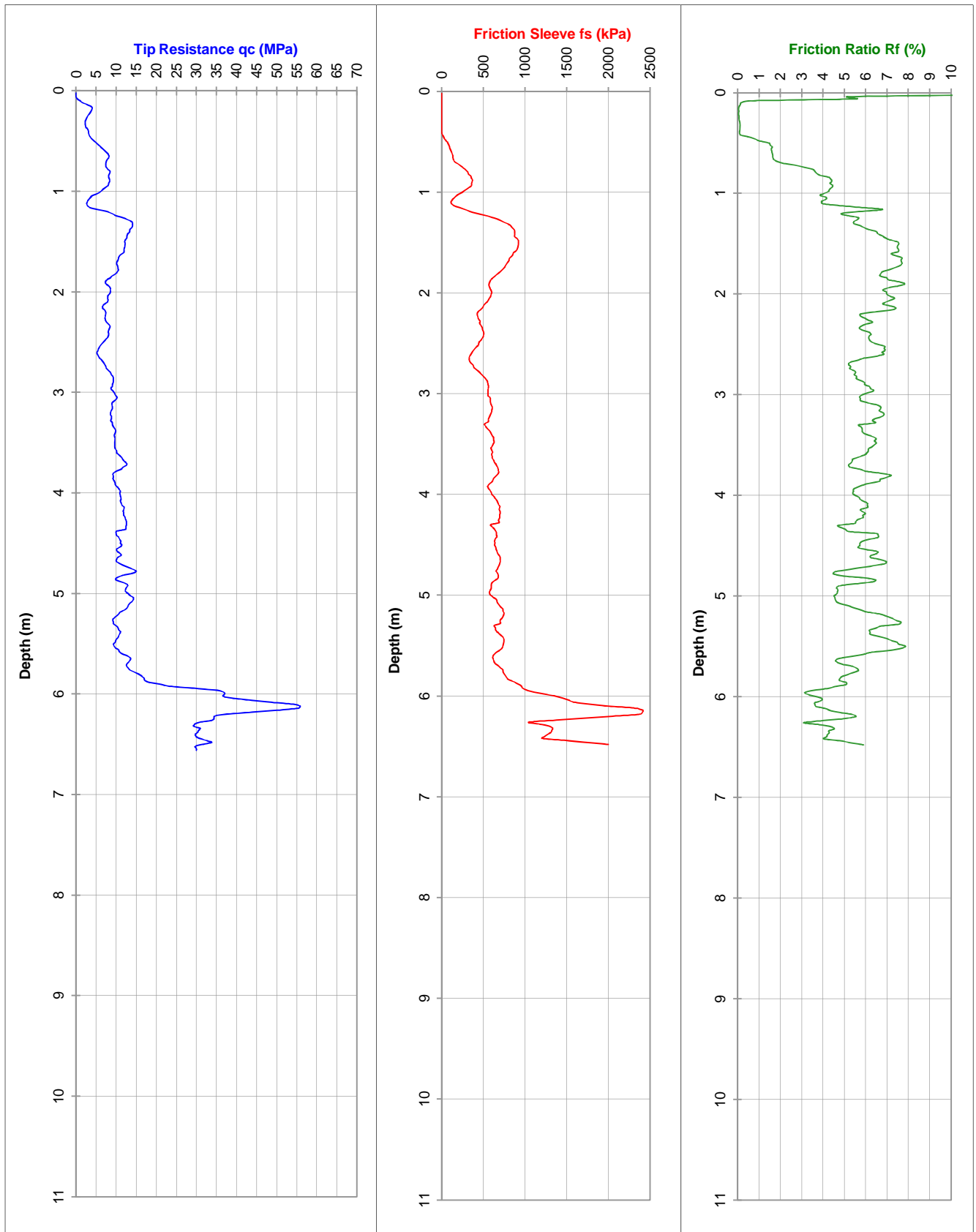
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 2

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 6.4

Refusal: 2000kPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0002G

Dummy probe to (m):

Cone I.D. : EC23GM

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

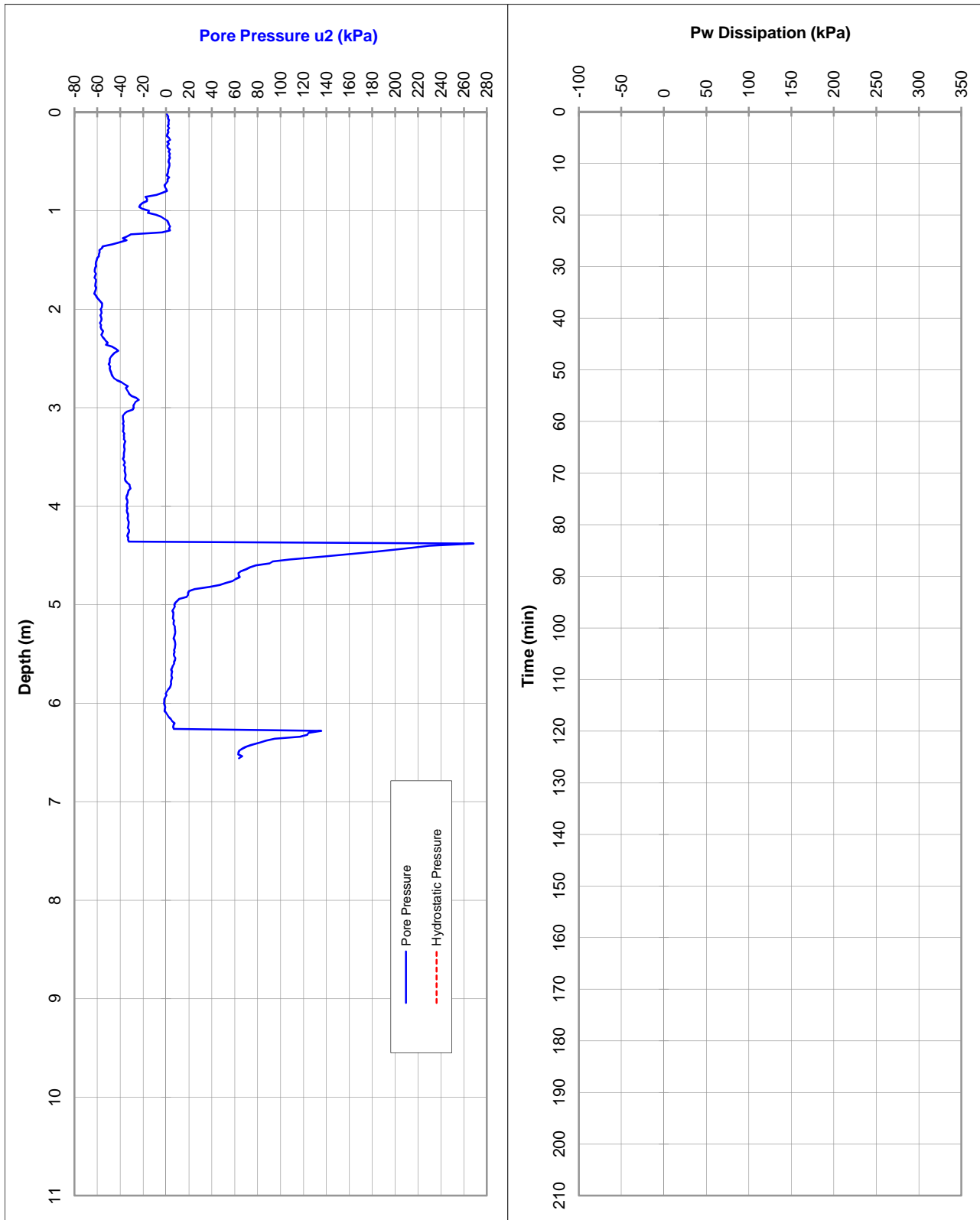
Project: Allawuna Farm Landfill

Probe No.: CPTU 2

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

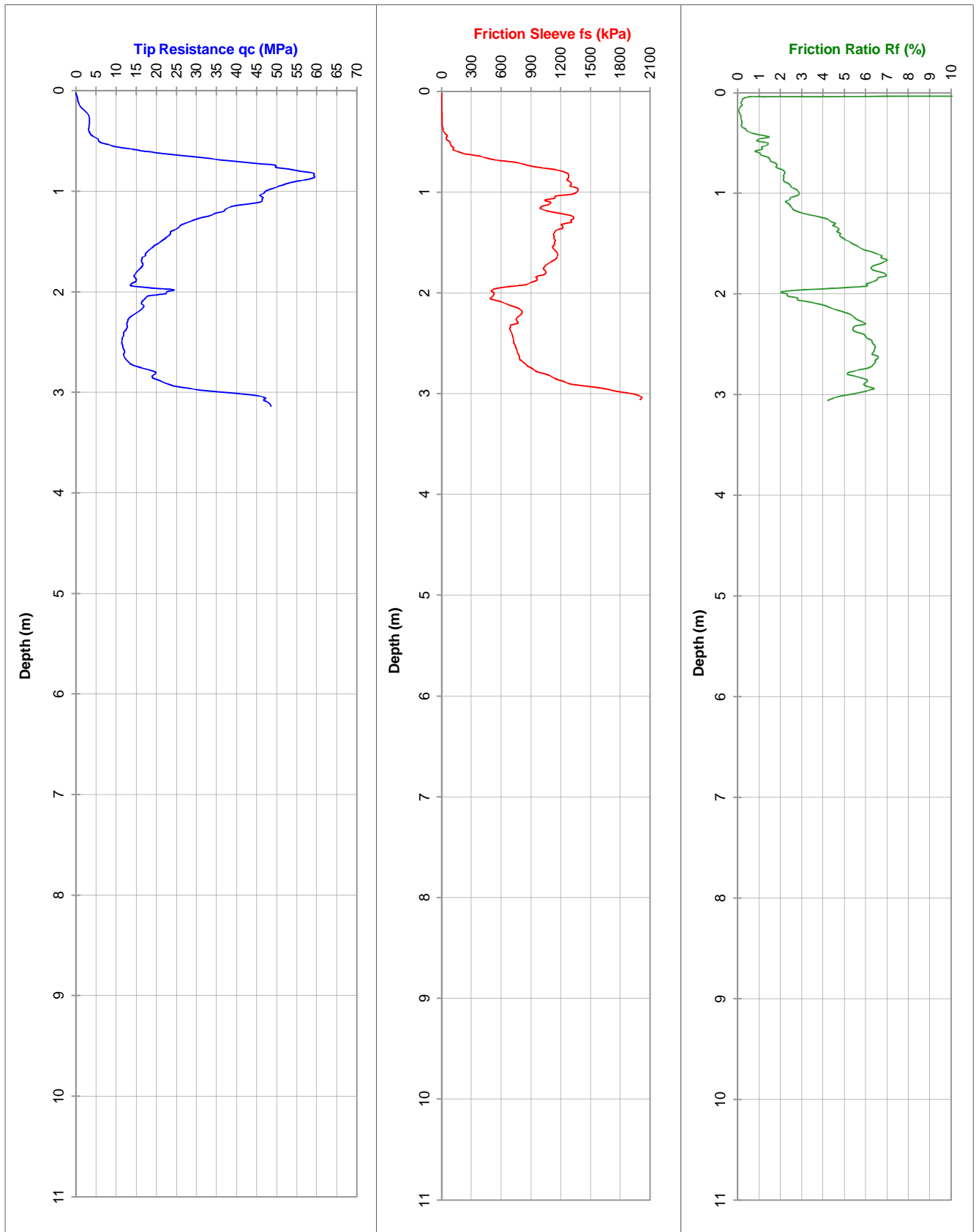
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 3

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 3.0

Refusal: 2000kPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0003G

Dummy probe to (m):

Cone I.D. : EC23GM

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

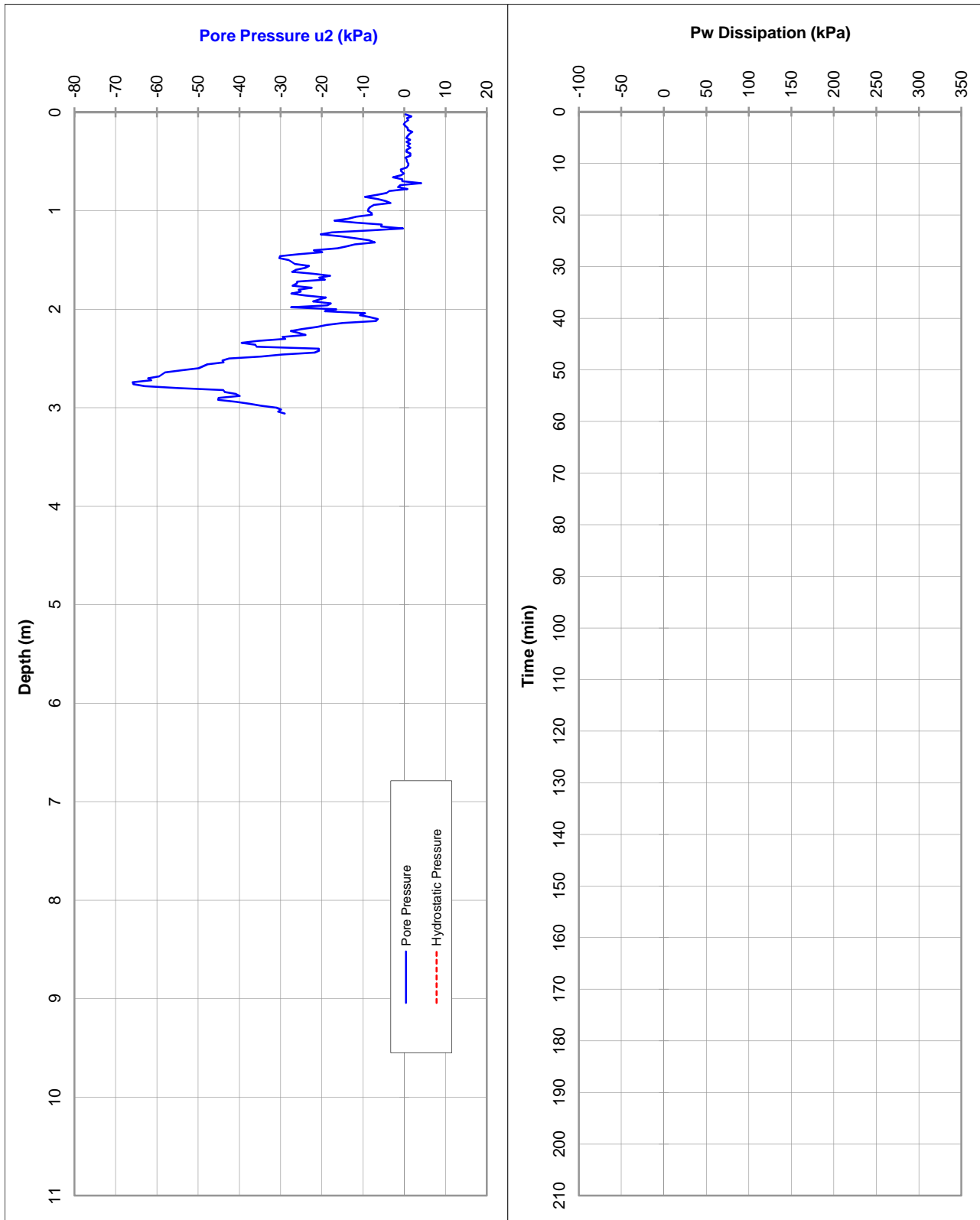
Project: Allawuna Farm Landfill

Probe No.: CPTU 3

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

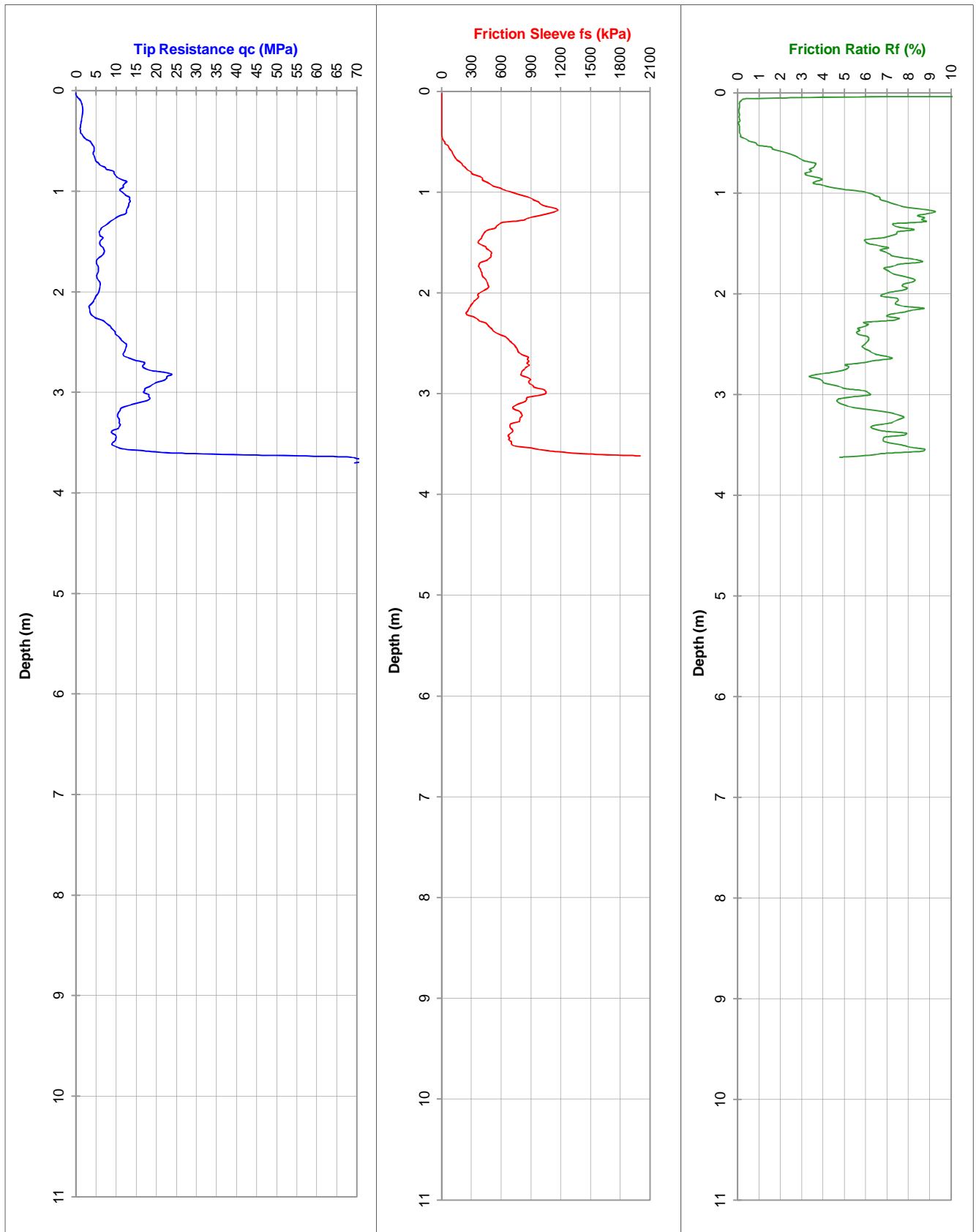
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 4

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 3.6

Refusal: 2000kPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0004G

Dummy probe to (m):

Cone I.D. : EC23GM

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

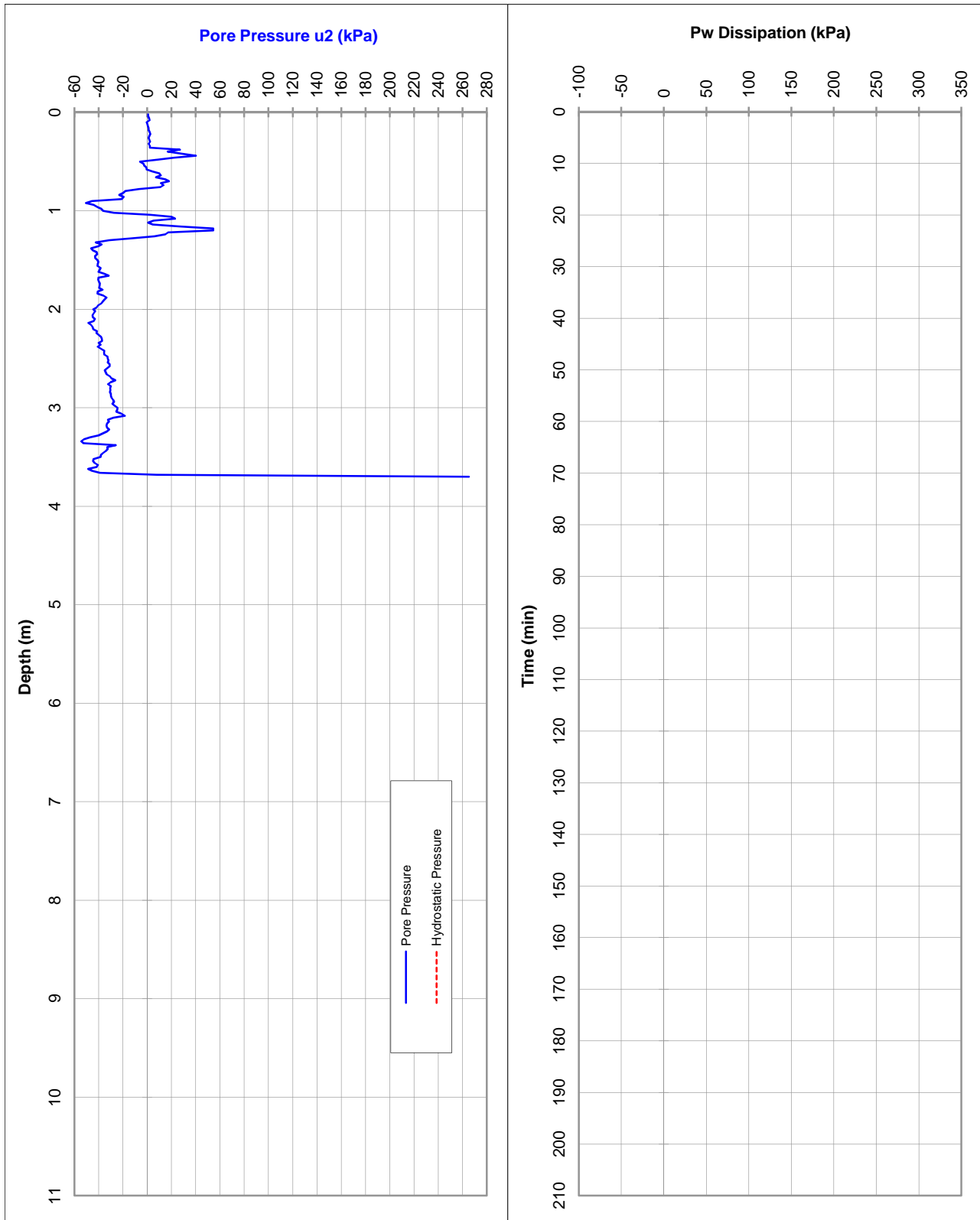
Project: Allawuna Farm Landfill

Probe No.: CPTU 4

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

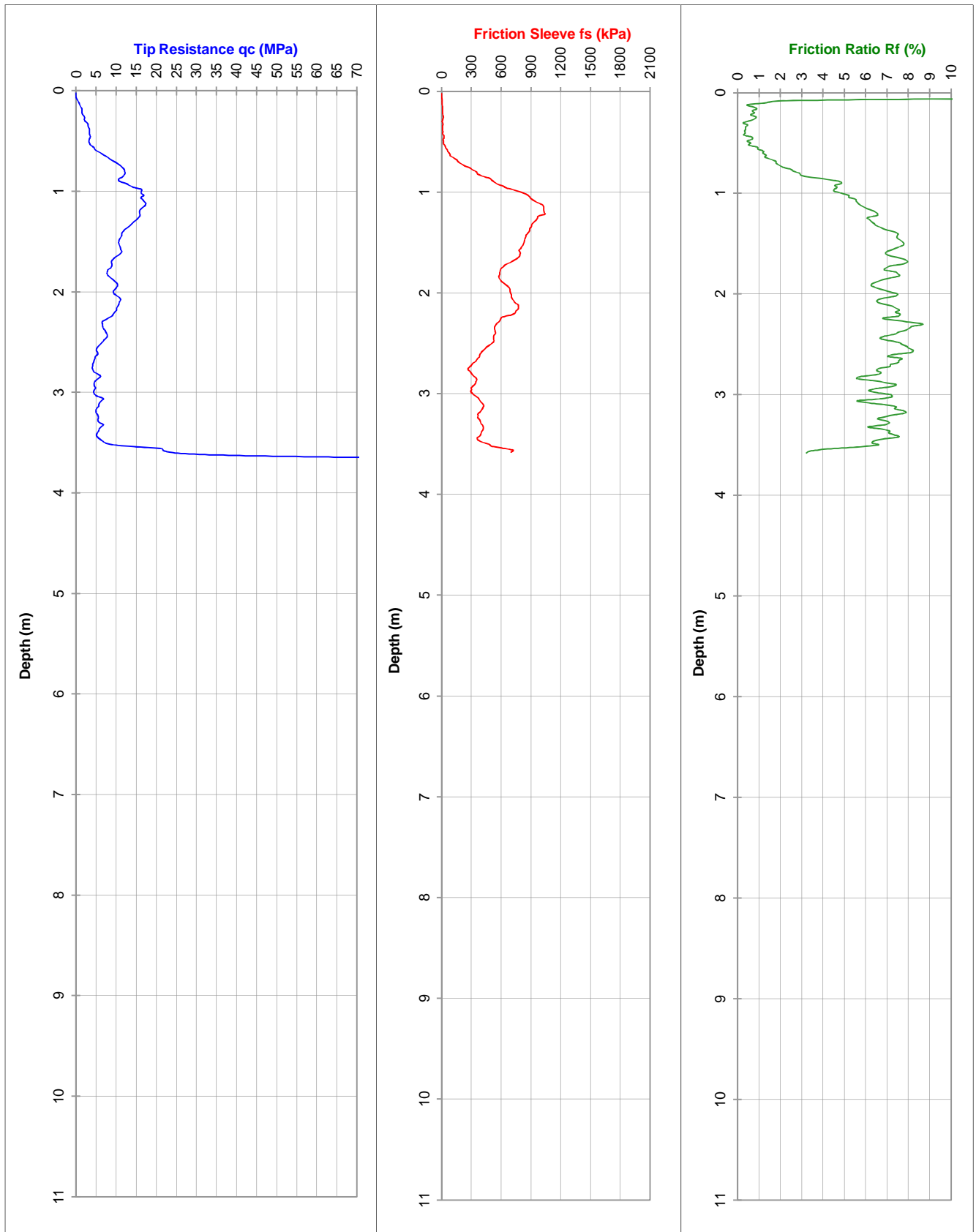
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 5

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 3.5

Refusal: 99MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0005G

Dummy probe to (m):

Cone I.D. : EC38

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

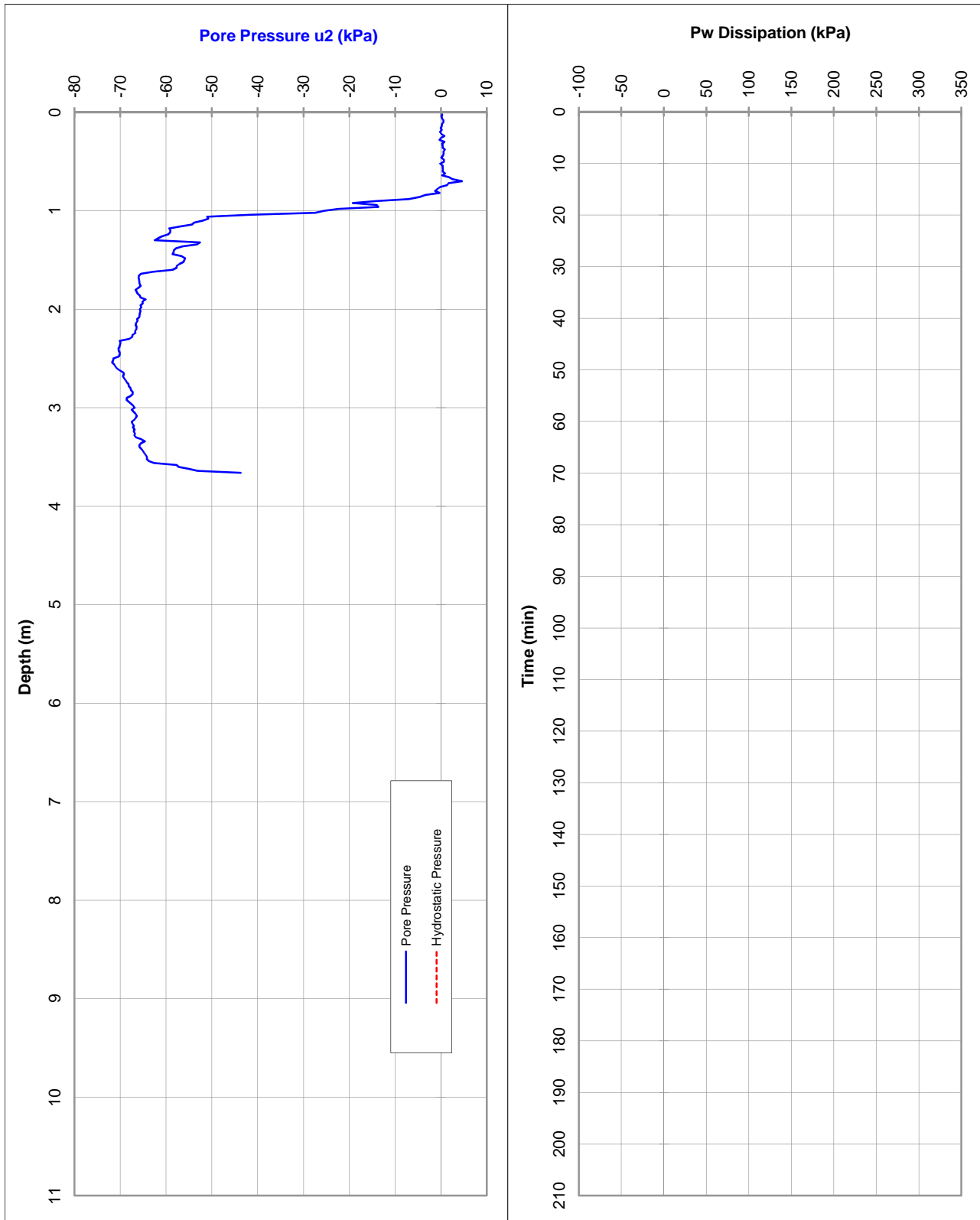
Project: Allawuna Farm Landfill

Probe No.: CPTU 5

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

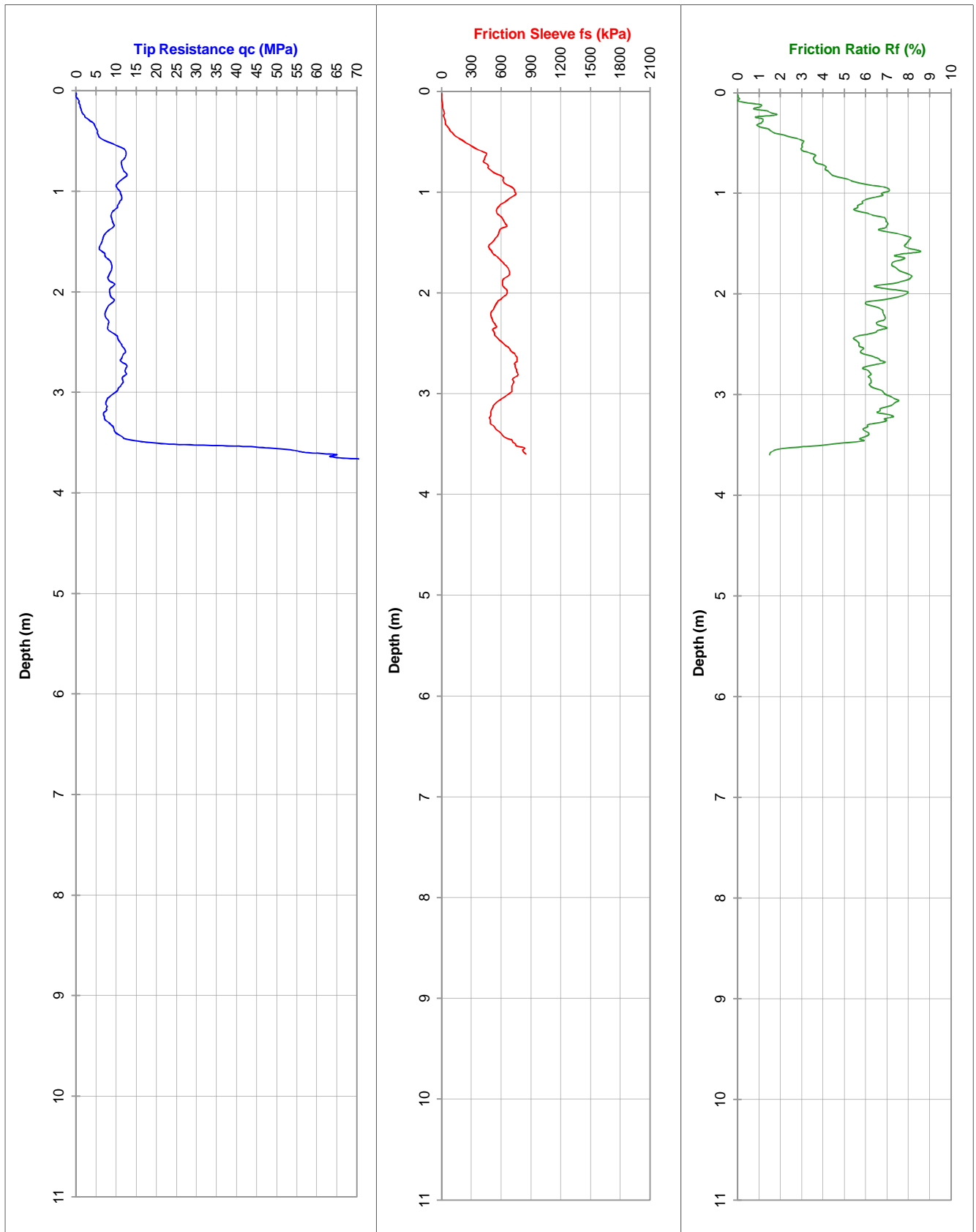
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 6

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 3.4

Refusal: 85MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0006G

Dummy probe to (m):

Cone I.D. : EC38

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

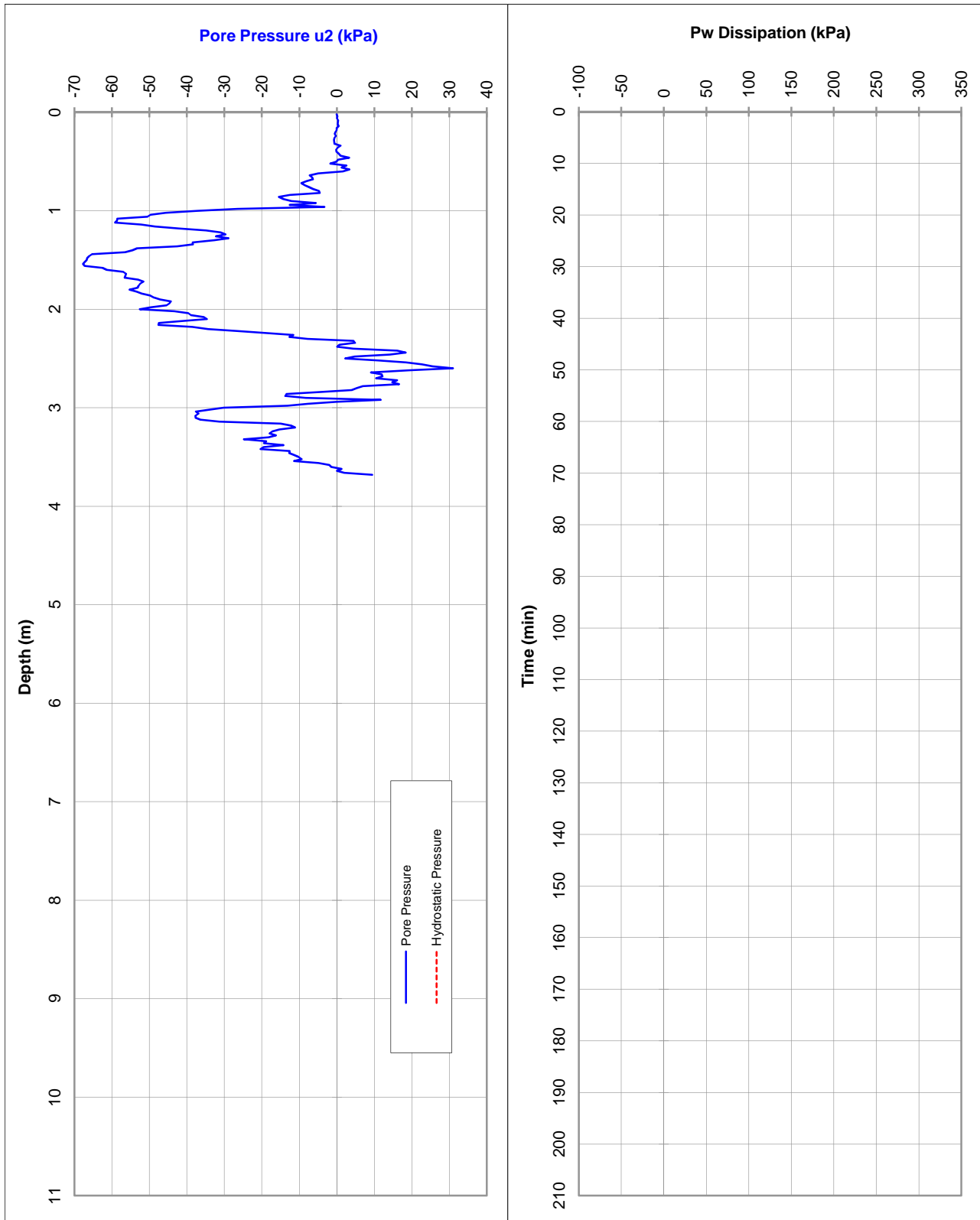
Project: Allawuna Farm Landfill

Probe No.: CPTU 6

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

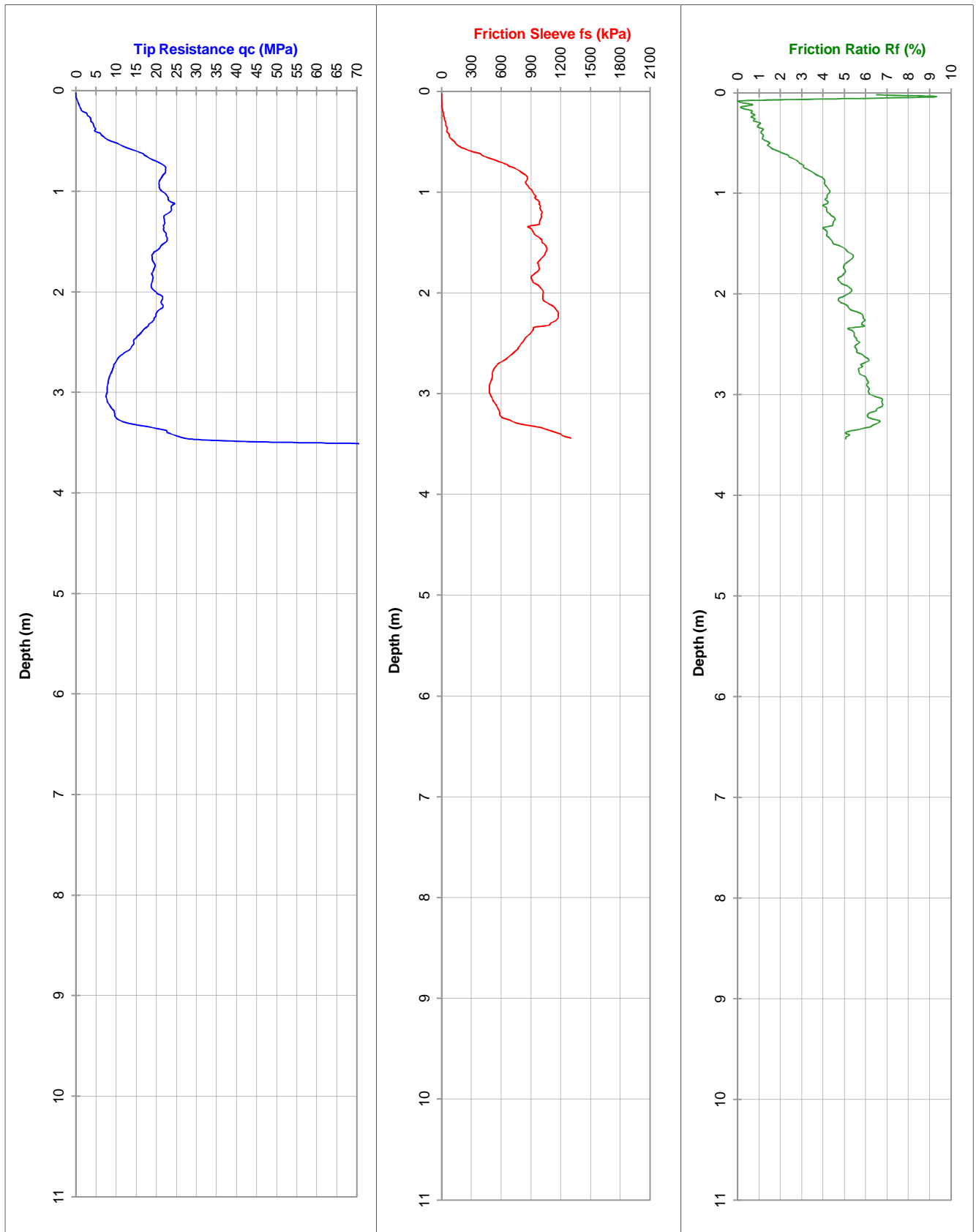
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 7

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): Dry to 3.2

Refusal: 96MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0007G

Dummy probe to (m):

Cone I.D. : EC38

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

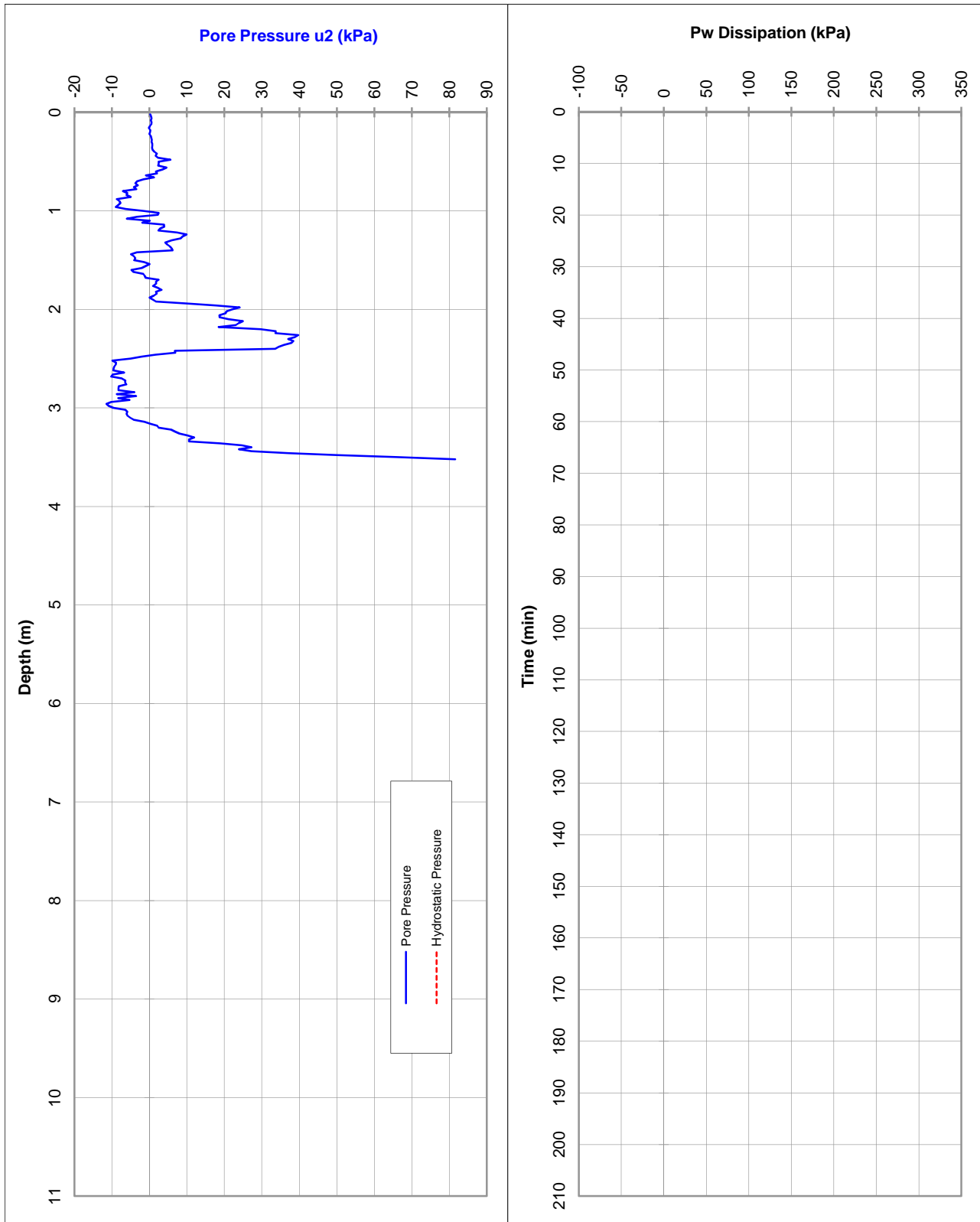
Project: Allawuna Farm Landfill

Probe No.: CPTU 7

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Bowman & Associates Pty Ltd

PROJECT: Allawuna Farm Landfill

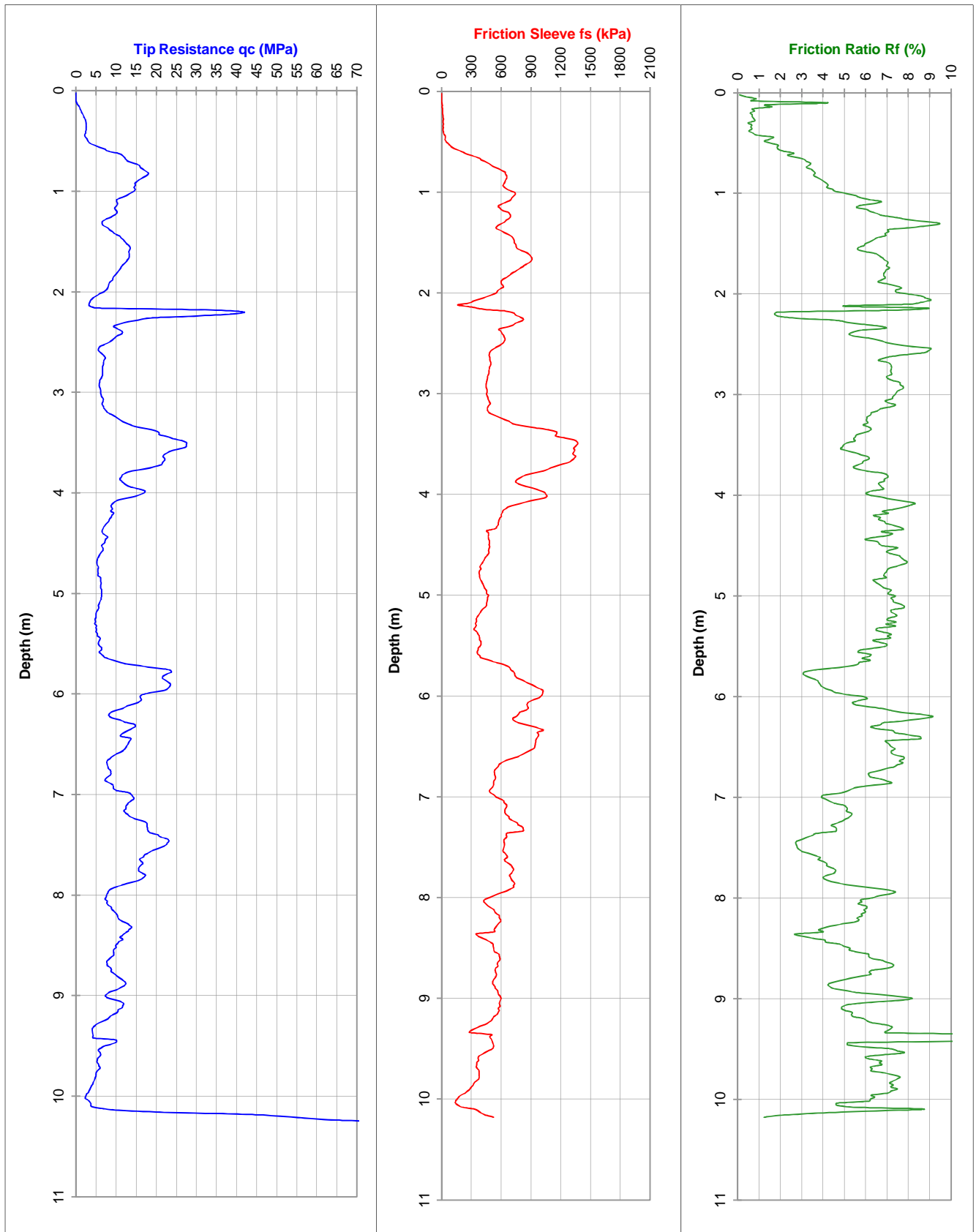
LOCATION: Allawuna, Shire of York

Date: Mon, 20 May 2013

Probe No.: CPTU 9

Job Number: ALLA-CPT-01

Co-ordinates:



Water (m): 1.5

Refusal: 90MPa + Inc

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

File: BA0008G

Dummy probe to (m):

Cone I.D. : EC38

22 tonne truck mounted CPT rig (Merc)

ELECTRIC FRICTION-CONE PENETROMETER

Client: Bowman & Associates Pty Ltd

Date: Mon, 20 May 2013

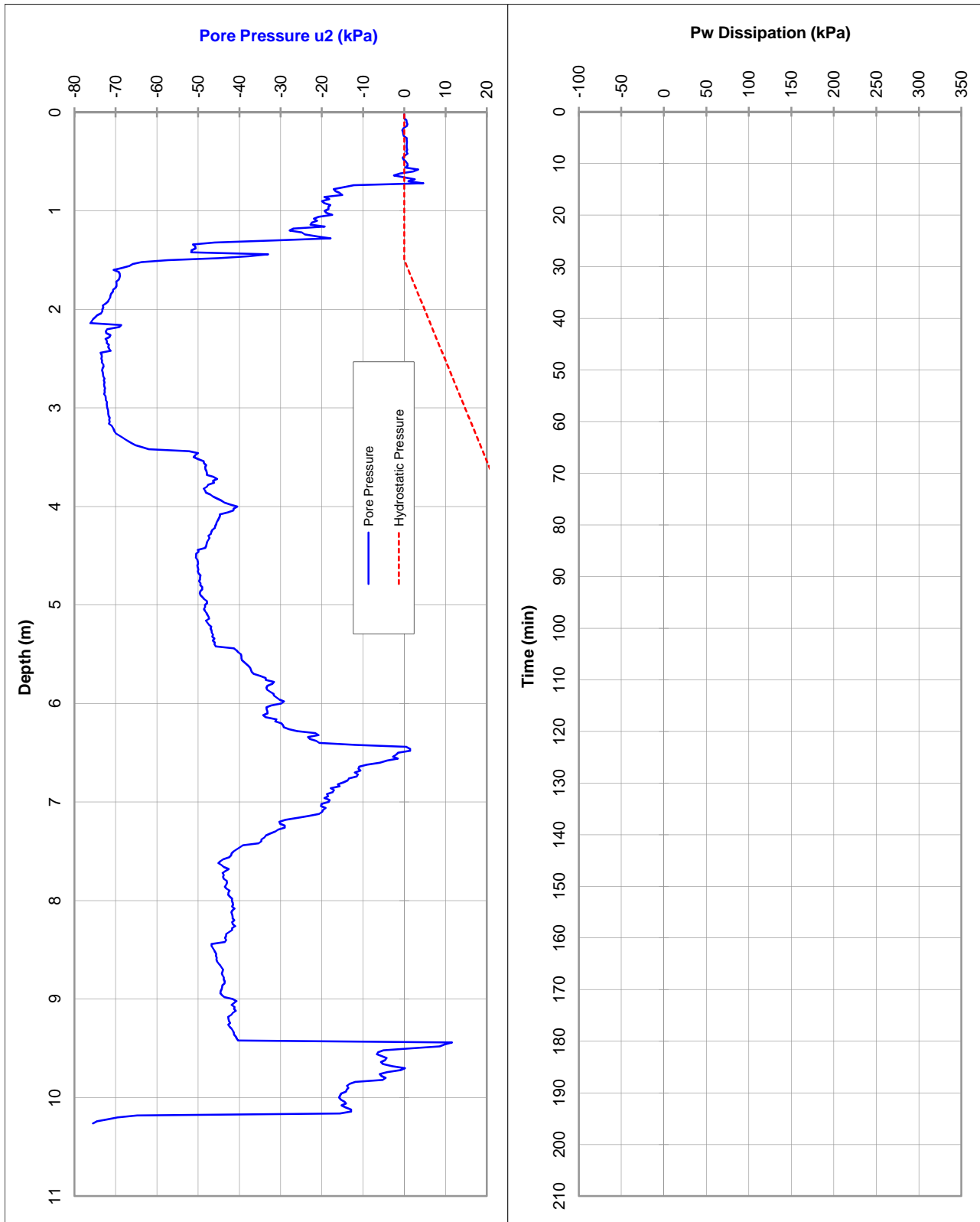
Project: Allawuna Farm Landfill

Probe No.: CPTU 9

Location: Allawuna, Shire of York

Job Number: ALLA-CPT-01

Co-ordinates:





APPENDIX C

Cone Penetration Testing - Interpretation

CPTu Field Investigations: 16-17 February 2015

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

Date: 16 - 17/2/15

PROJECT: Allawuna Farm

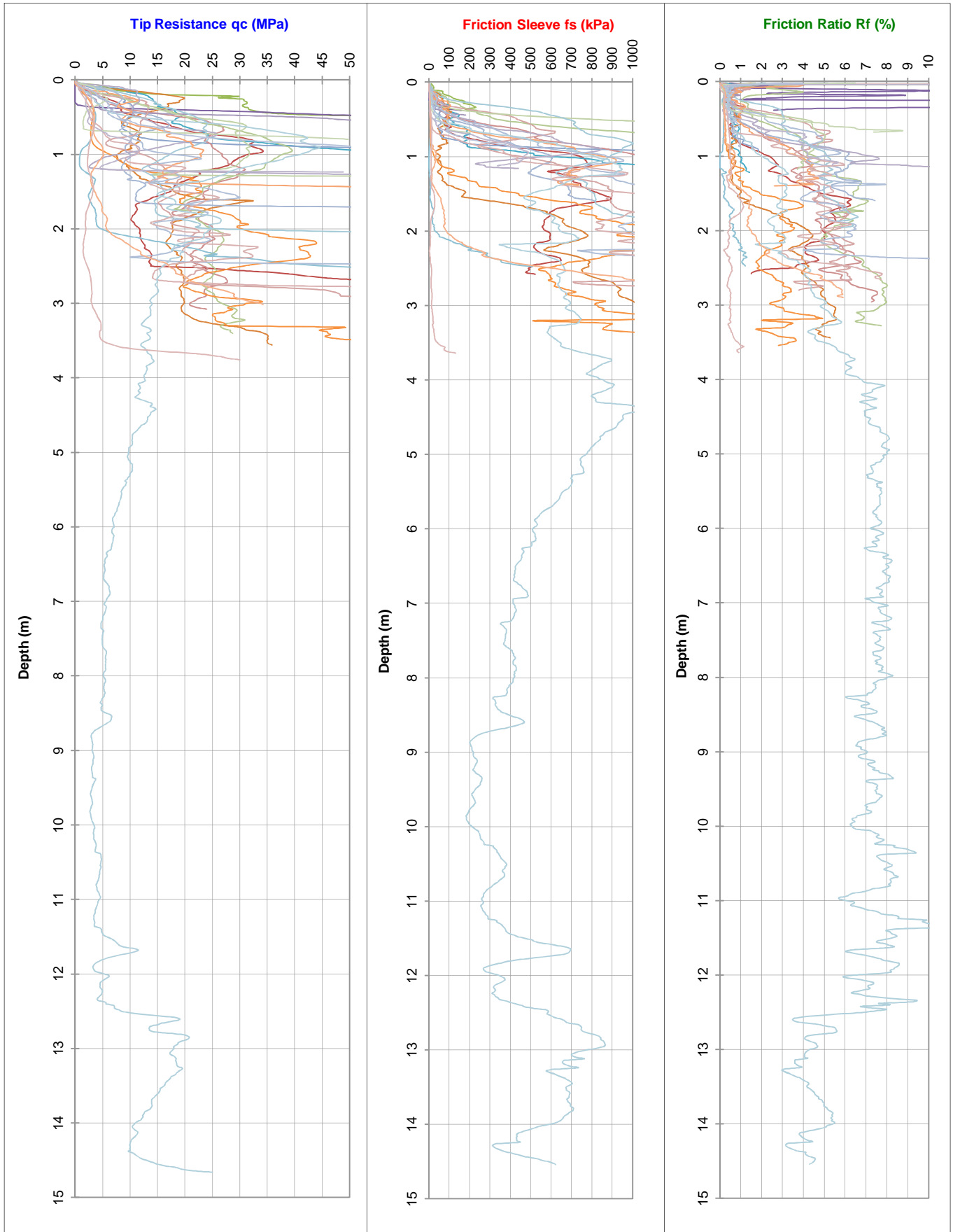
Probe No.: All Data

LOCATION: York, W.A.

Job Number: 147645033

RL (m):

Co-ordinates:



Water (m):

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

Refusal:

File:

Cone I.D. :

Dummy probe to (m):

25 tonne truck mounted CPT Rig (RWF)

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

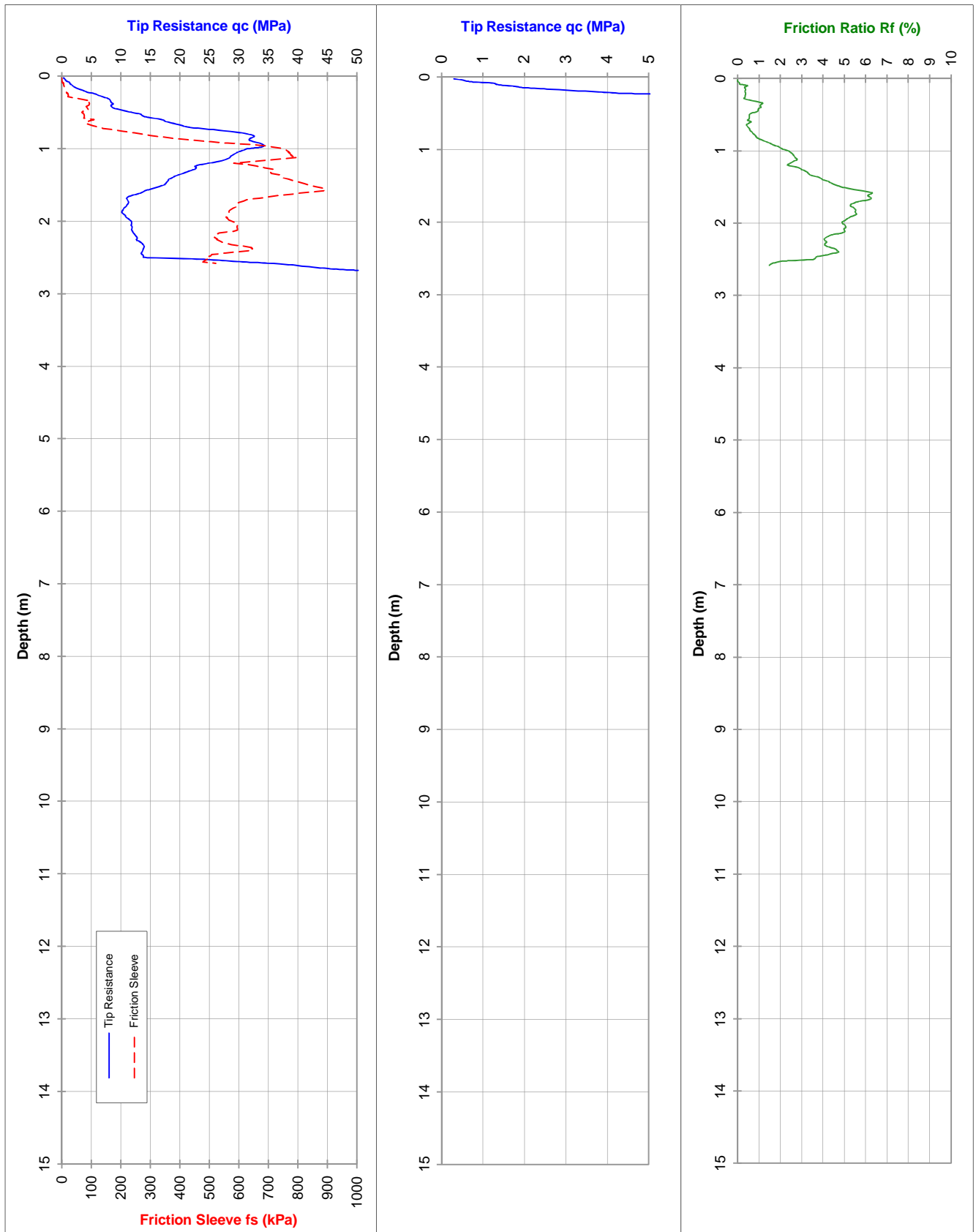
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 2

Job Number: 147645033

Co-ordinates: 462216E, 6469546N



Water (m): Dry to 1.10

Refusal: Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

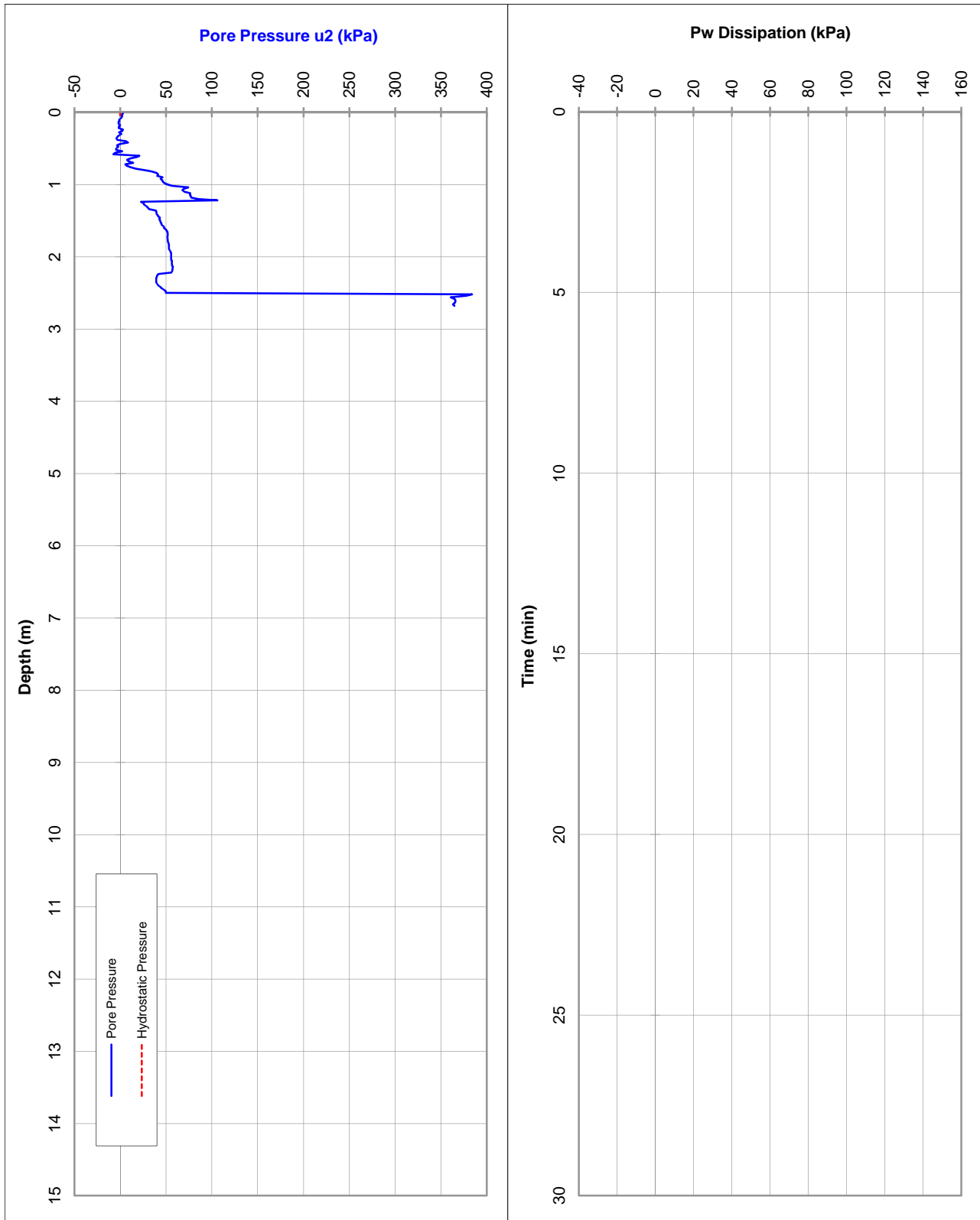
Project: Allawuna Farm

Probe No.: CPTU 2

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462216E, 6469546N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

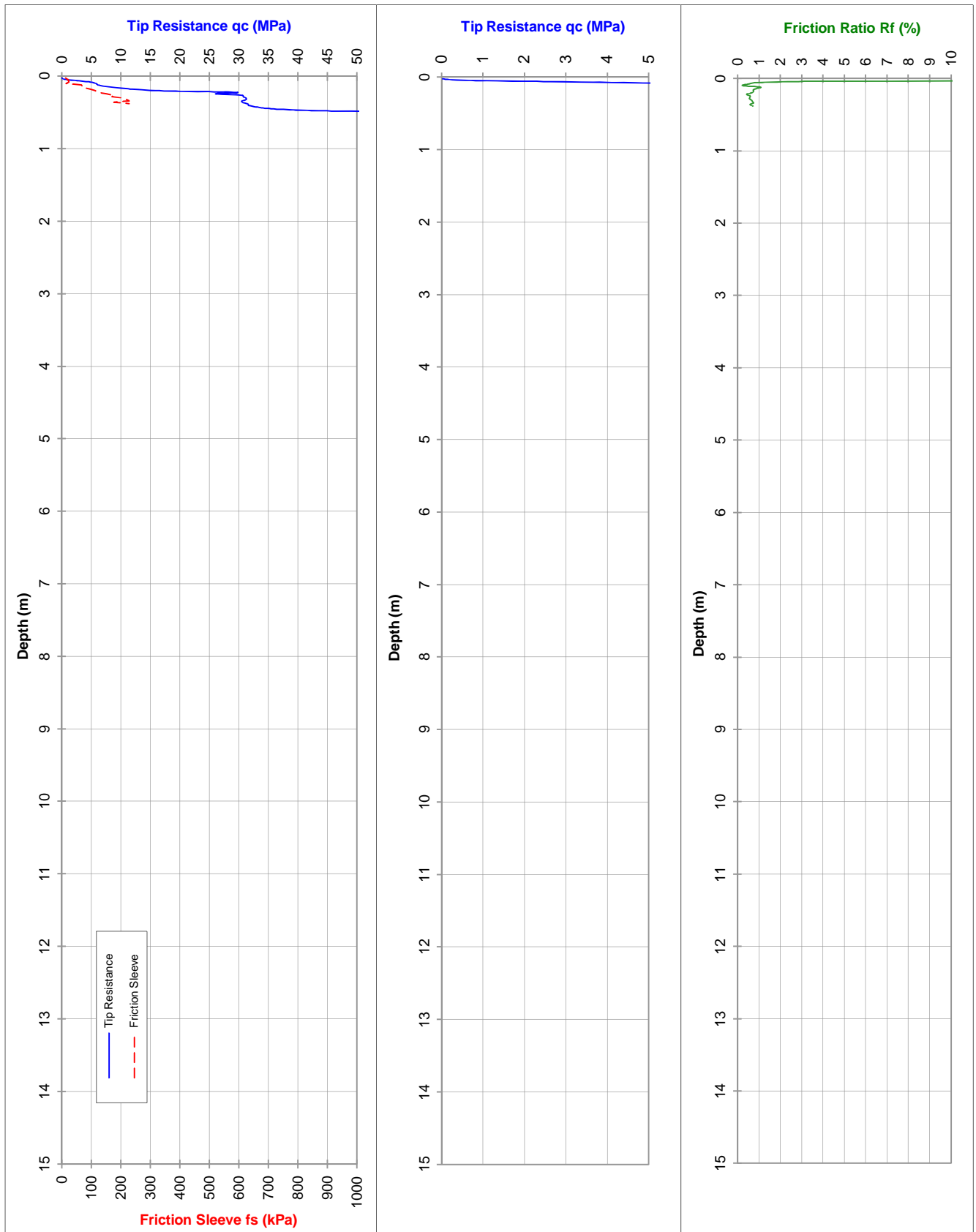
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 2.1

Job Number: 147645033

Co-ordinates:



Water (m): -

Refusal: 80MPa + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

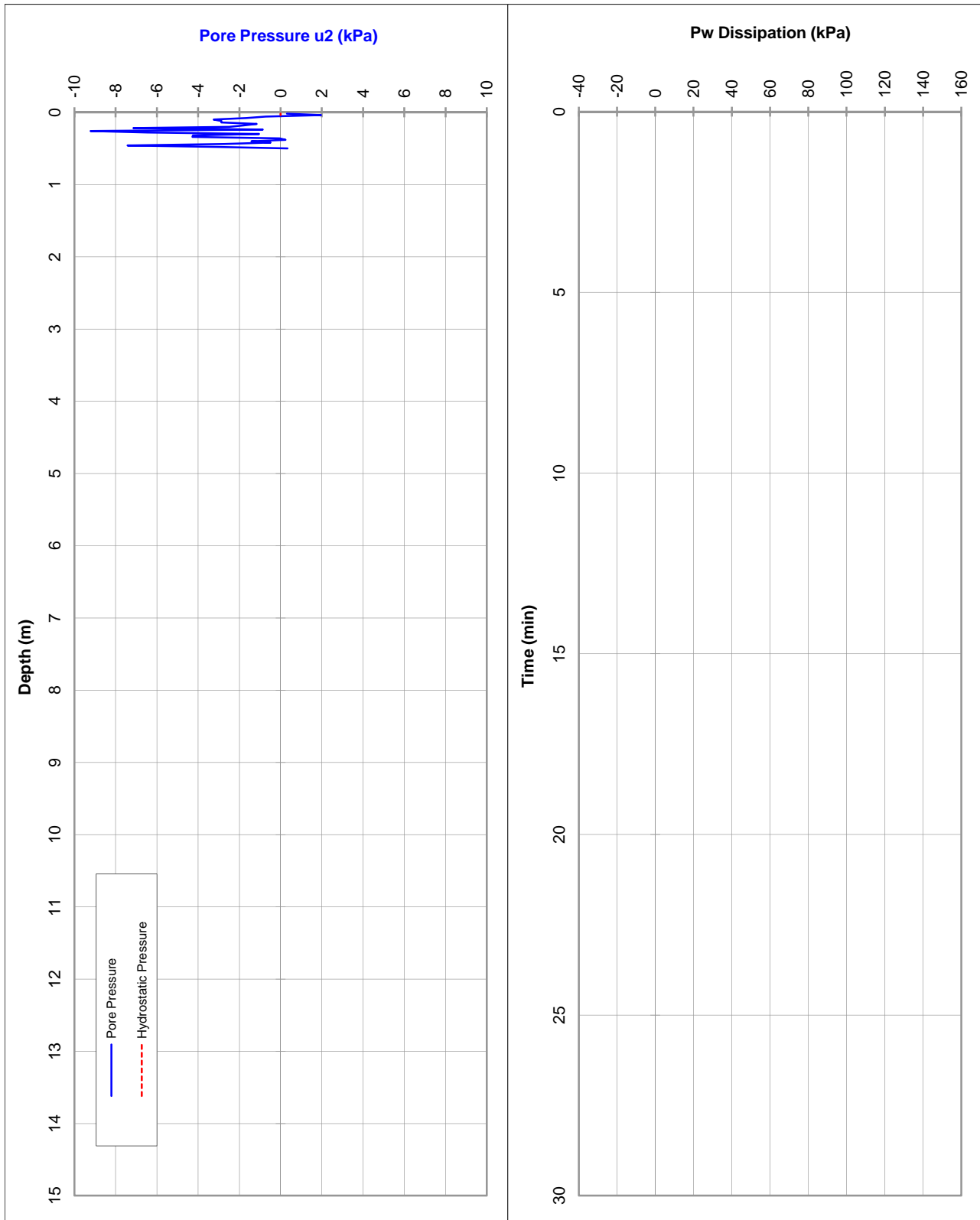
Project: Allawuna Farm

Probe No.: CPTU 2.1

Location: York, W.A.

Job Number: 147645033

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

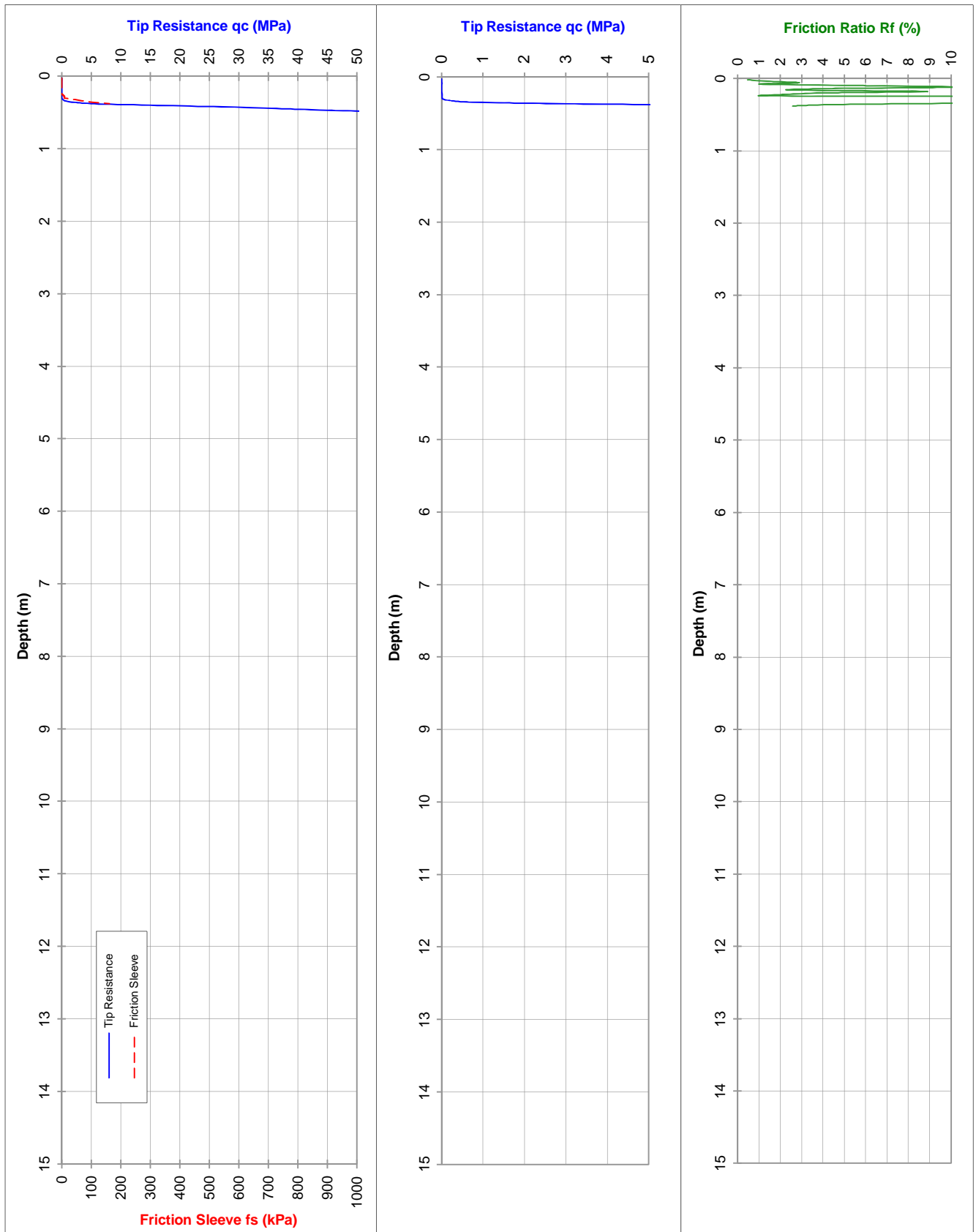
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 2.1A

Job Number: 147645033

Co-ordinates:



Water (m): -

Refusal: 80MPa + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

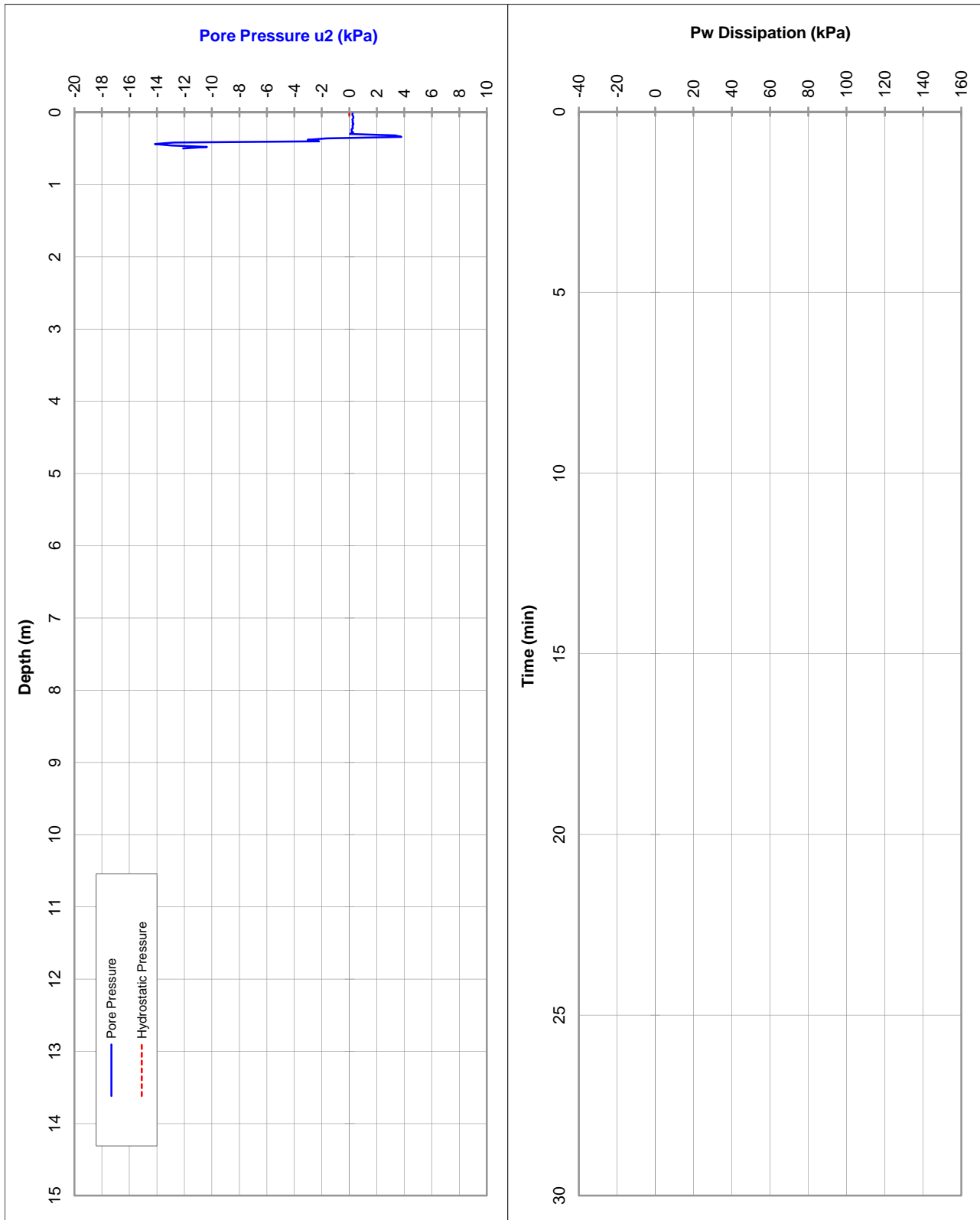
Project: Allawuna Farm

Probe No.: CPTU 2.1A

Location: York, W.A.

Job Number: 147645033

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

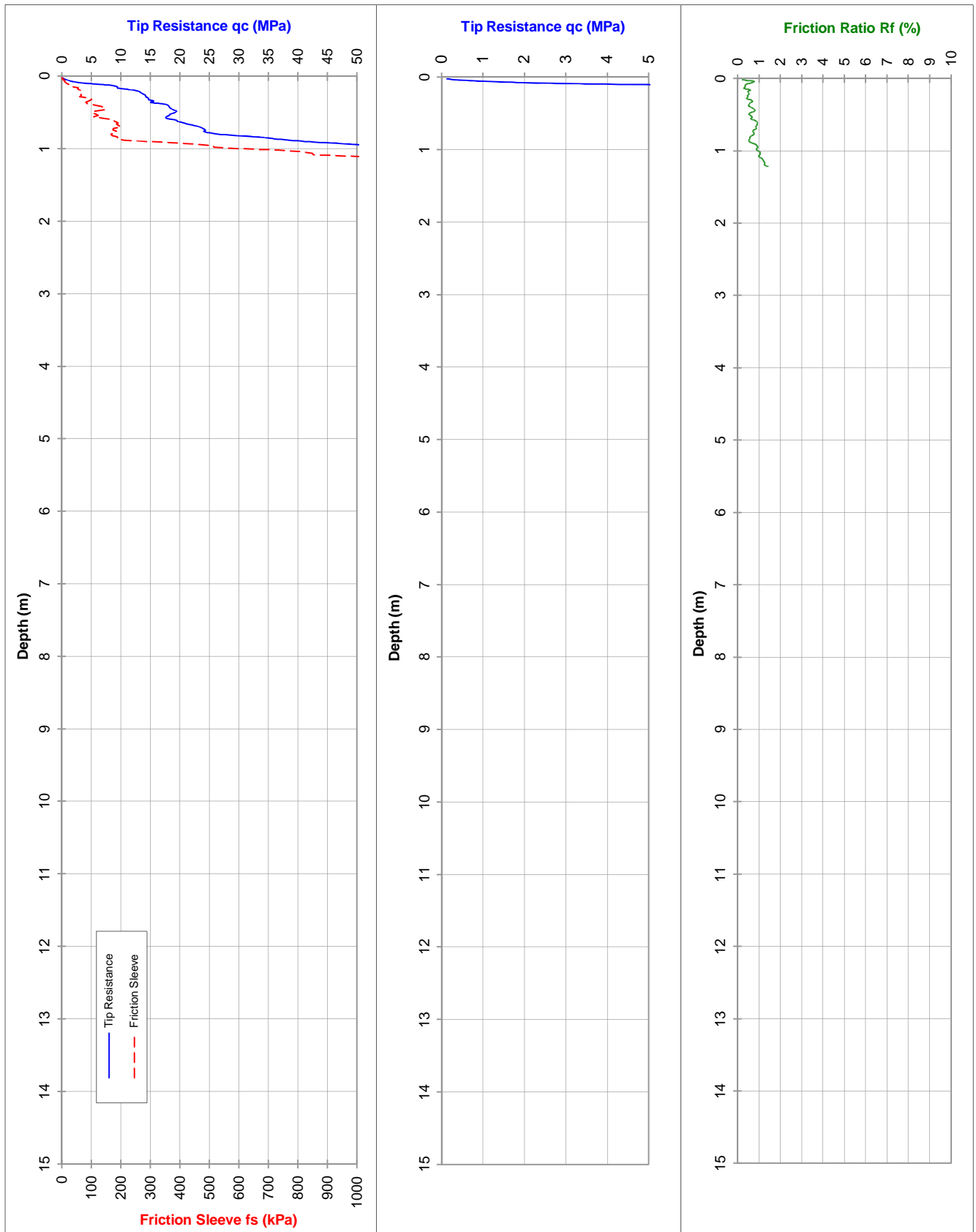
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 1.1

Job Number: 147645033

Co-ordinates:



Water (m): Dry to 0.85

Refusal: 100MPa + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

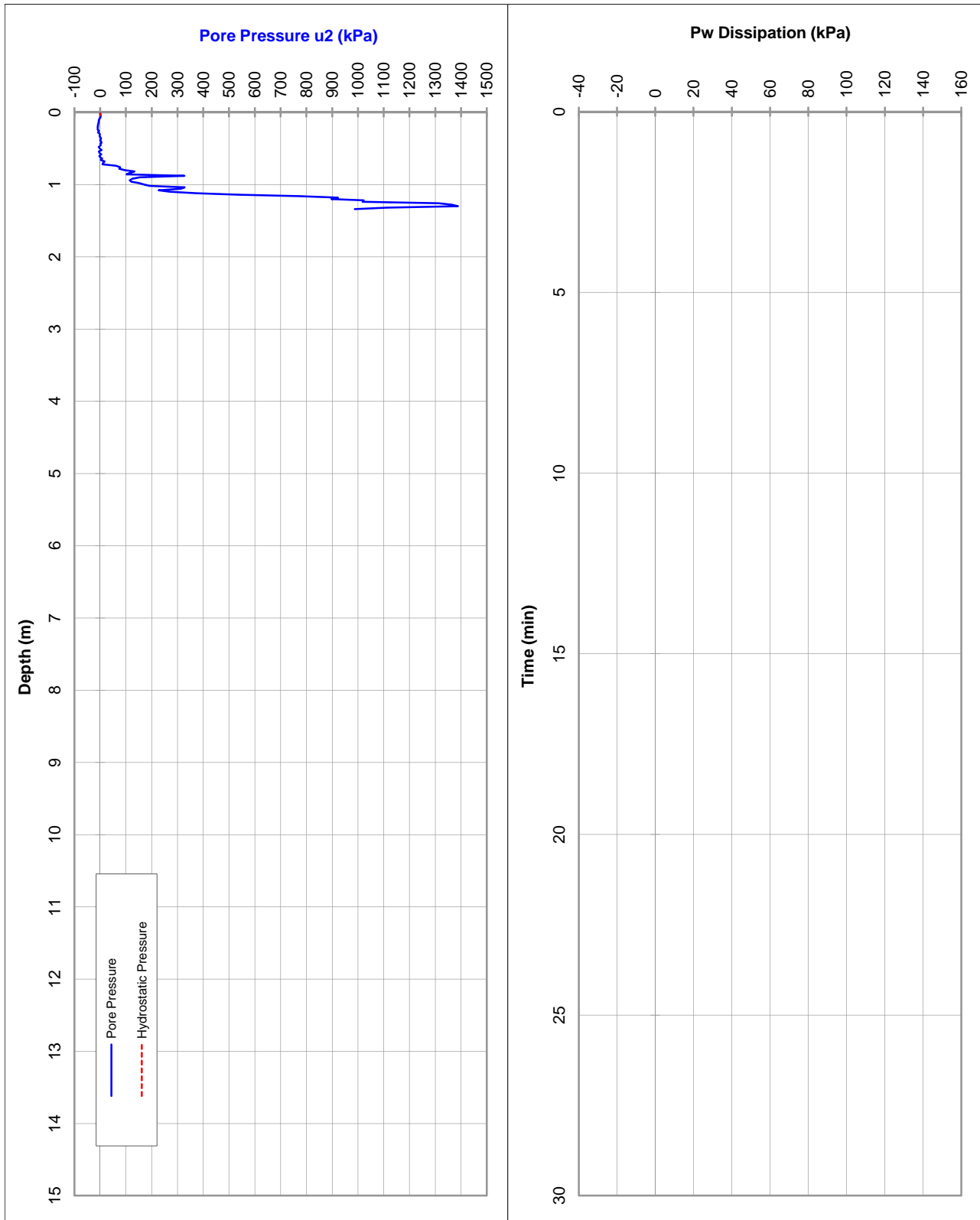
Project: Allawuna Farm

Probe No.: CPTU 1.1

Location: York, W.A.

Job Number: 147645033

Co-ordinates:



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

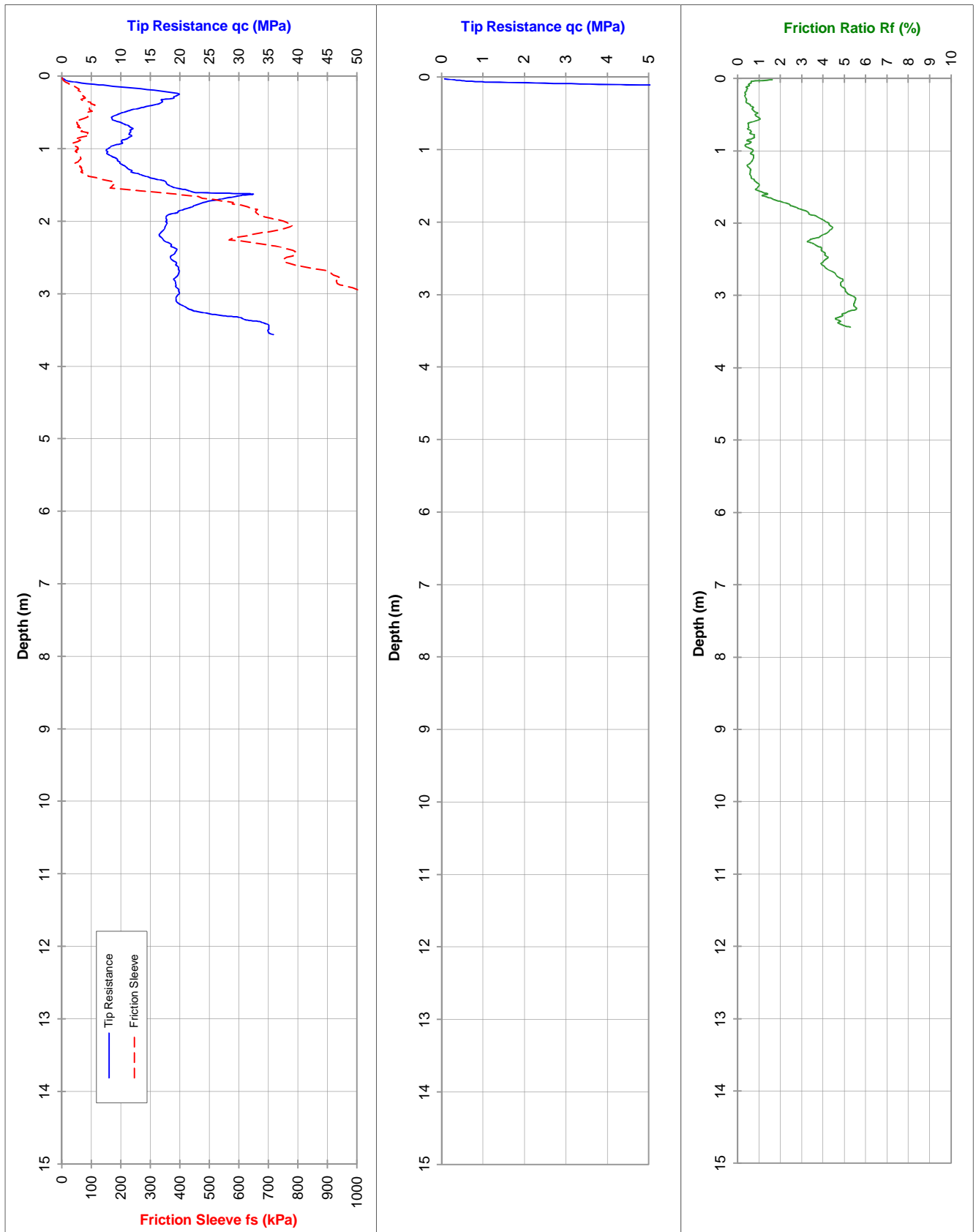
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 1

Job Number: 147645033

Co-ordinates: 462092E, 6469485N



Water (m): Dry to 2.0

Refusal: Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

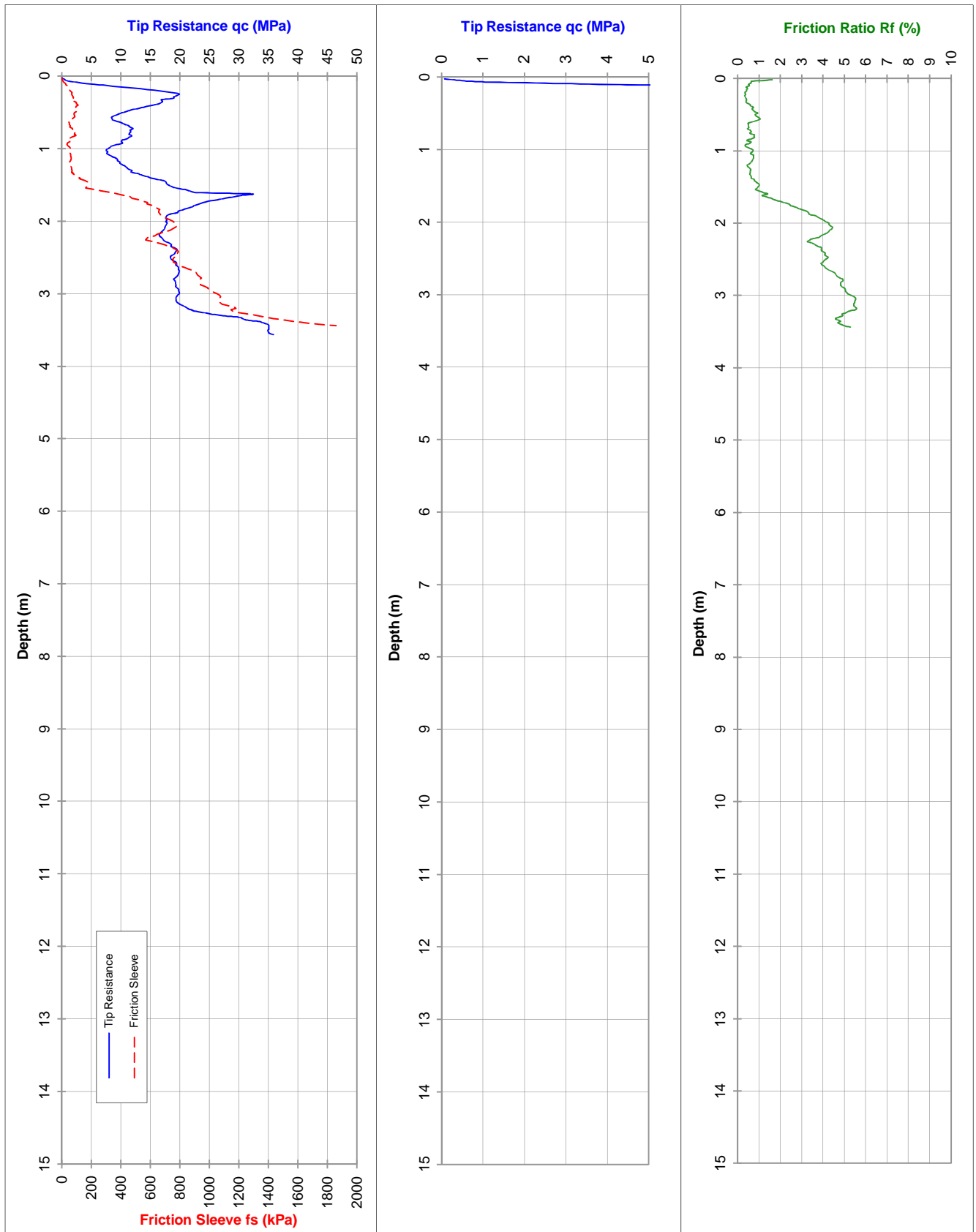
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 1

Job Number: 147645033

Co-ordinates: 462092E, 6469485N



Water (m): Dry to 2.0

Refusal: Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

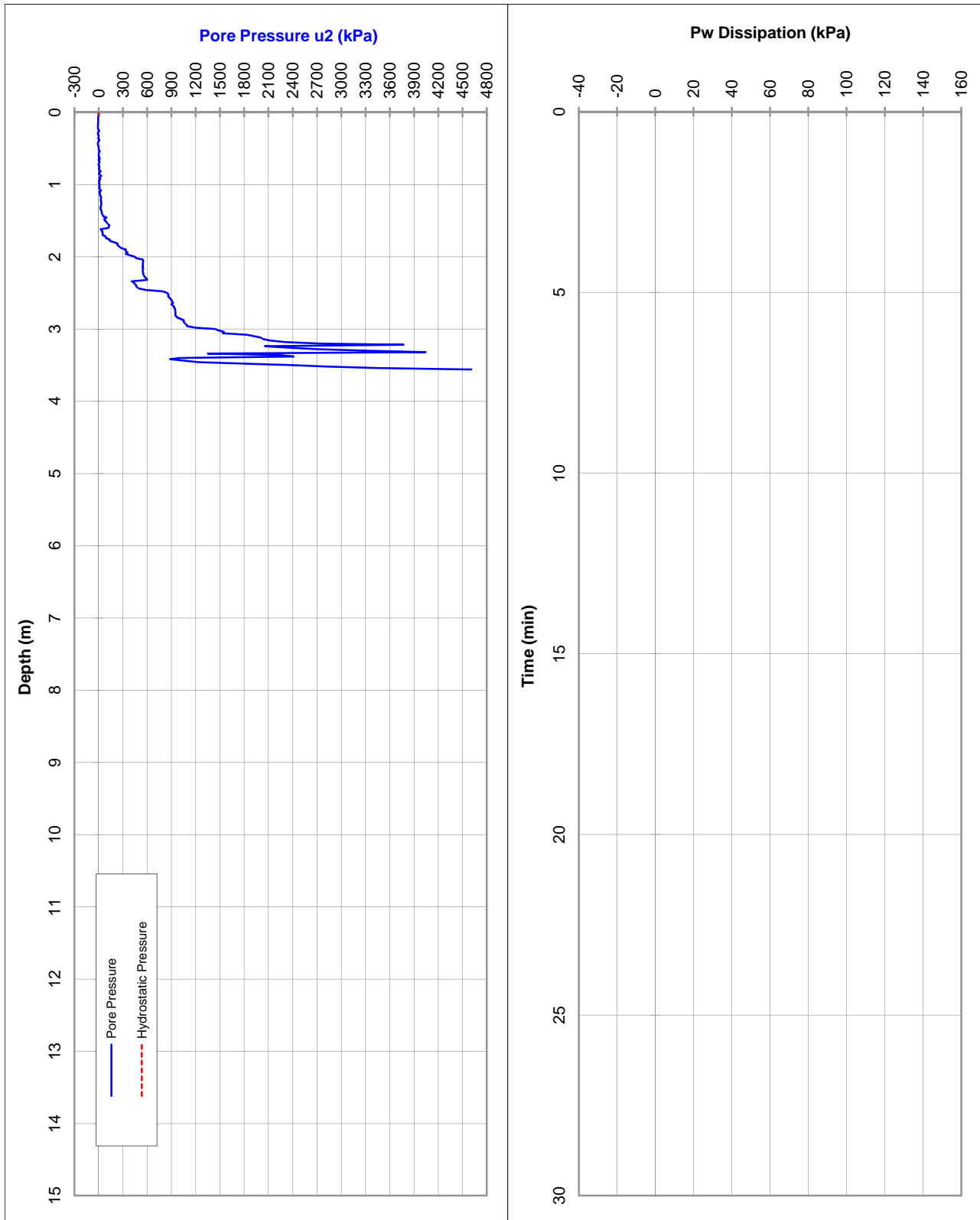
Project: Allawuna Farm

Probe No.: CPTU 1

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462092E, 6469485N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

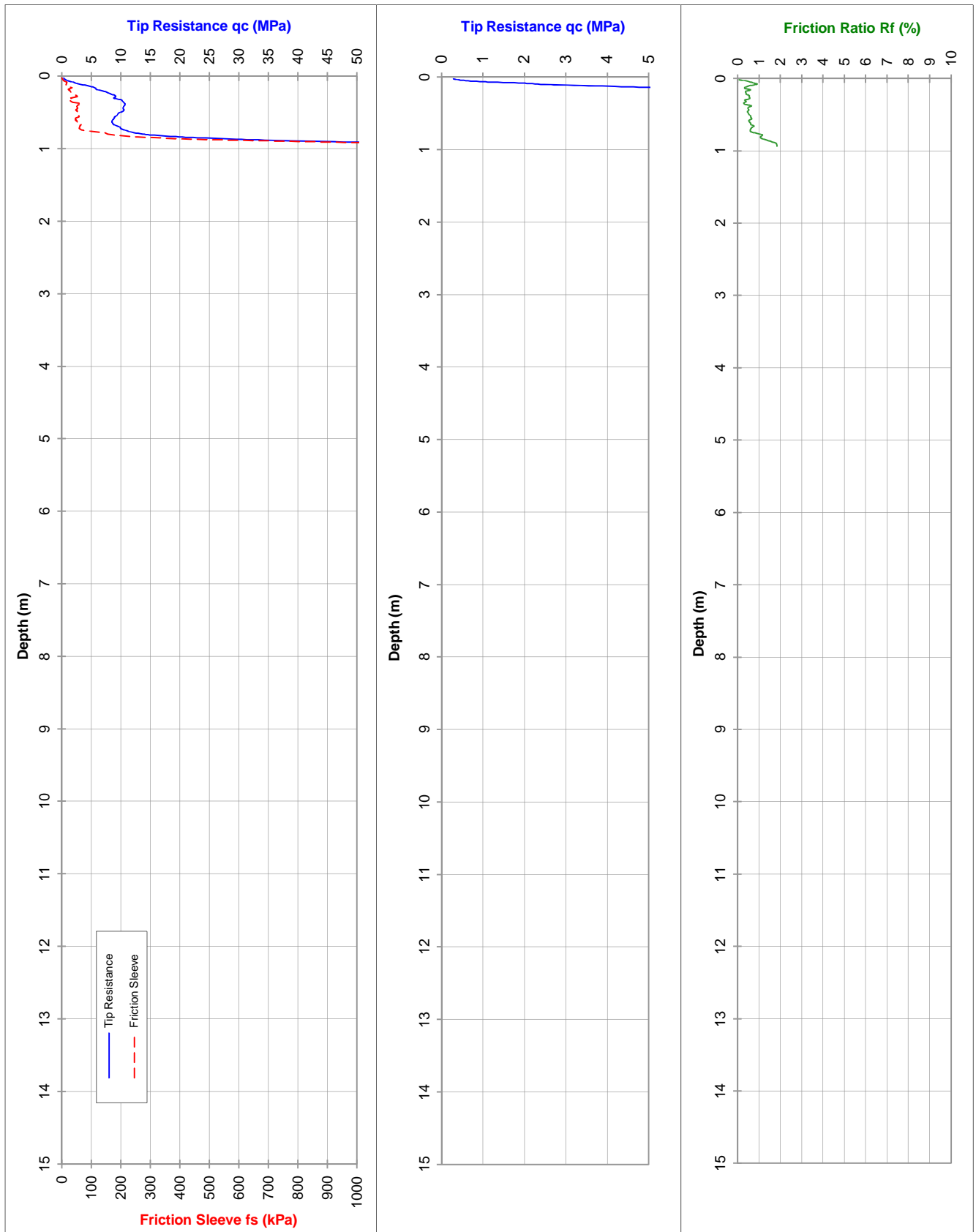
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 1.2

Job Number: 147645033

Co-ordinates: 462082E, 6469460N



Water (m): Dry to 0.60

Refusal: 100MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

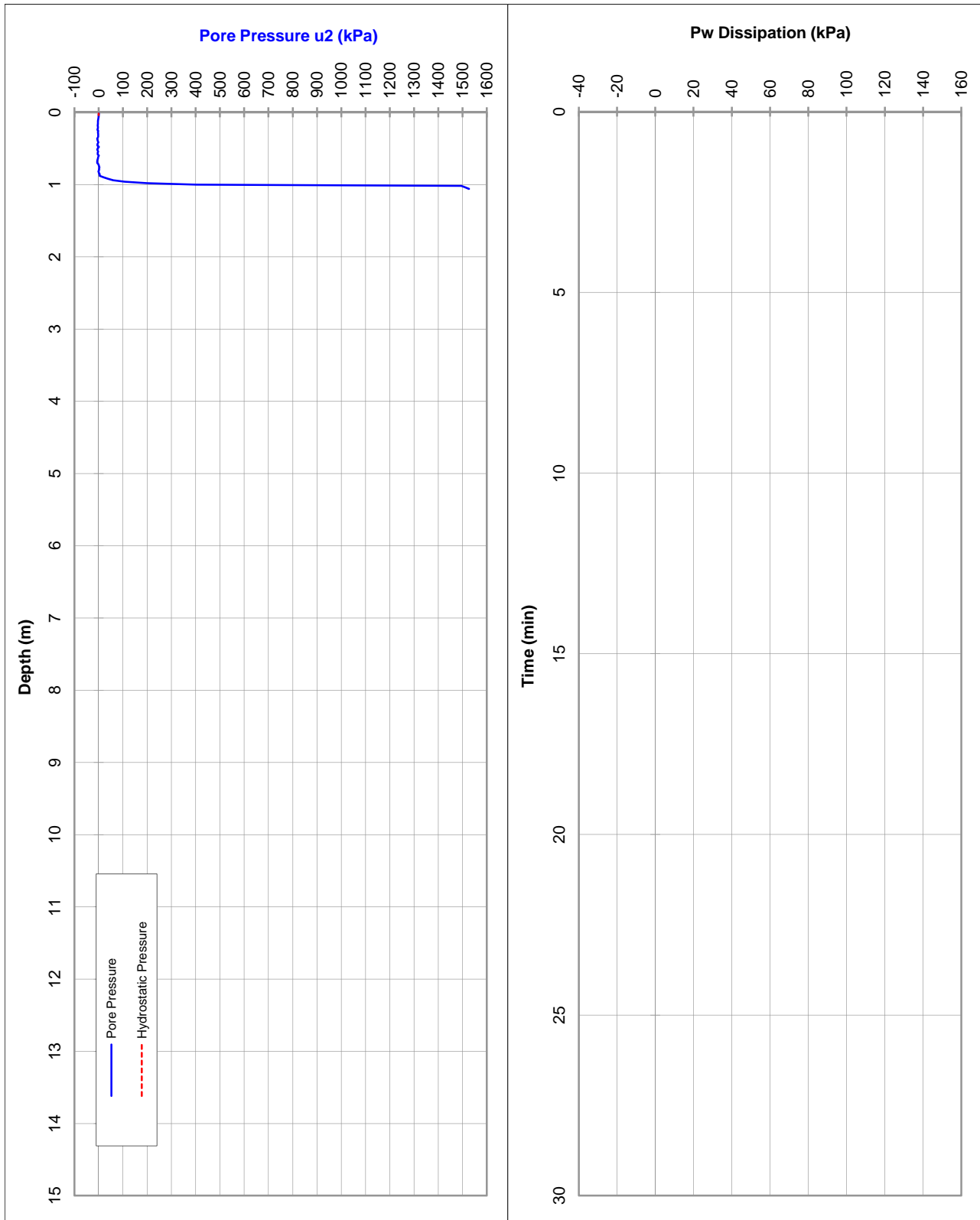
Project: Allawuna Farm

Probe No.: CPTU 1.2

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462082E, 6469460N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

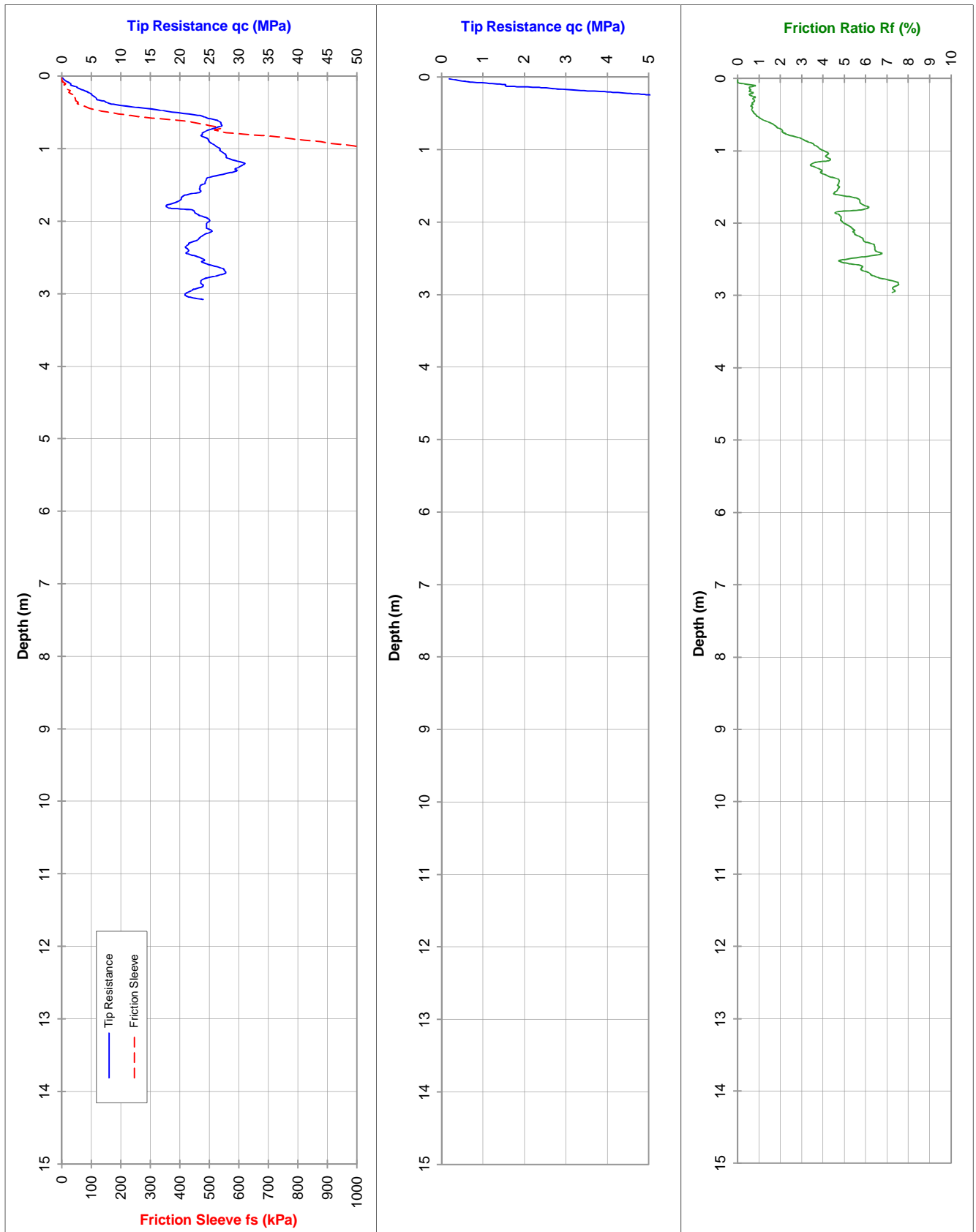
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 2.2

Job Number: 147645033

Co-ordinates: 462273E, 6469541N



Water (m): Dry to 2.10

Refusal: Inclination & Rod Friction

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

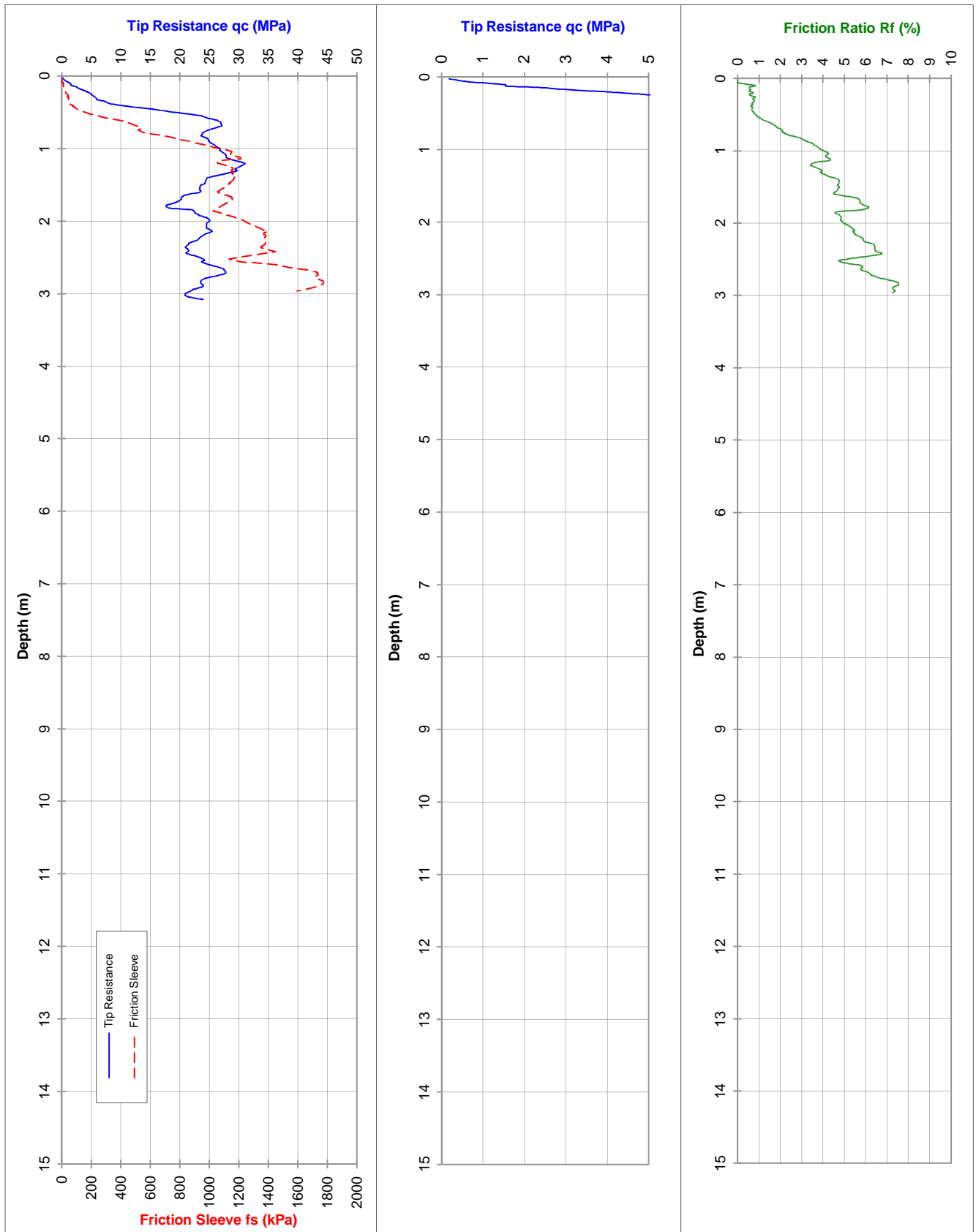
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 2.2

Job Number: 147645033

Co-ordinates: 462273E, 6469541N



Water (m): Dry to 2.10

Refusal: Inclination & Rod Friction

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

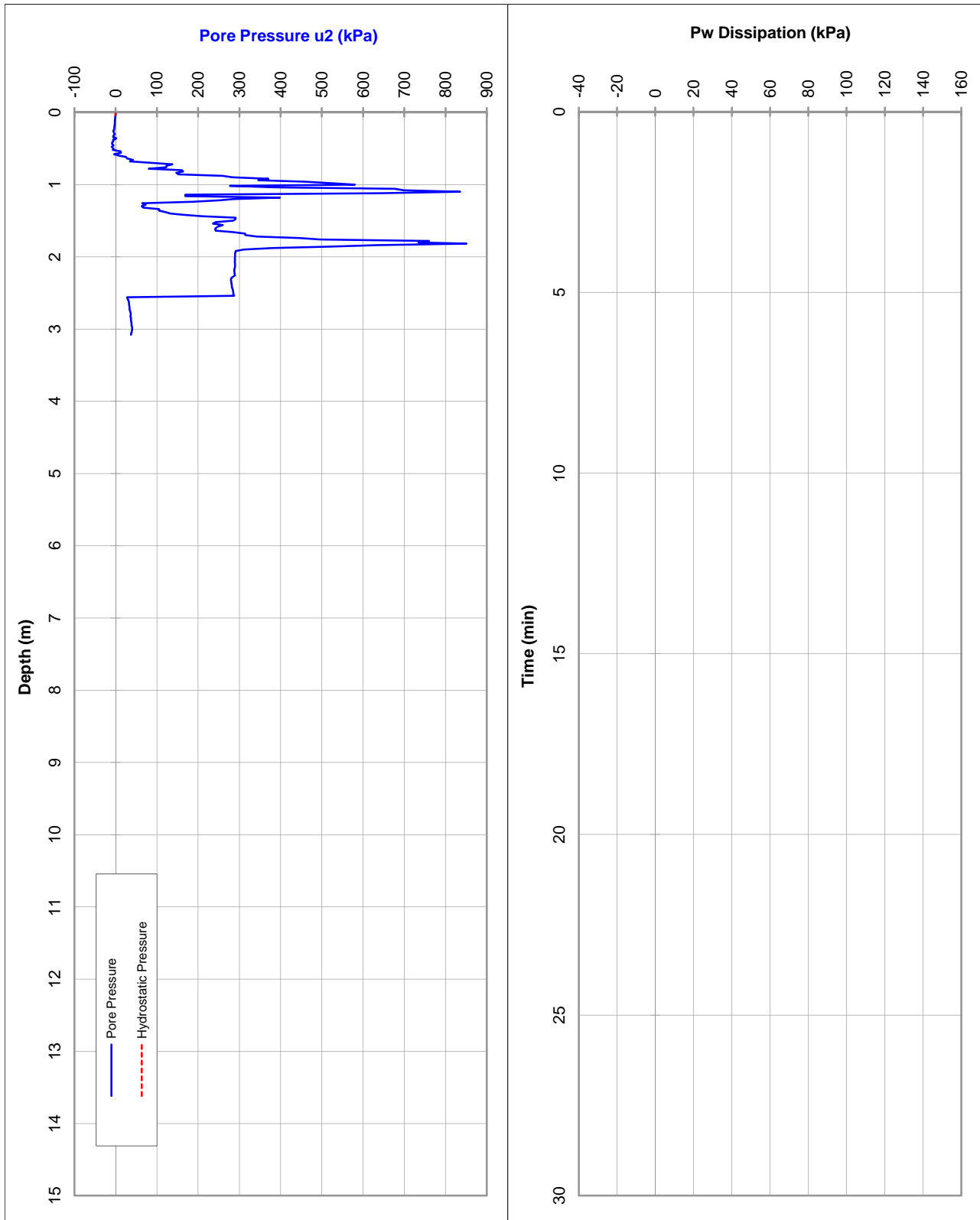
Project: Allawuna Farm

Probe No.: CPTU 2.2

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462273E, 6469541N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

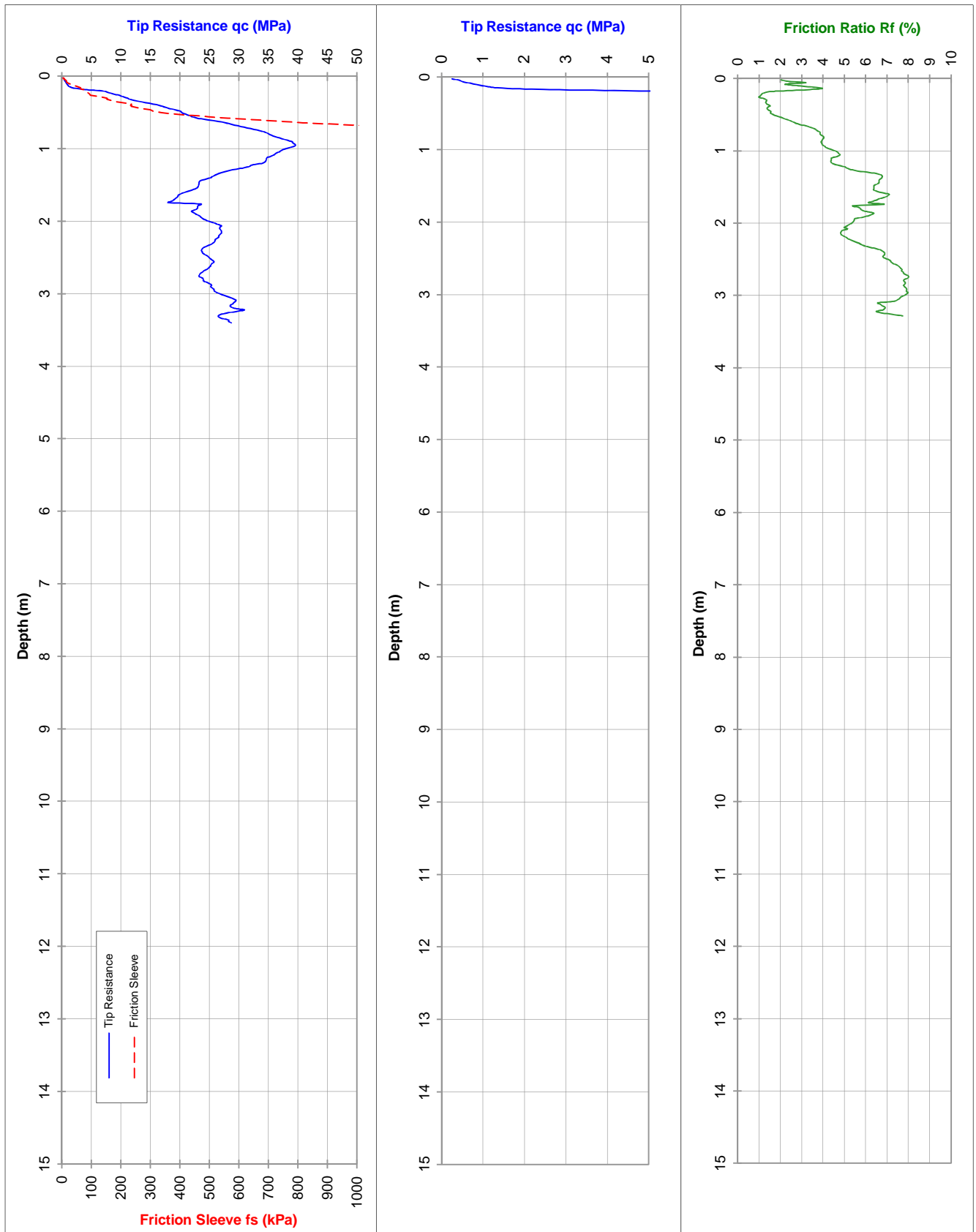
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPT 2.3

Job Number: 147645033

Co-ordinates: 462244E, 6469545N



Water (m): Dry to 3.10

Refusal: Rod Friction + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

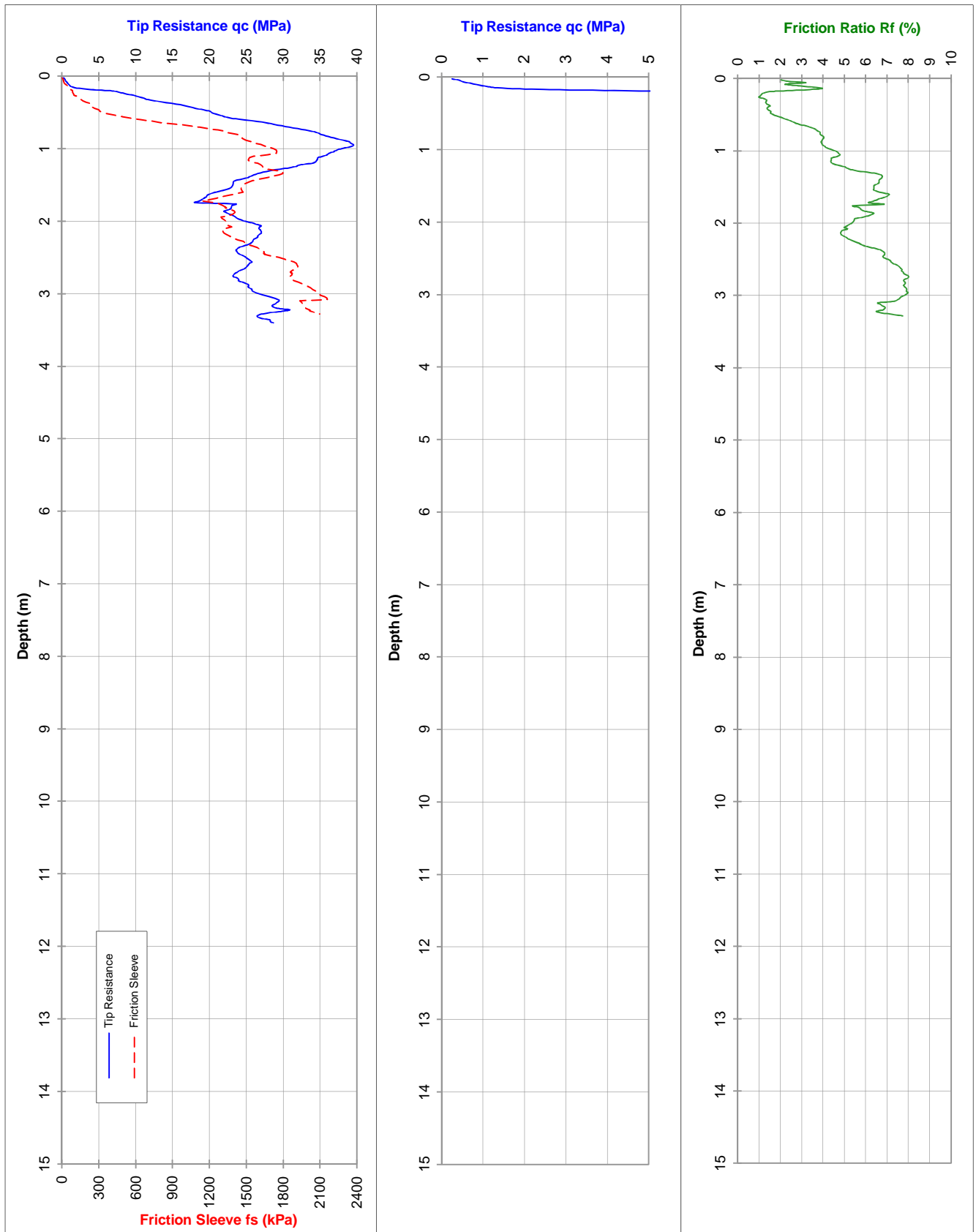
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPT 2.3

Job Number: 147645033

Co-ordinates: 462244E, 6469545N



Water (m): Dry to 3.10

Refusal: Rod Friction + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

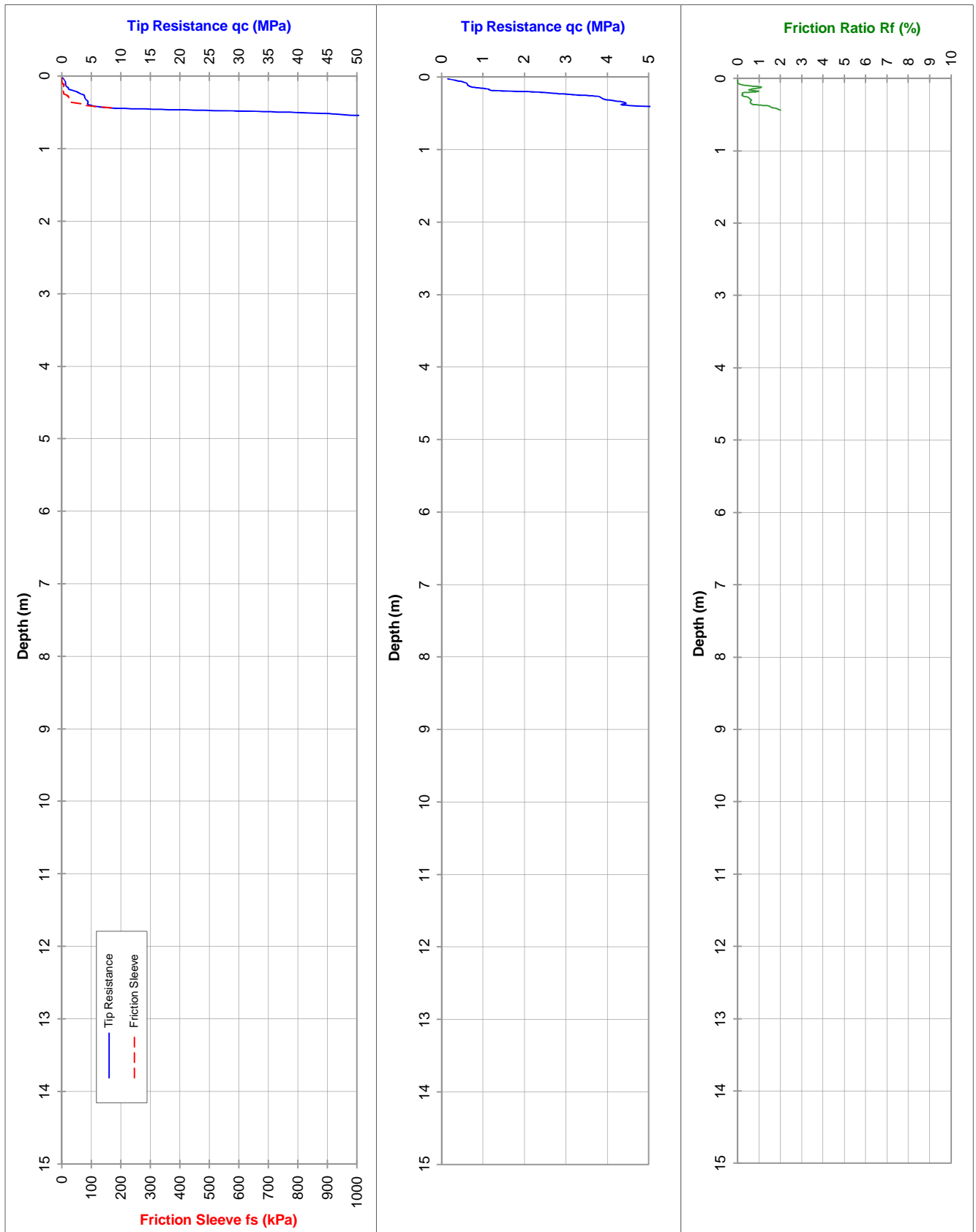
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPT 2.4

Job Number: 147645033

Co-ordinates: 462251E, 6469521N



Water (m): -

Refusal: 70MPa + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

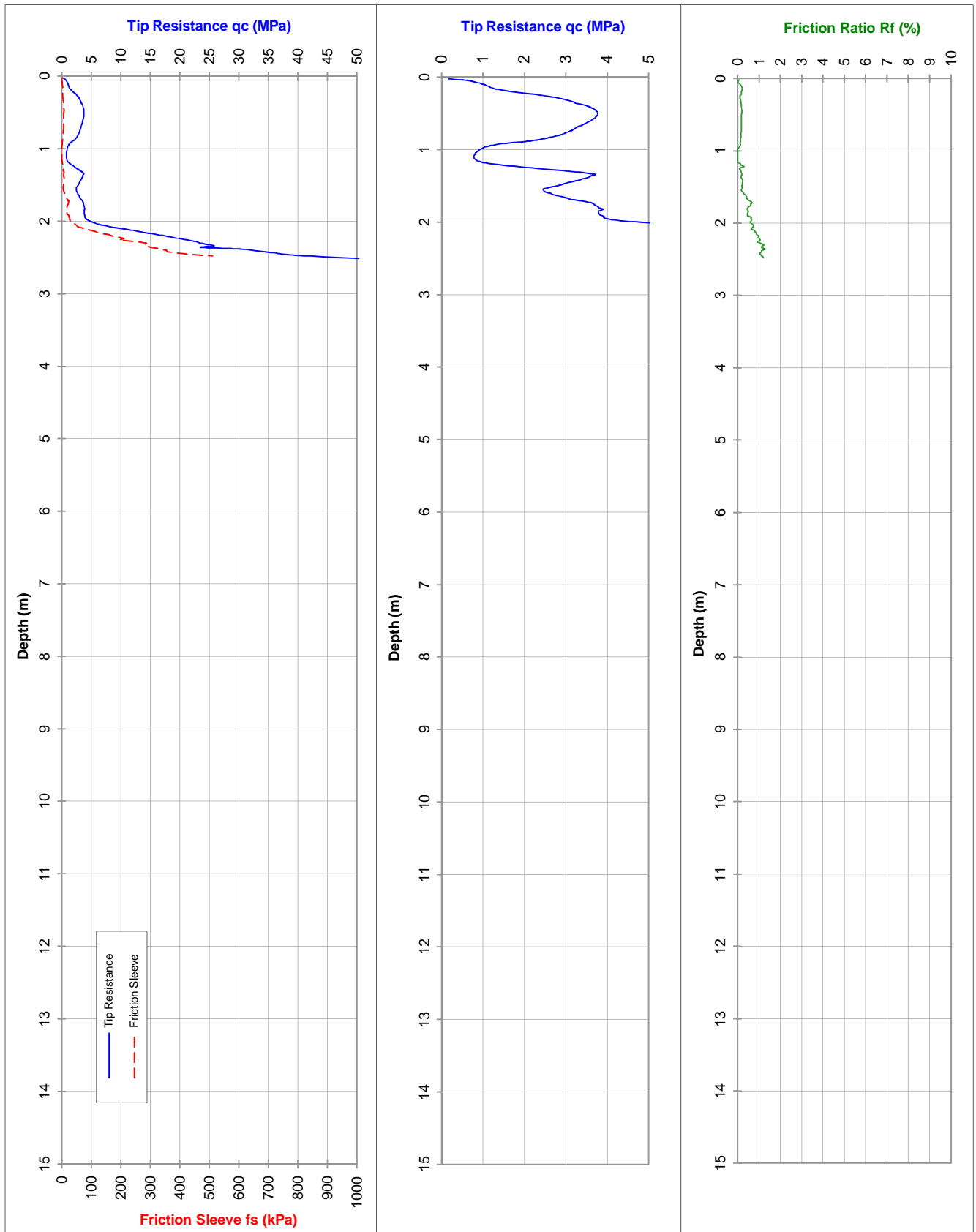
RL (m):

Date: Monday, 16 February 2015

Probe No.: CPTU 2.5

Job Number: 147645033

Co-ordinates: 462229E, 6469439N



Water (m): Dry to 2.40

Refusal: 85MPa / No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Monday, 16 February 2015

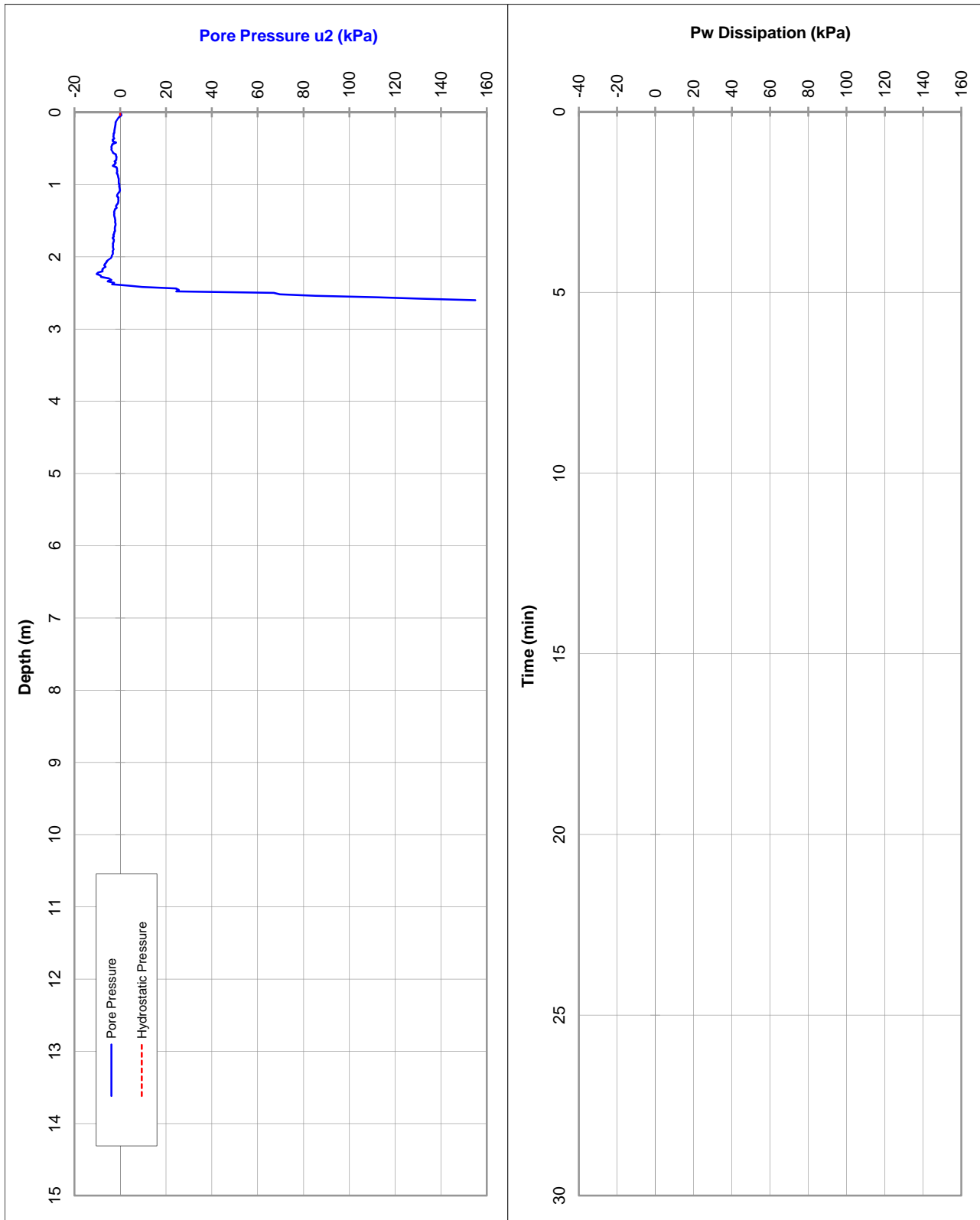
Project: Allawuna Farm

Probe No.: CPTU 2.5

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462229E, 6469439N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

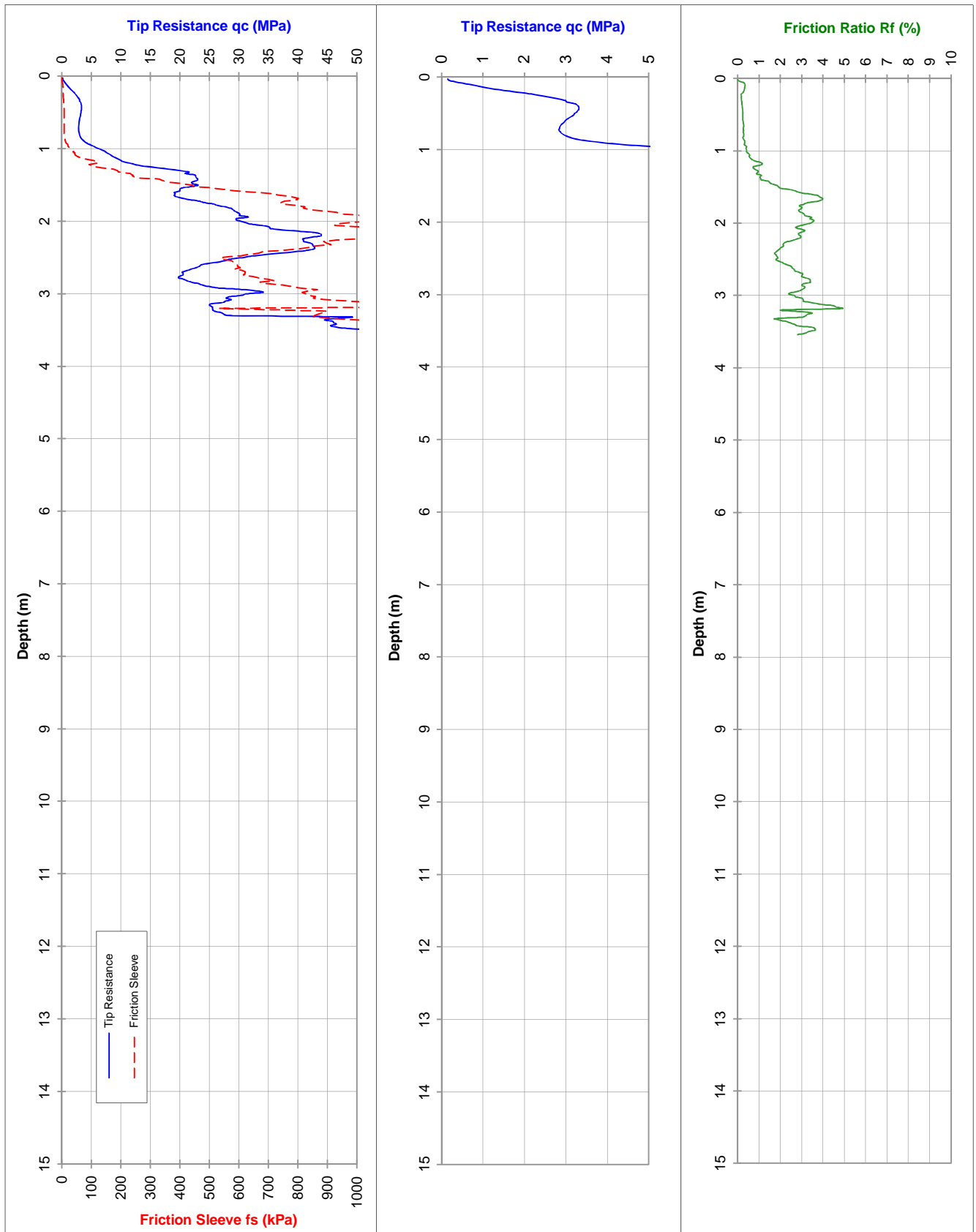
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 4

Job Number: 147645033

Co-ordinates: 462514E, 6469263N



Water (m): Dry to 3.0

Refusal: Inclination / No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

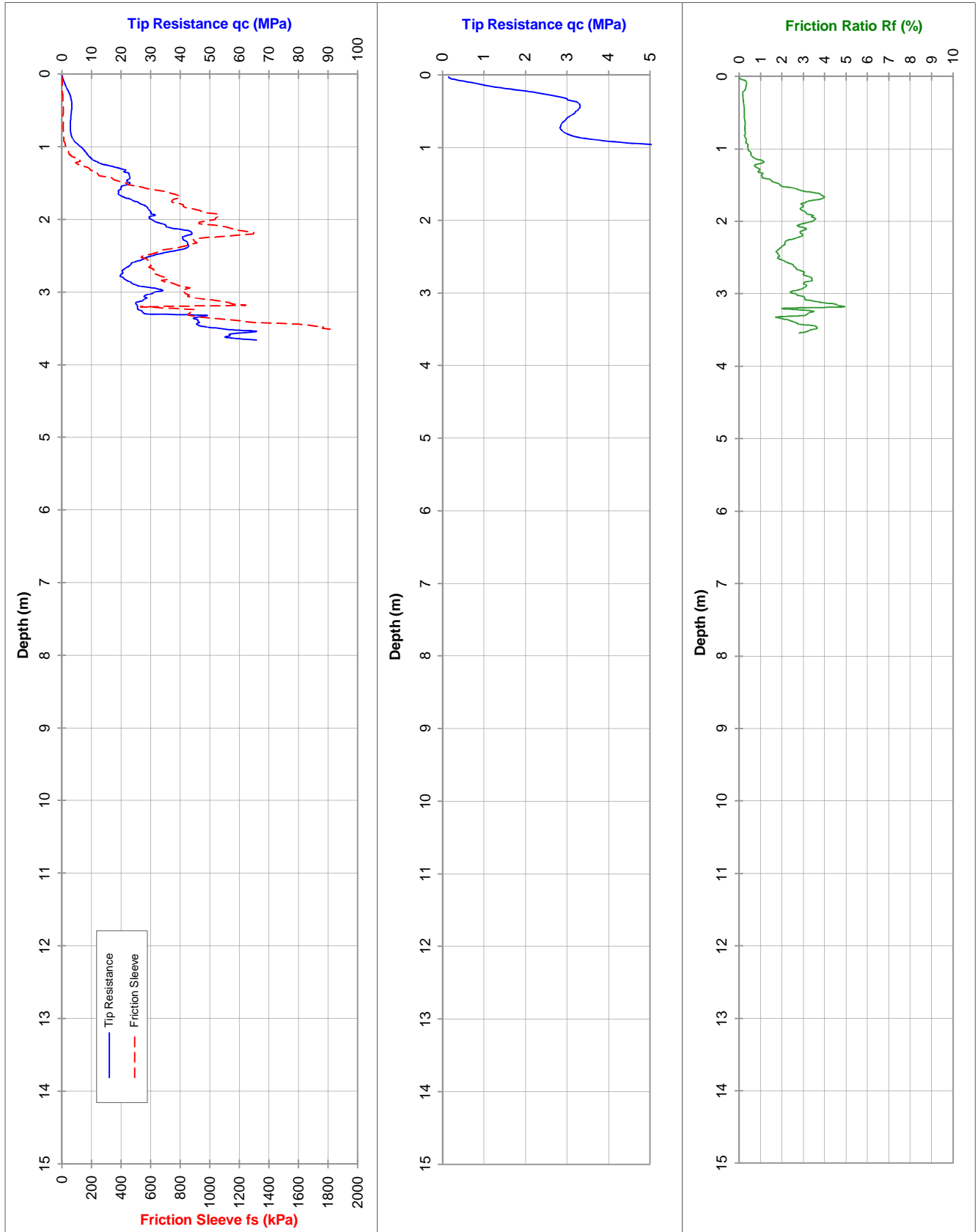
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 4

Job Number: 147645033

Co-ordinates: 462514E, 6469263N



Water (m): Dry to 3.0

Refusal: Inclination / No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

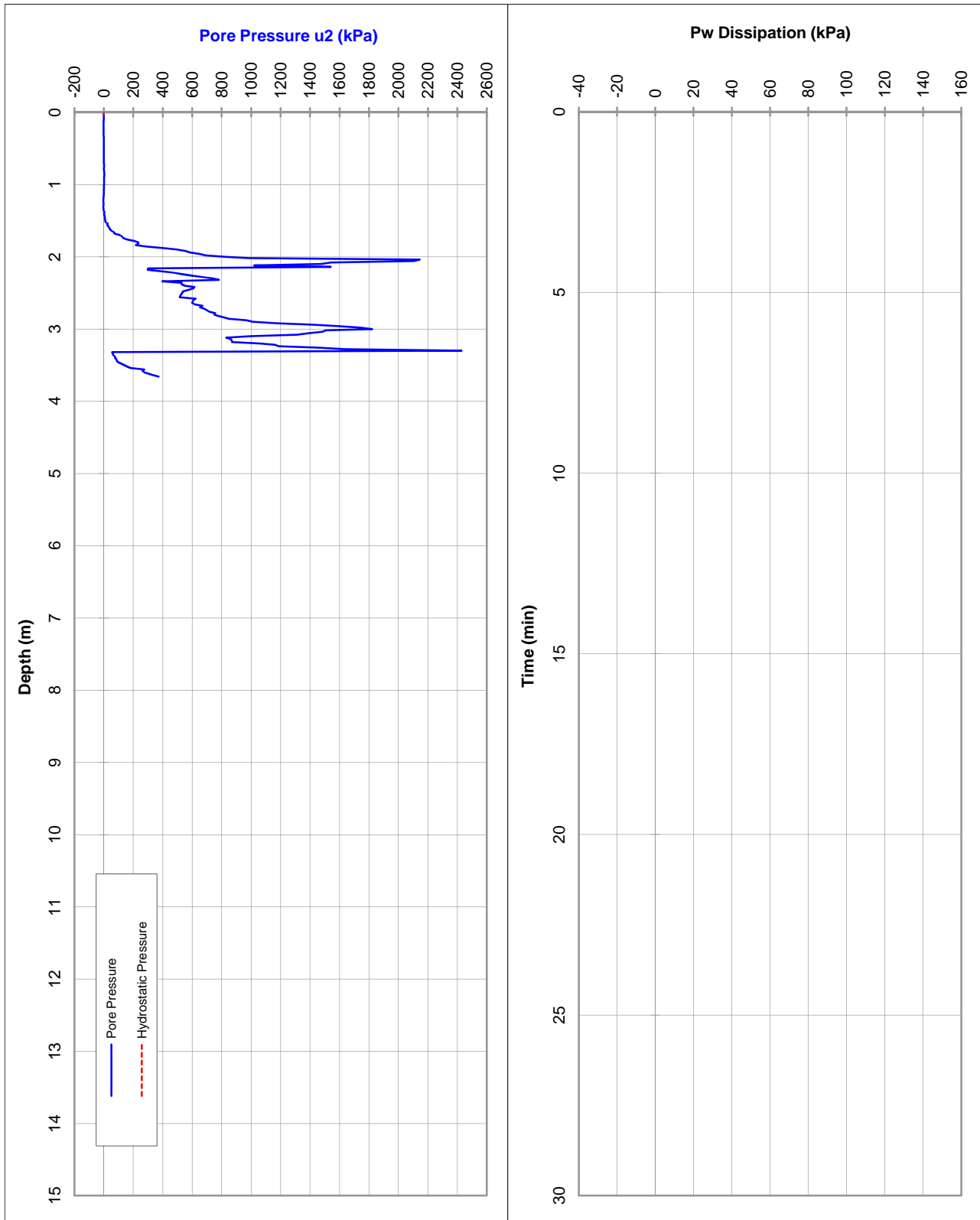
Project: Allawuna Farm

Probe No.: CPTU 4

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462514E, 6469263N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

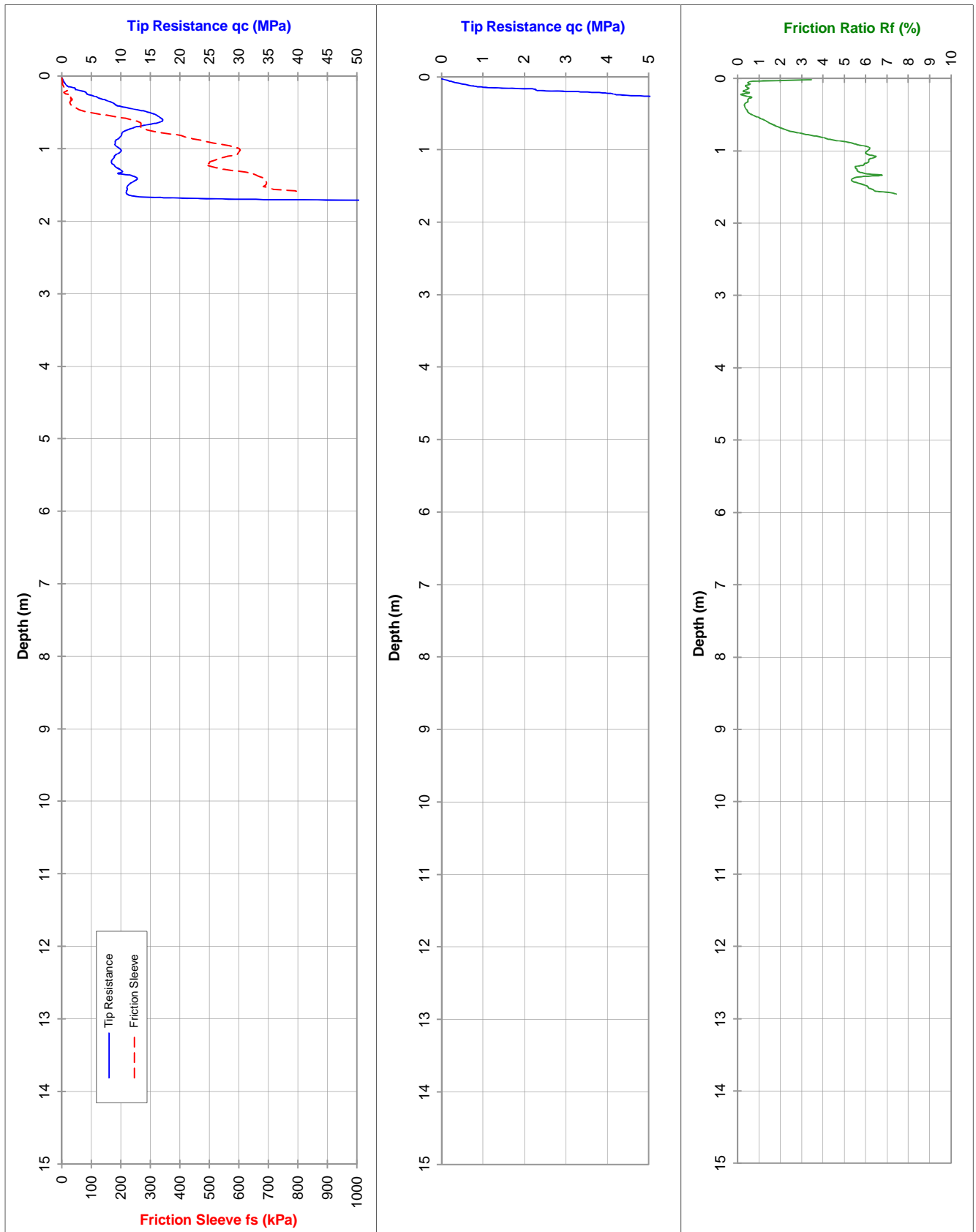
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3.1

Job Number: 147645033

Co-ordinates: 463007E, 6468975N



Water (m): Dry to 1.40

Refusal: 85MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

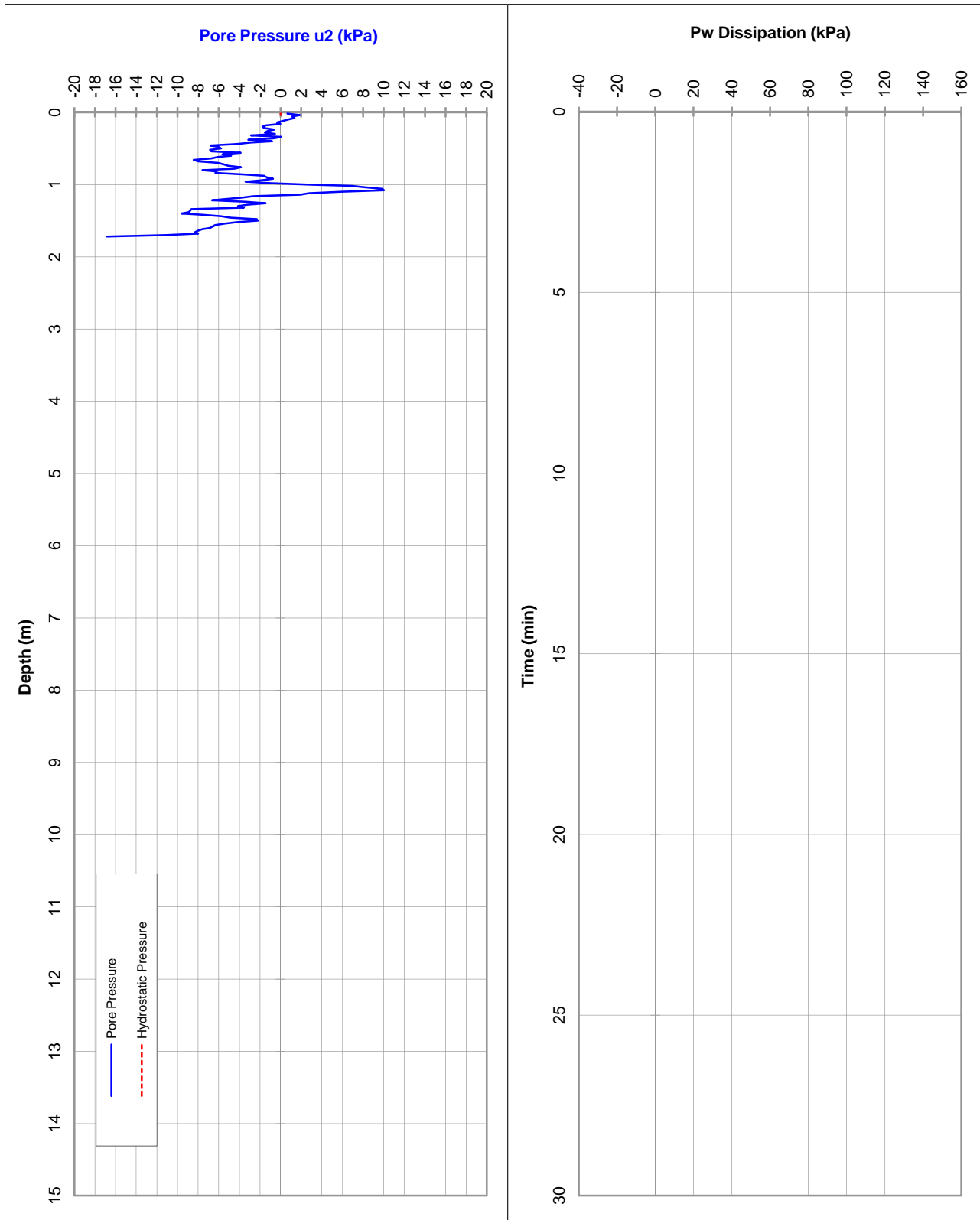
Project: Allawuna Farm

Probe No.: CPTU 3.1

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 463007E, 6468975N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

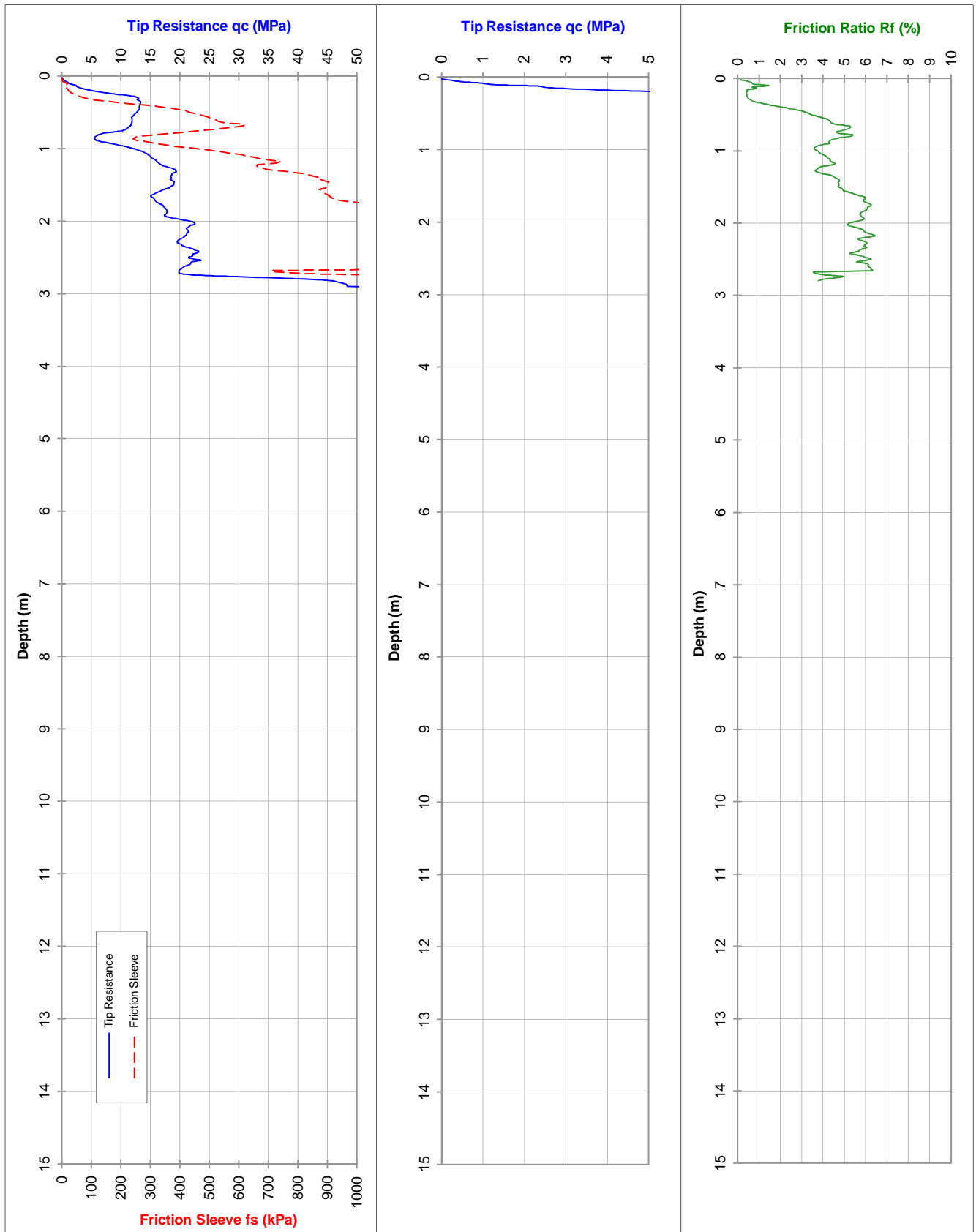
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3

Job Number: 147645033

Co-ordinates: 463071E, 6469099N



Water (m): Dry to 2.30

Refusal: 60MPa + Rod Friction

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

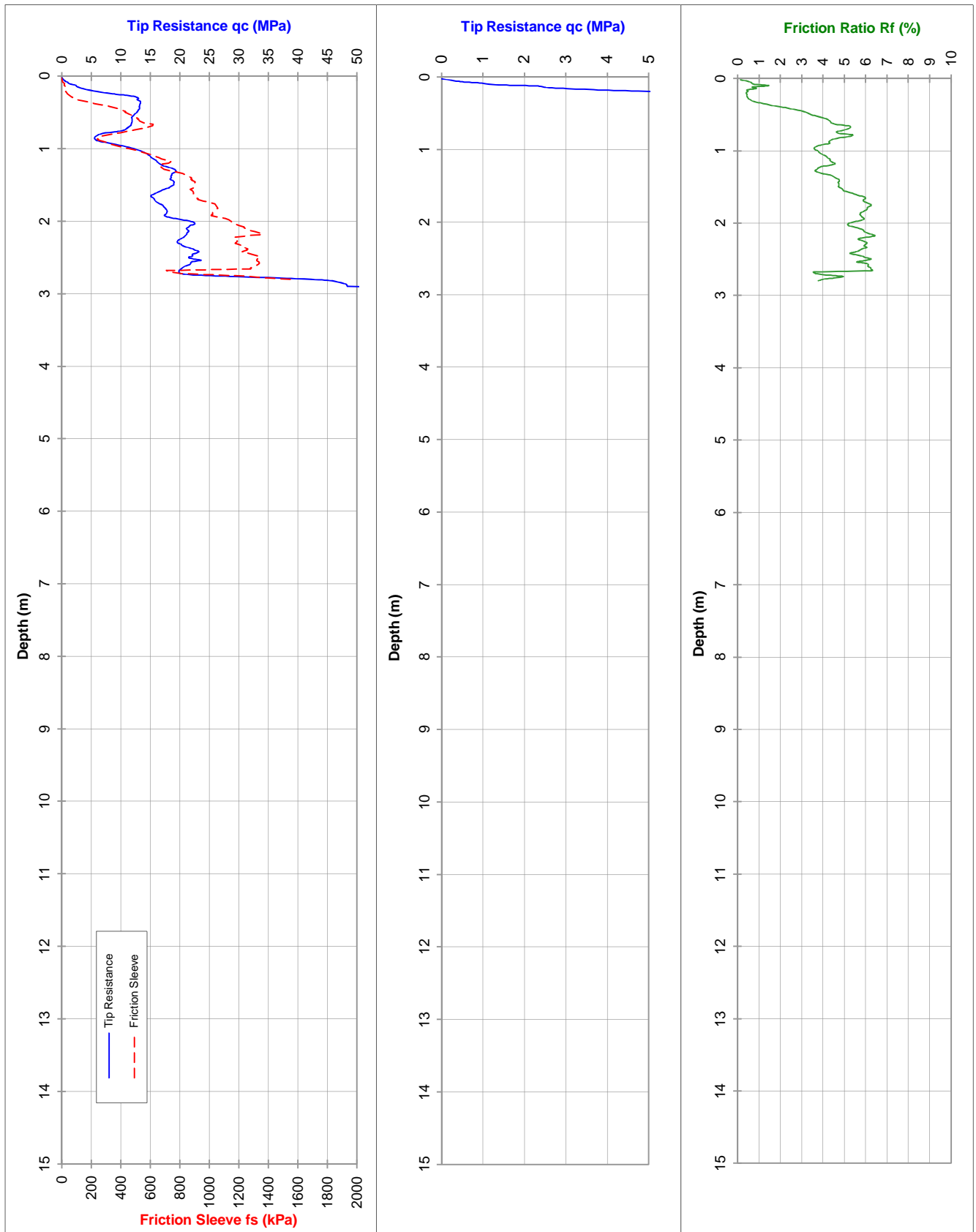
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3

Job Number: 147645033

Co-ordinates: 463071E, 6469099N



Water (m): Dry to 2.30

Refusal: 60MPa + Rod Friction

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

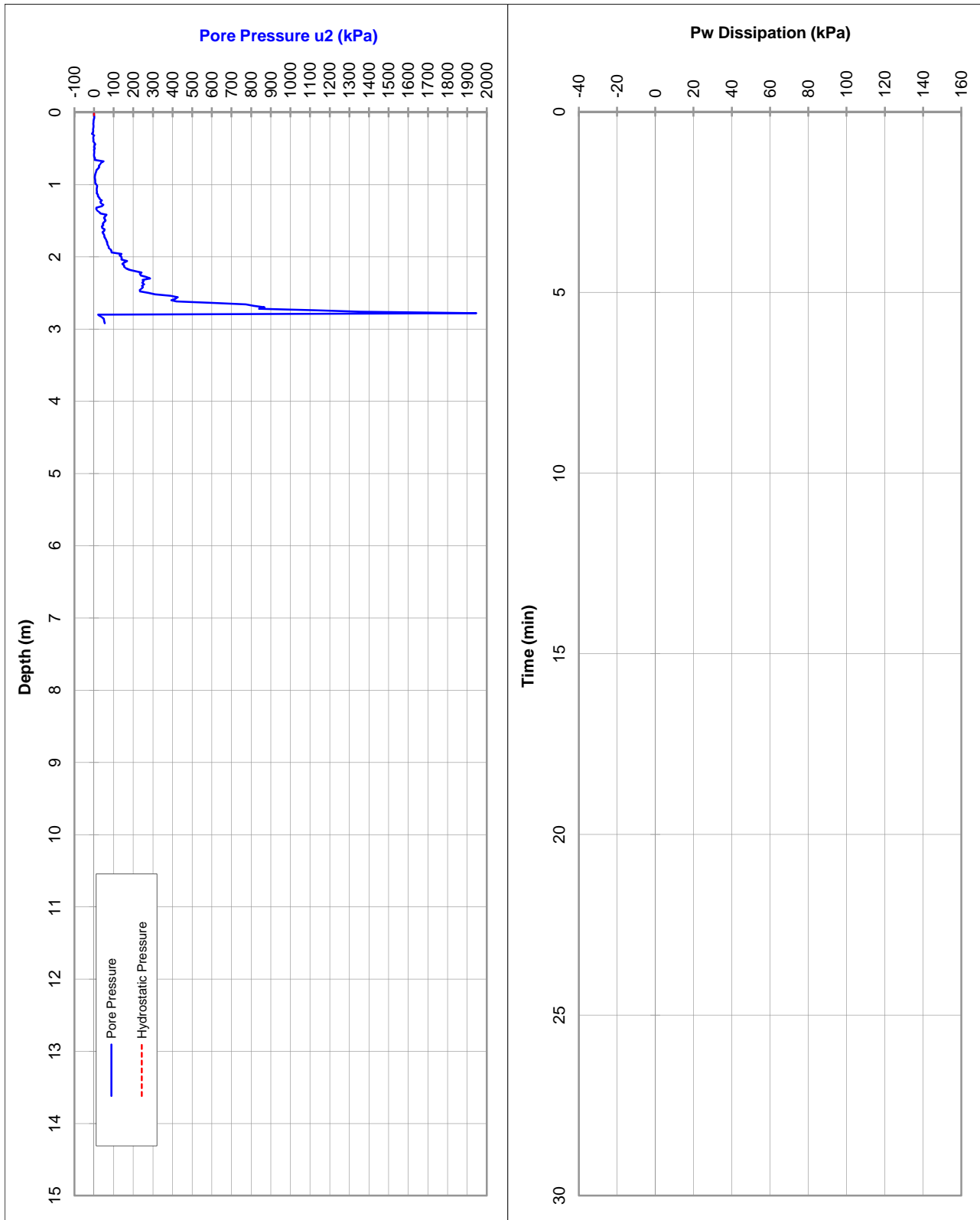
Project: Allawuna Farm

Probe No.: CPTU 3

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 463071E, 6469099N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

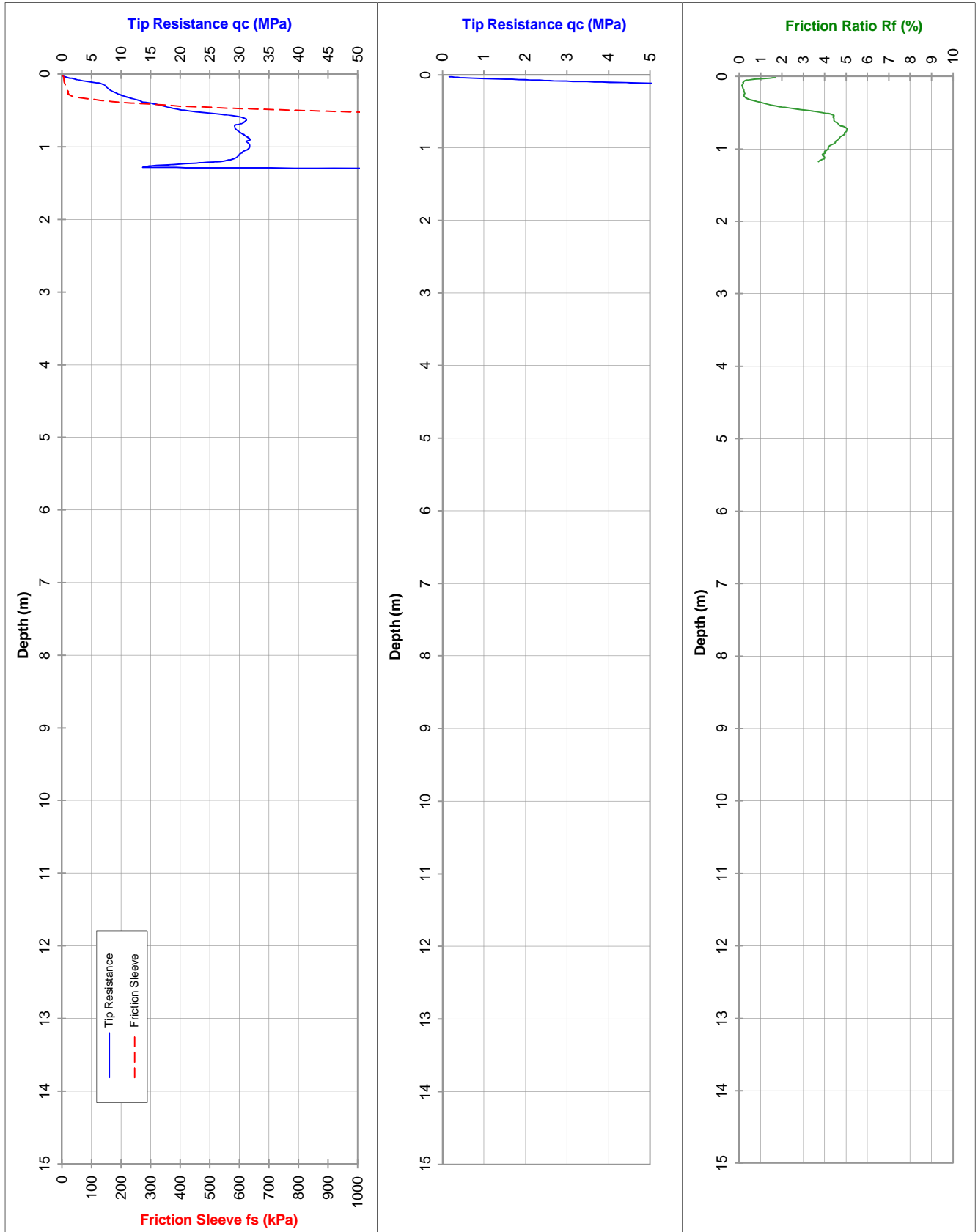
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3.2

Job Number: 147645033

Co-ordinates: 463057E, 6469133N



Water (m): Dry to 1.20

Refusal: 65MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

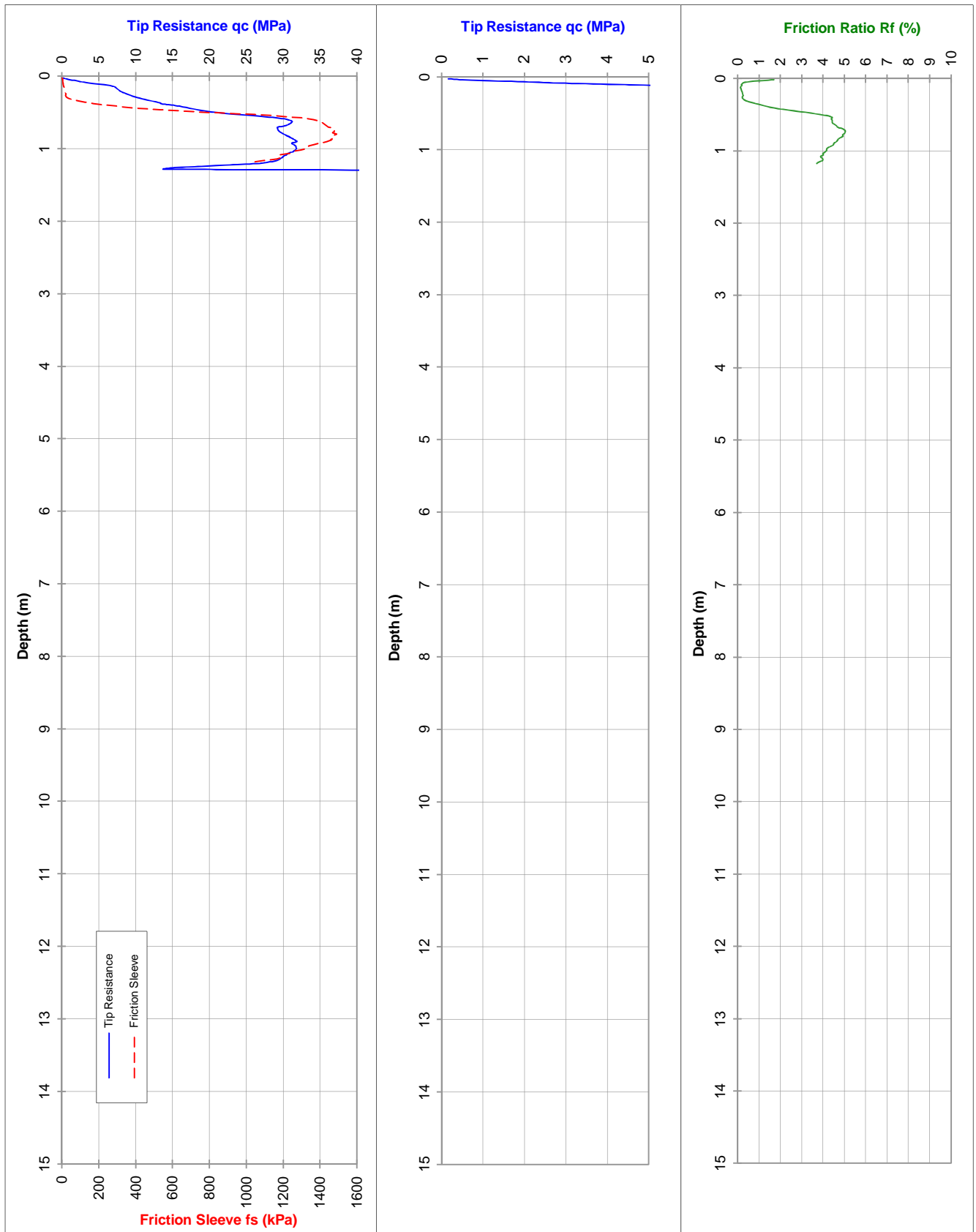
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3.2

Job Number: 147645033

Co-ordinates: 463057E, 6469133N



Water (m): Dry to 1.20

Refusal: 65MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

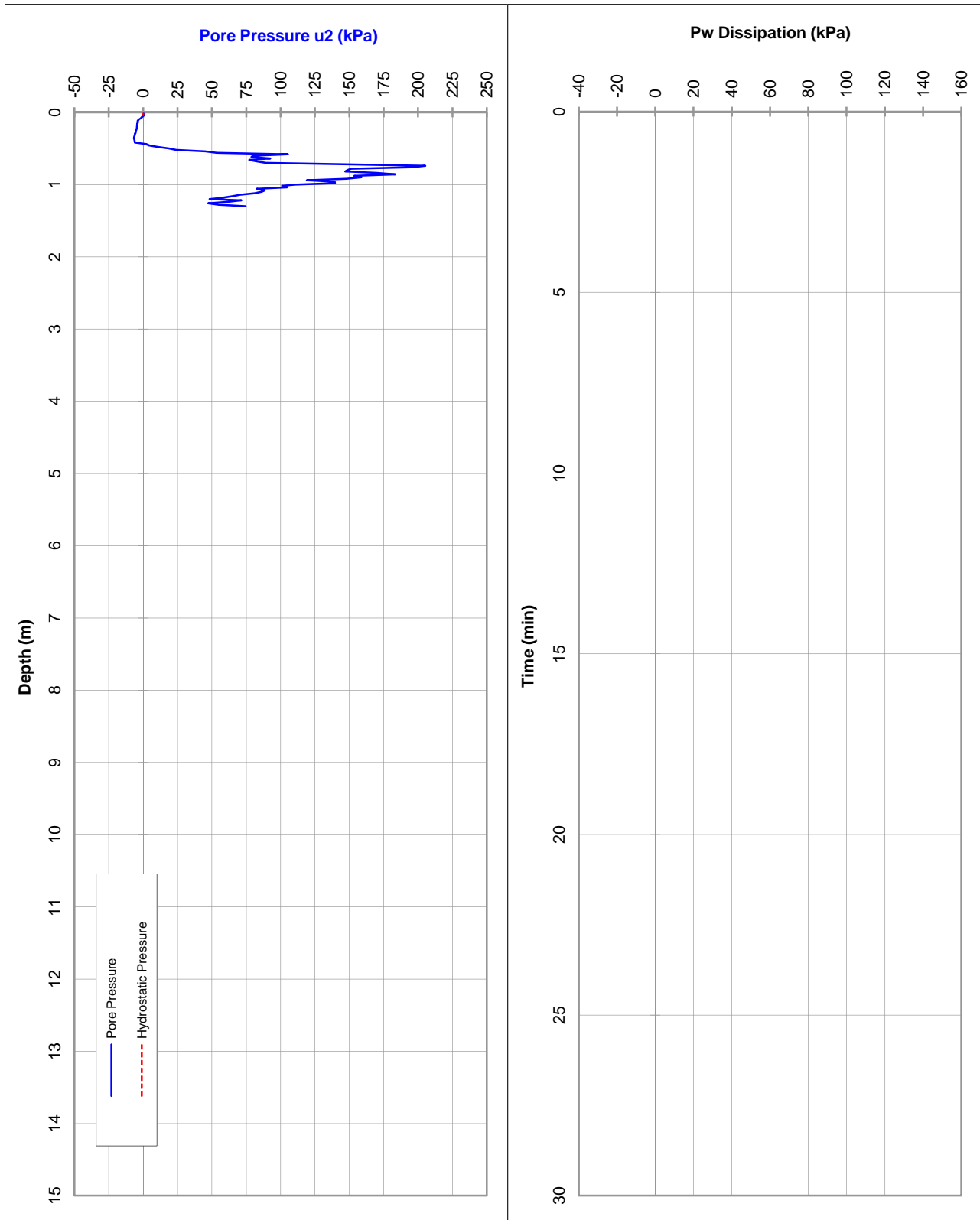
Project: Allawuna Farm

Probe No.: CPTU 3.2

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 463057E, 6469133N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

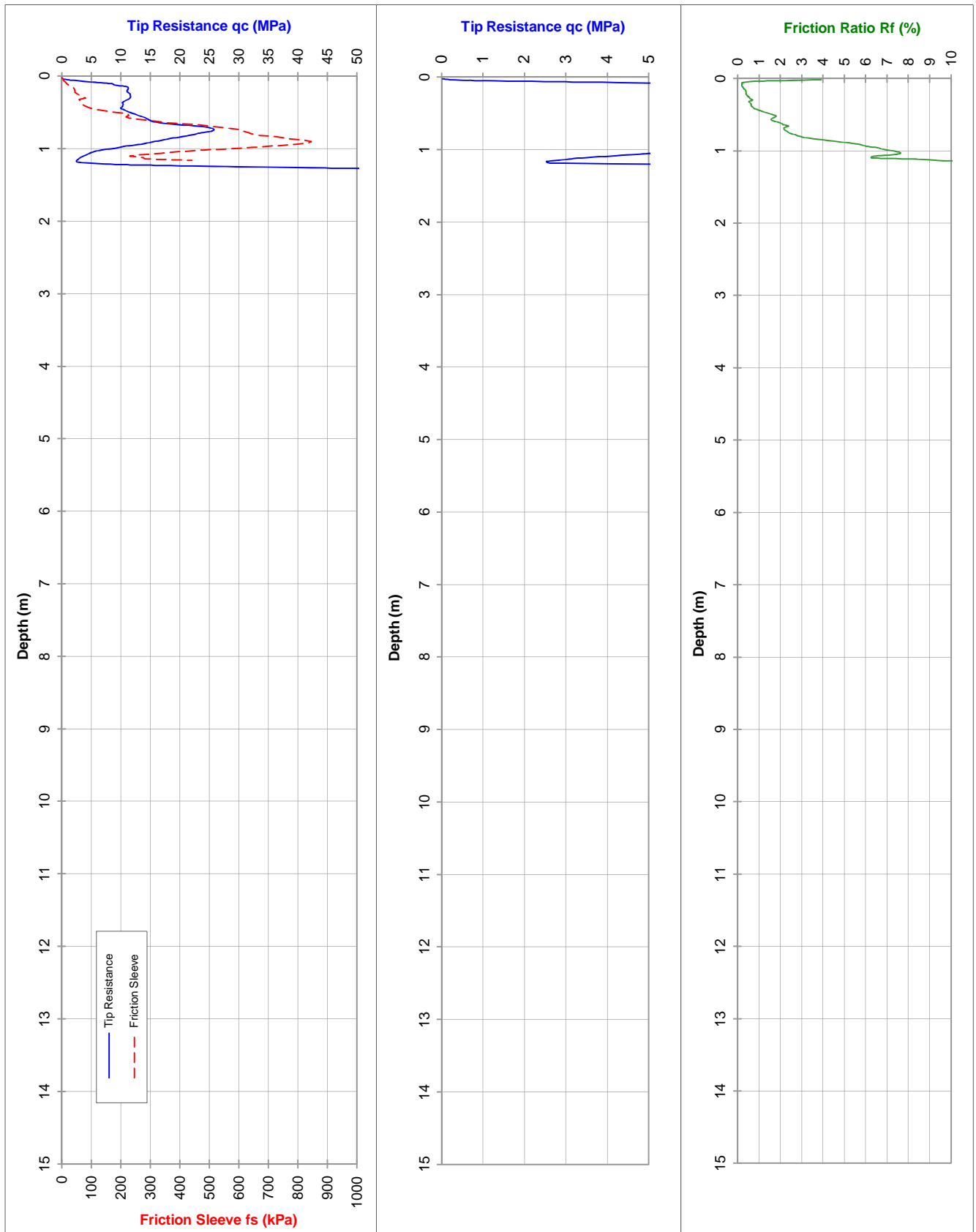
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3.3

Job Number: 147645033

Co-ordinates: 463058E, 6469164N



Water (m): Dry to 1.10

Refusal: 65MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

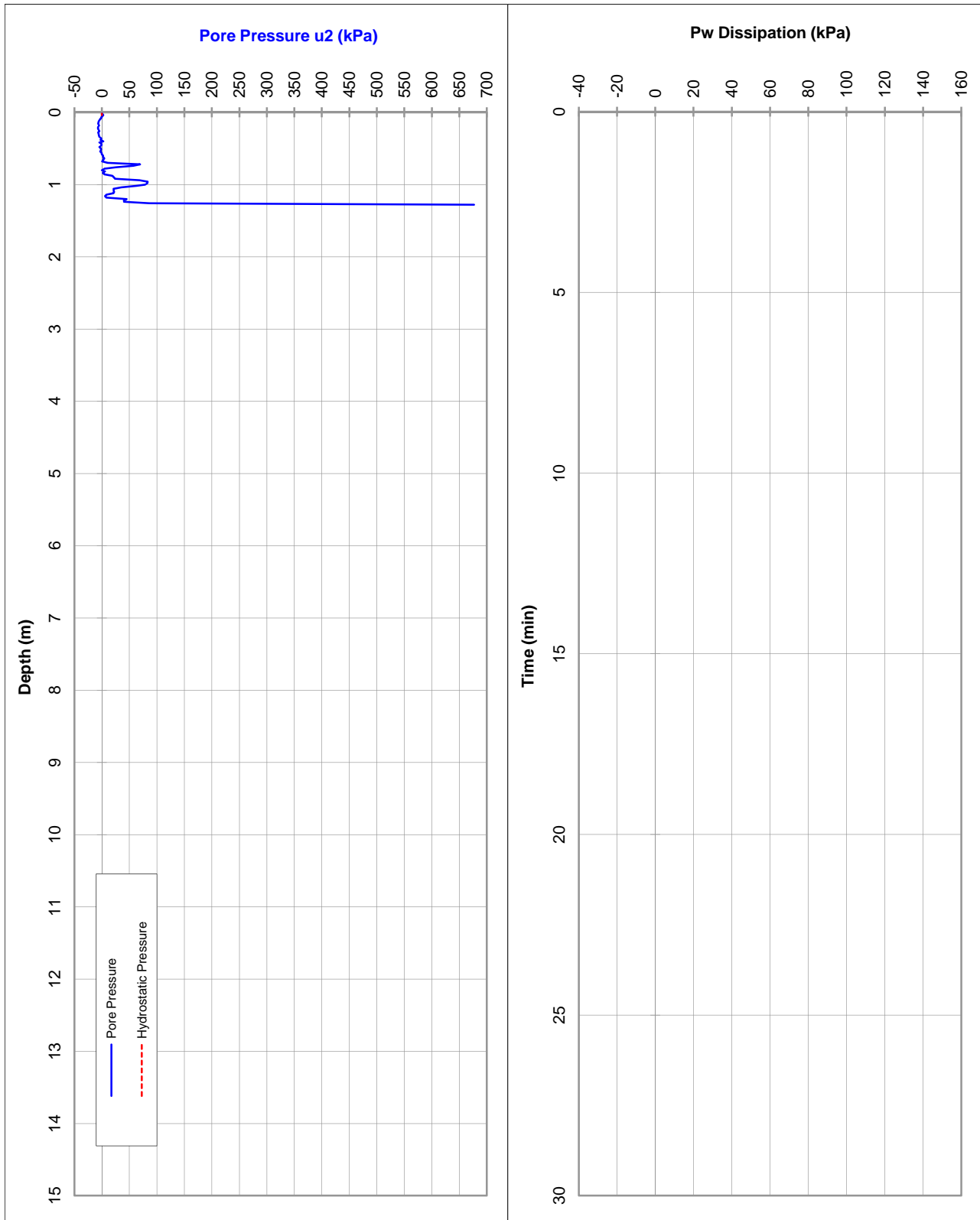
Project: Allawuna Farm

Probe No.: CPTU 3.3

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 463058E, 6469164N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

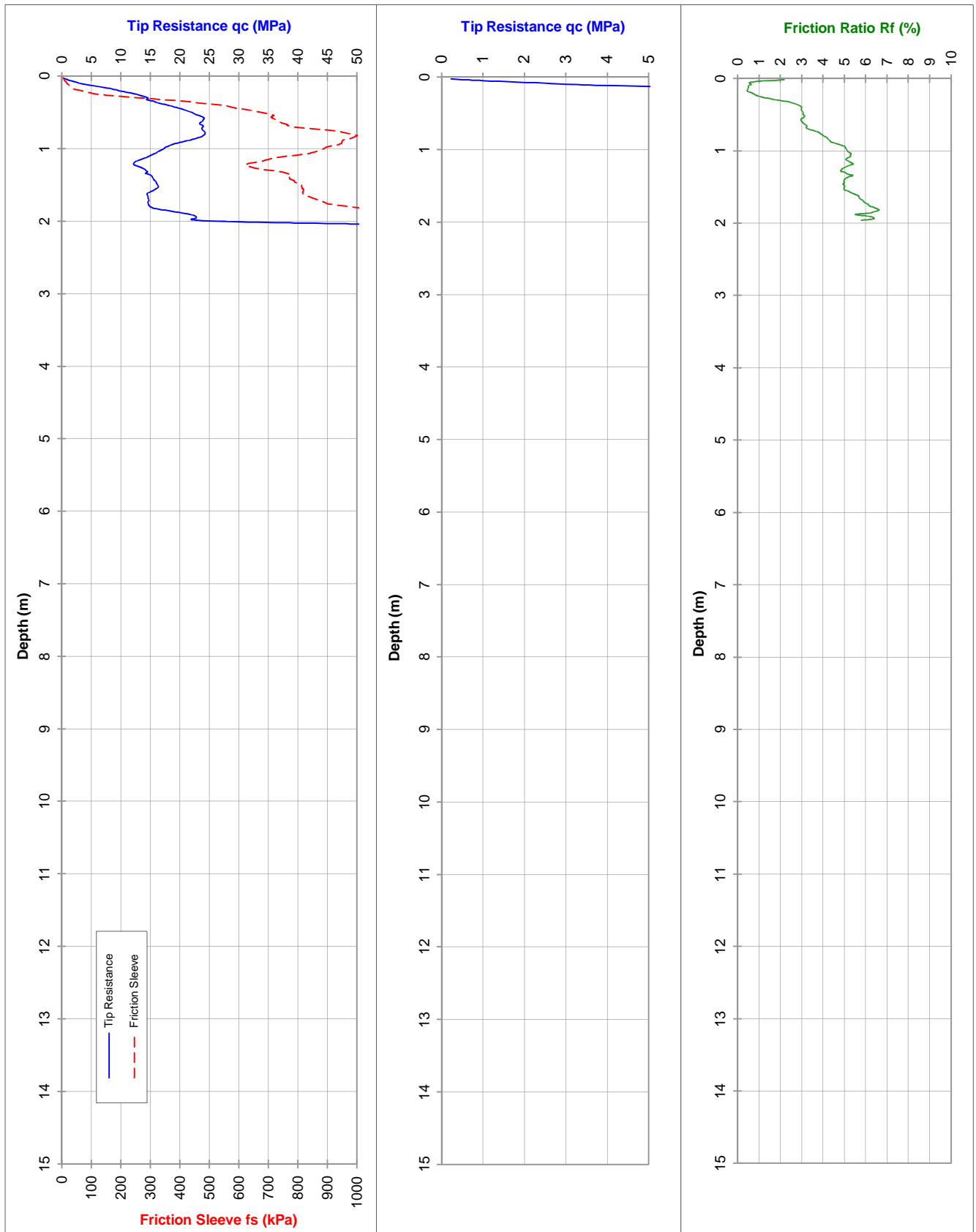
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3.4

Job Number: 147645033

Co-ordinates: 463078E, 6469018N



Water (m): Dry to 2.0

Refusal: 75MPa + Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

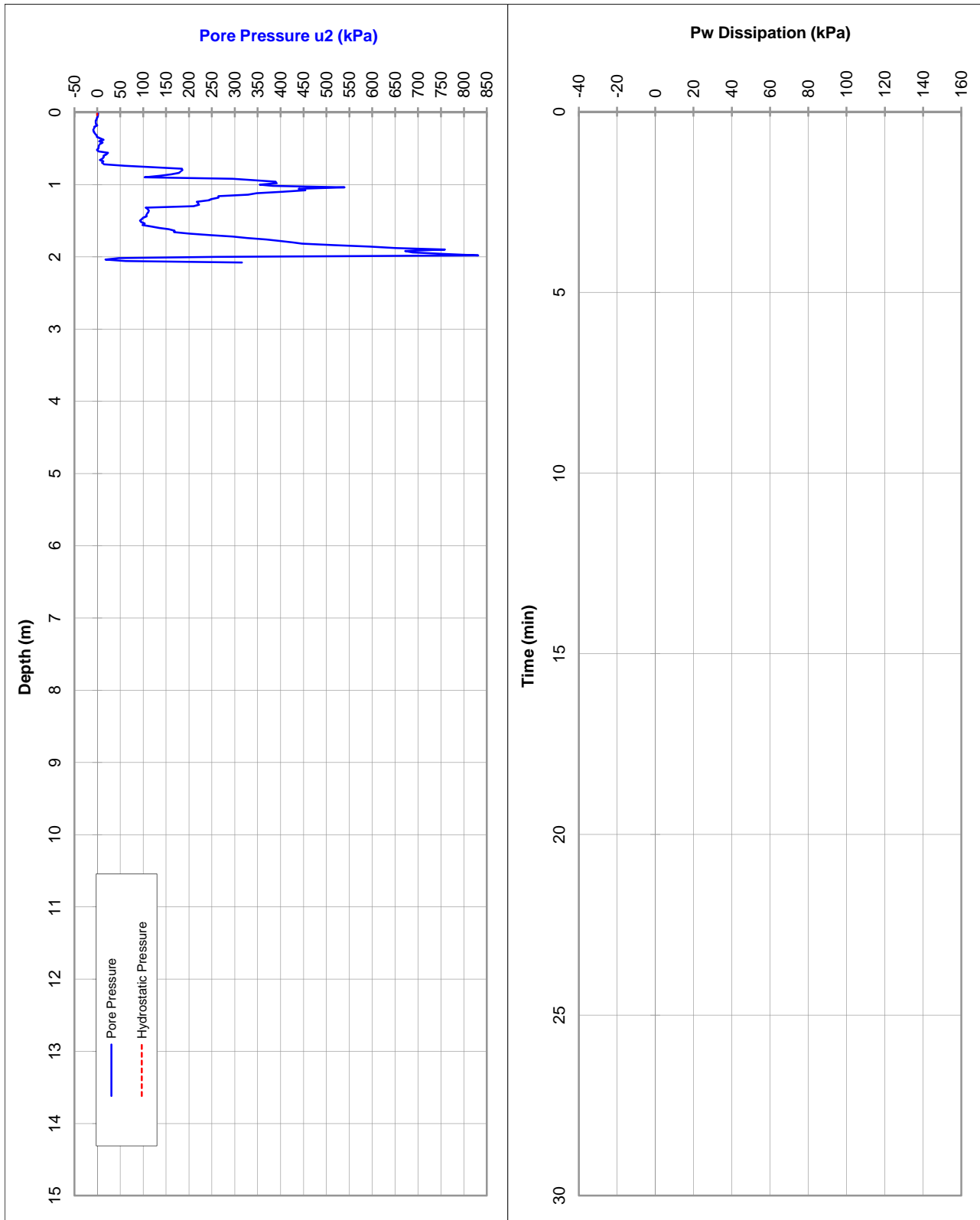
Project: Allawuna Farm

Probe No.: CPTU 3.4

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 463078E, 6469018N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

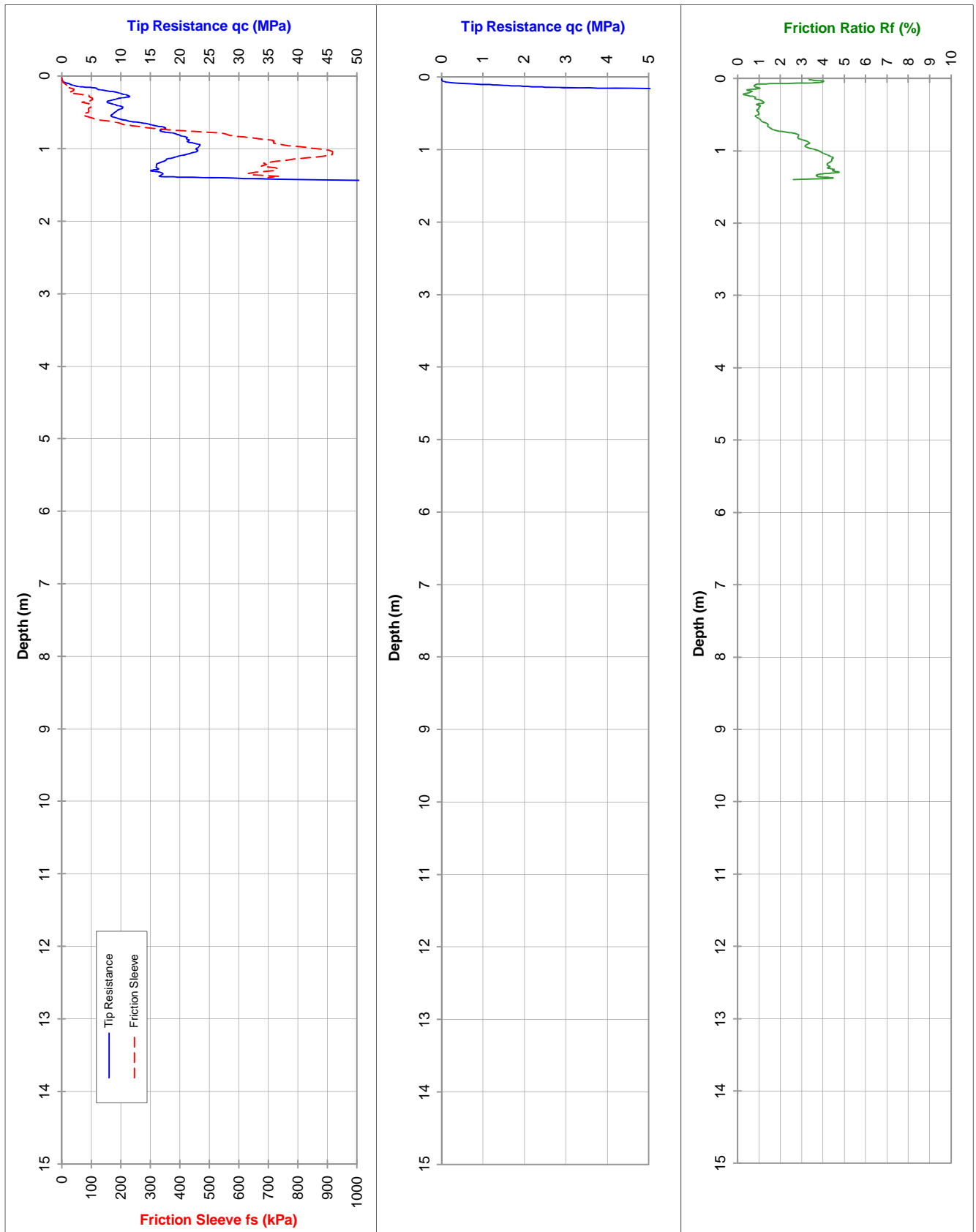
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 3.5

Job Number: 147645033

Co-ordinates: 463093E, 6469002N



Water (m): Dry to 0.3

Refusal: 75MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

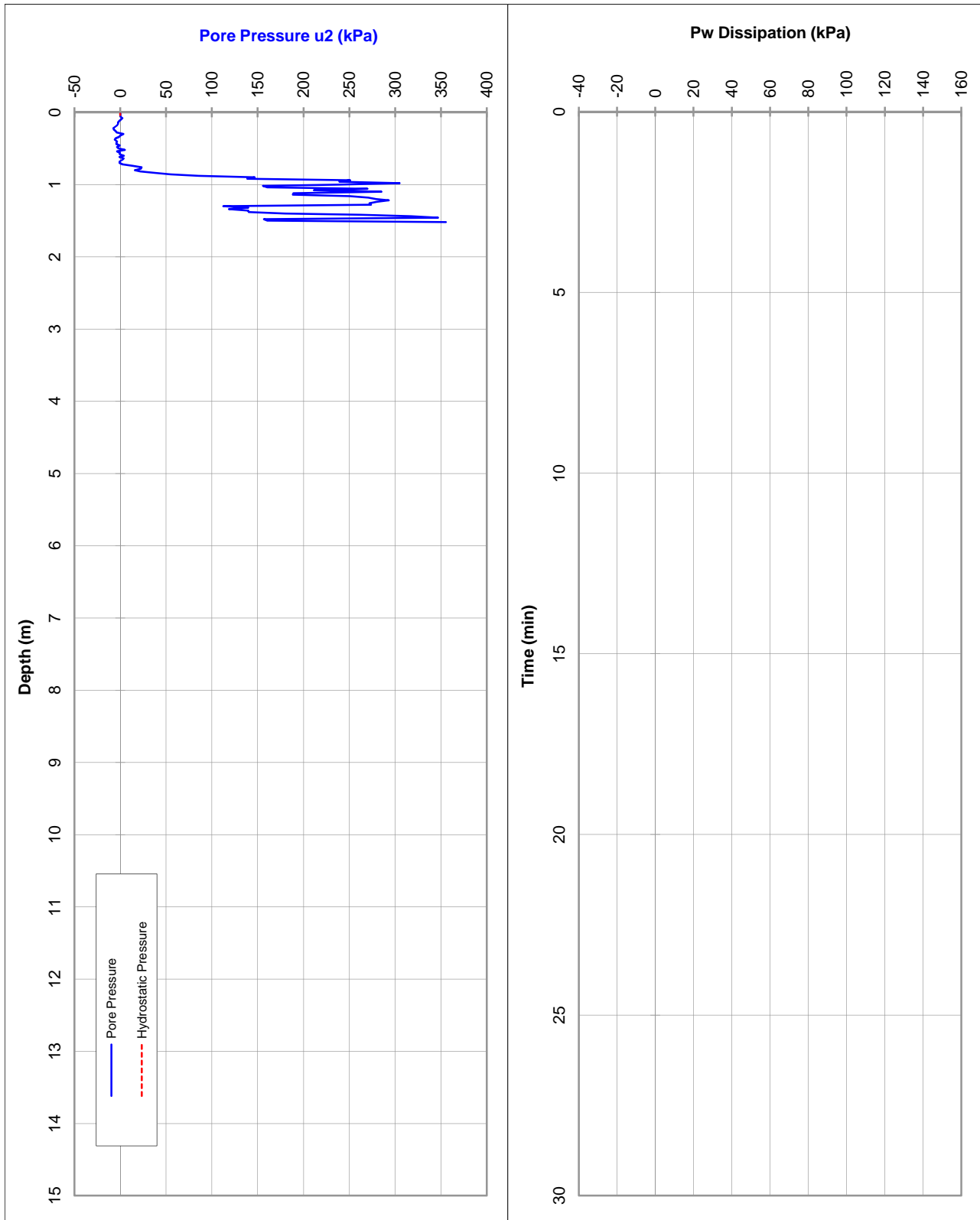
Project: Allawuna Farm

Probe No.: CPTU 3.5

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 463093E, 6469002N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

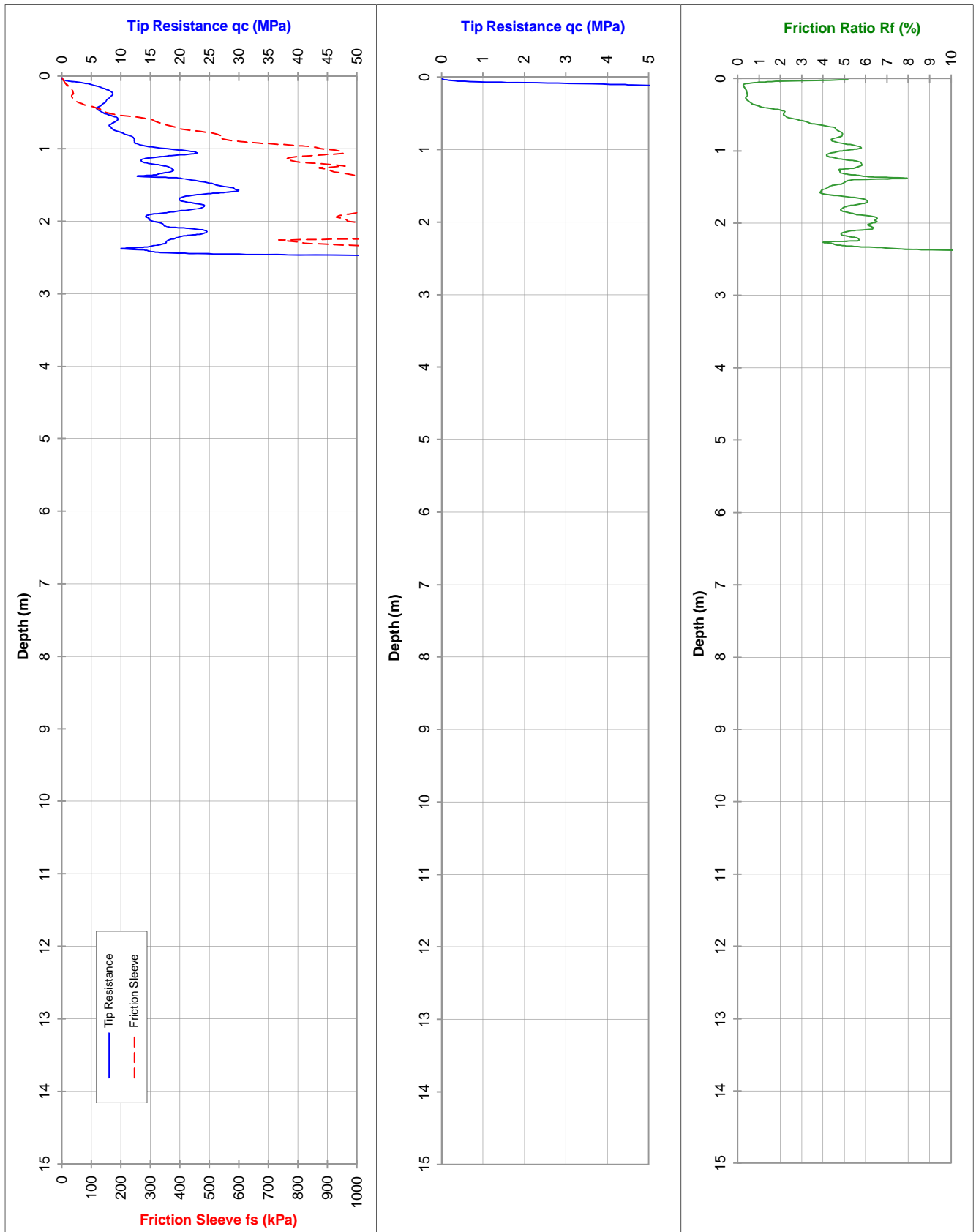
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 5

Job Number: 147645033

Co-ordinates: 462881E, 6468941N



Water (m): Dry to 2.35

Refusal: 70MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

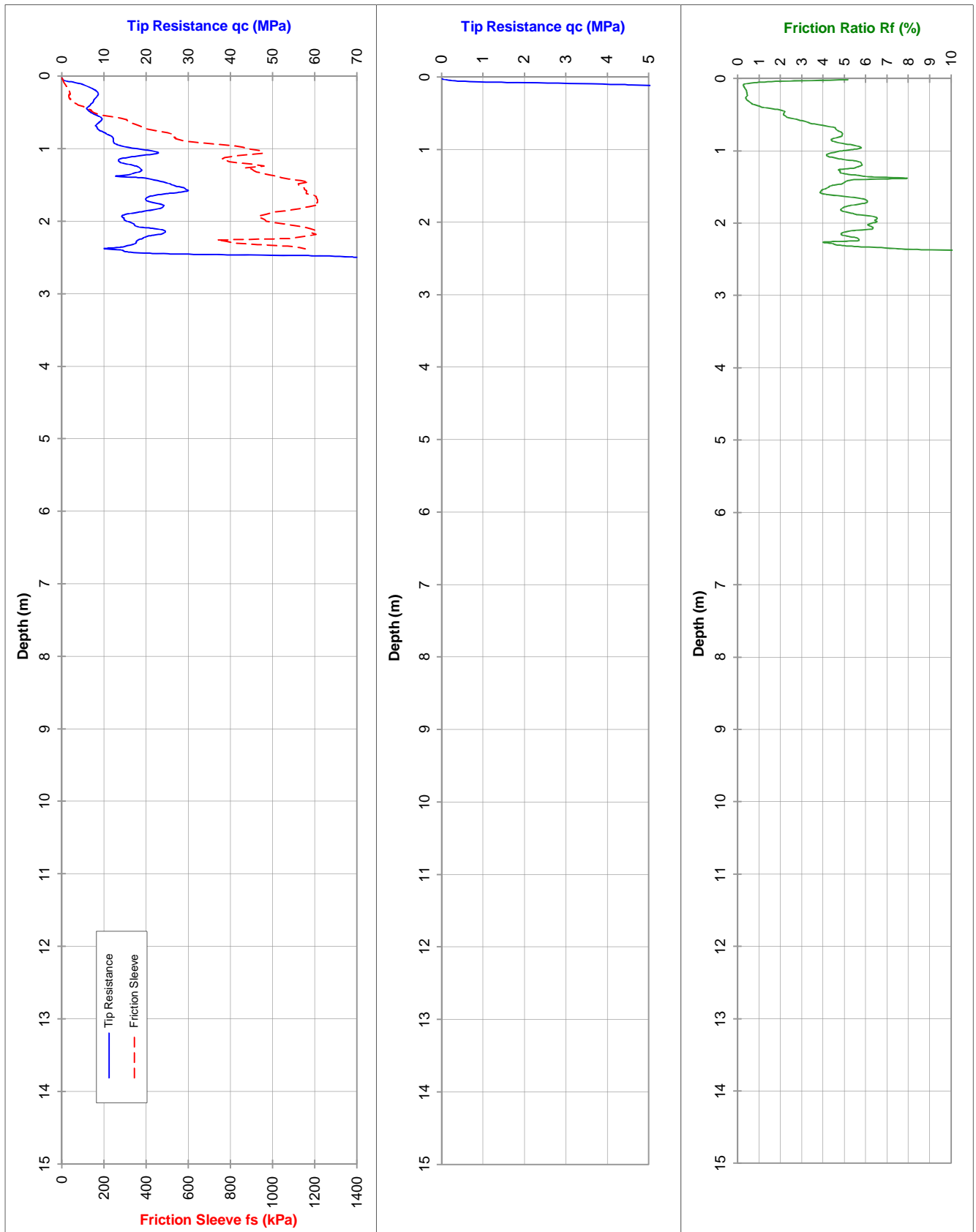
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 5

Job Number: 147645033

Co-ordinates: 462881E, 6468941N



Water (m): Dry to 2.35

Refusal: 70MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

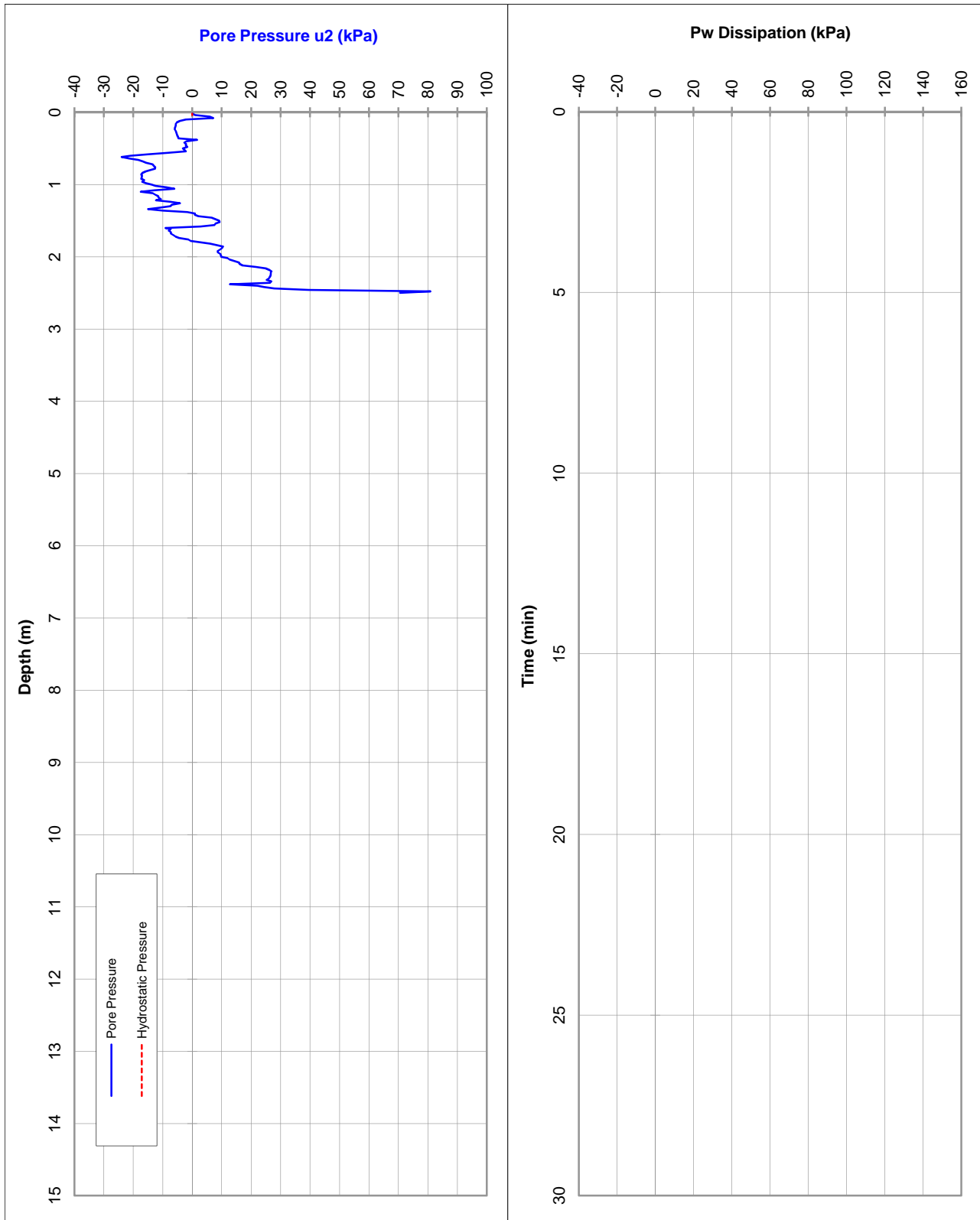
Project: Allawuna Farm

Probe No.: CPTU 5

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462881E, 6468941N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

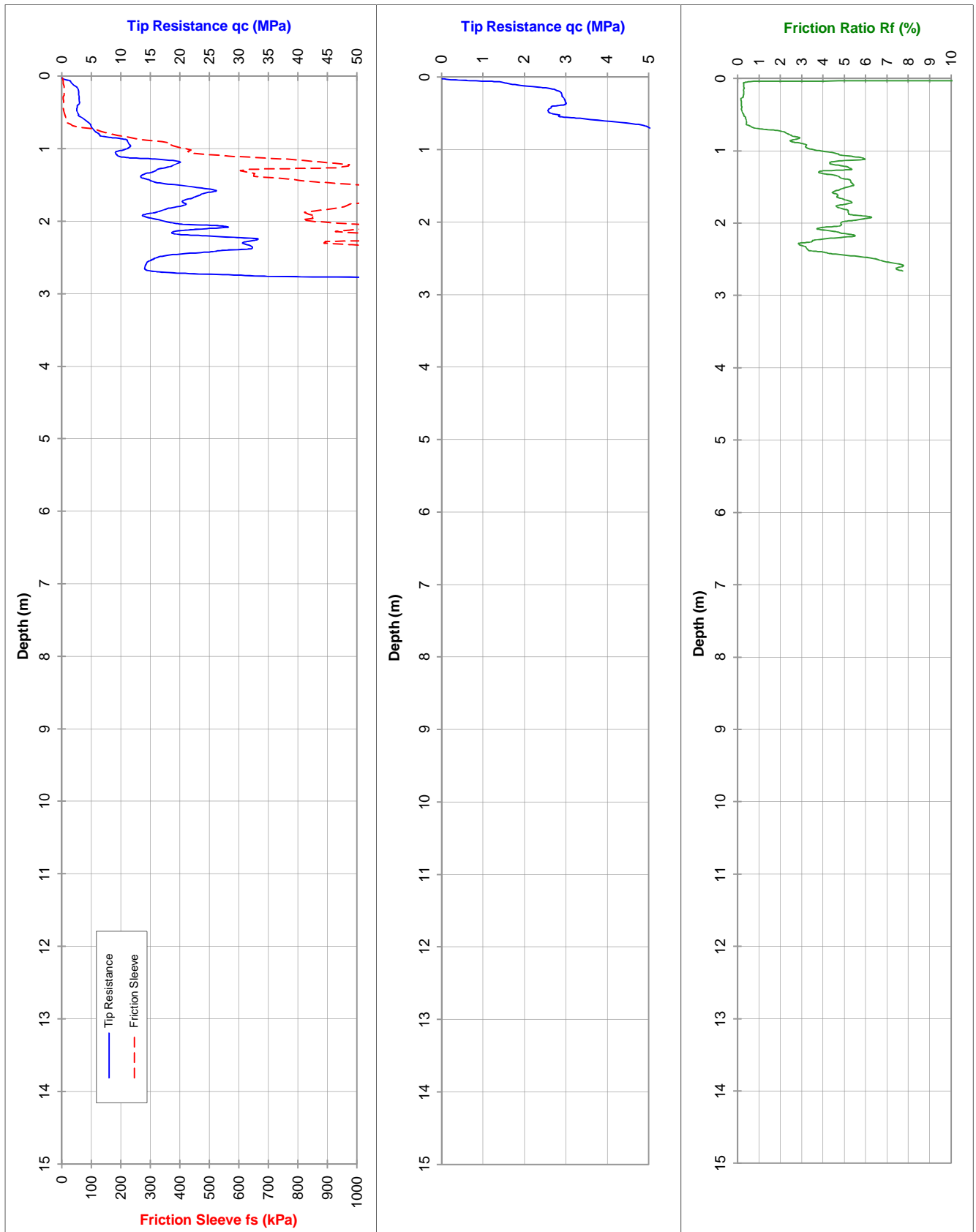
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 5.1

Job Number: 147645033

Co-ordinates: 462882E, 6468997N



Water (m): Dry to 2.70

Refusal: 65MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

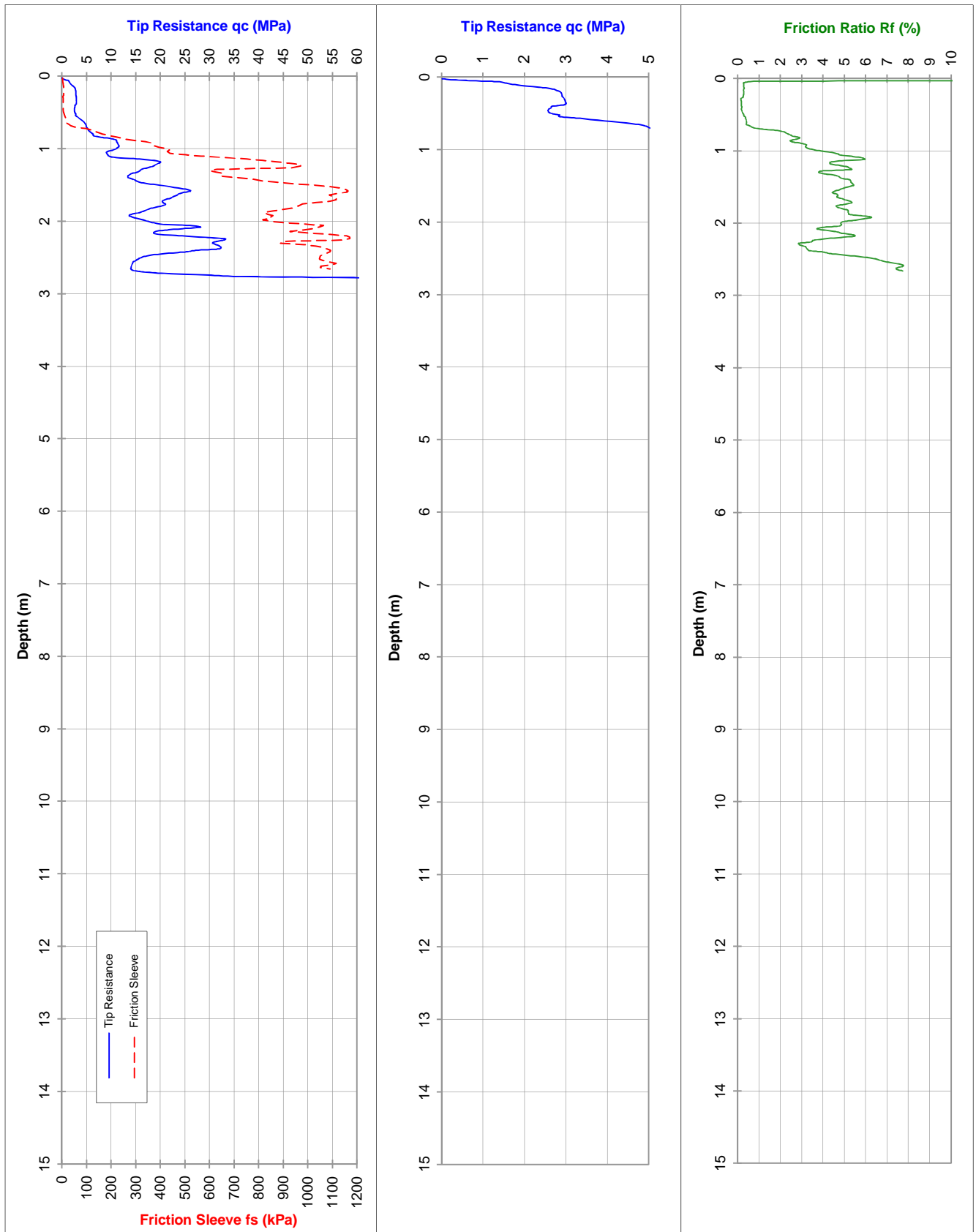
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 5.1

Job Number: 147645033

Co-ordinates: 462882E, 6468997N



Water (m): Dry to 2.70

Refusal: 65MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

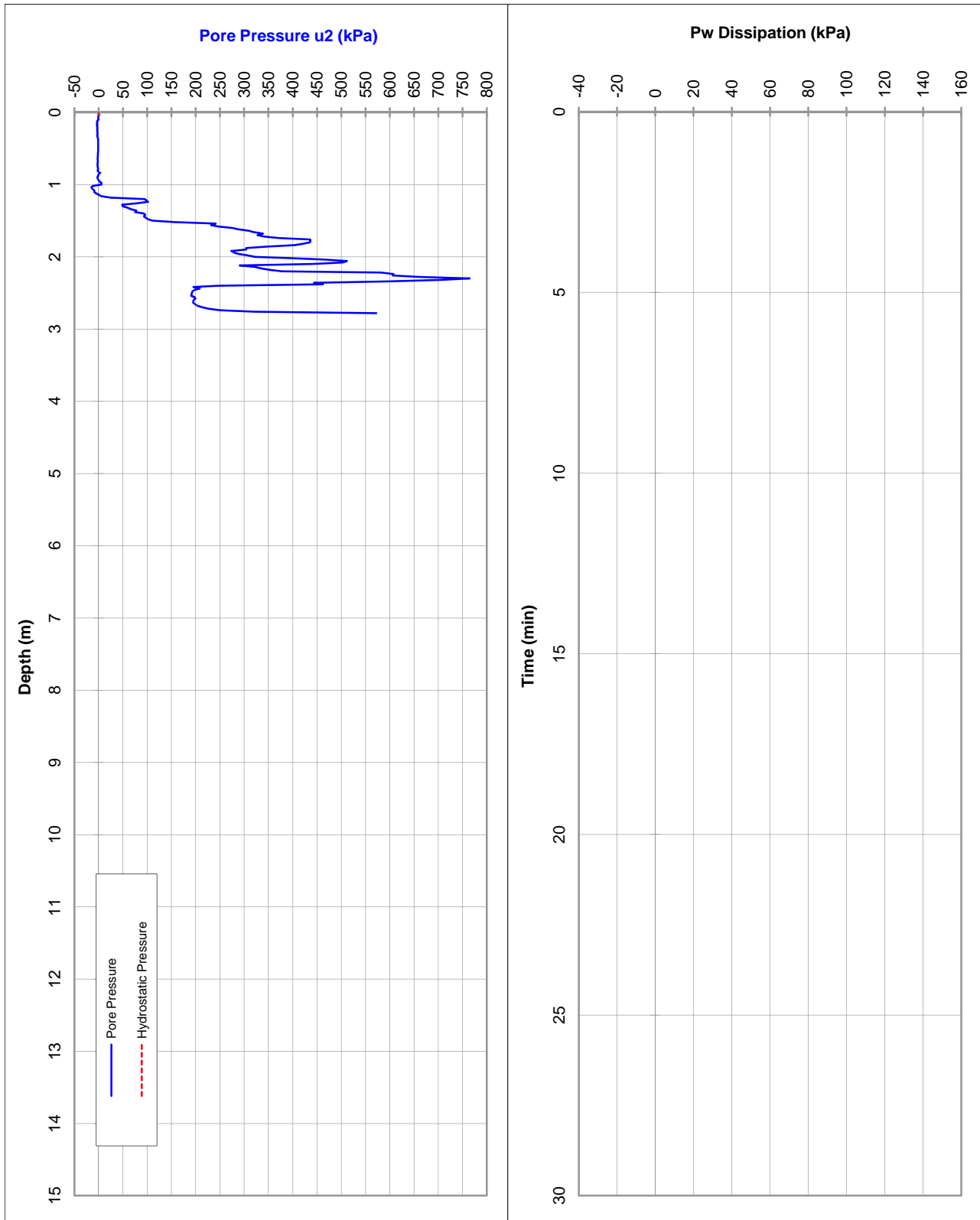
Project: Allawuna Farm

Probe No.: CPTU 5.1

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462882E, 6468997N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

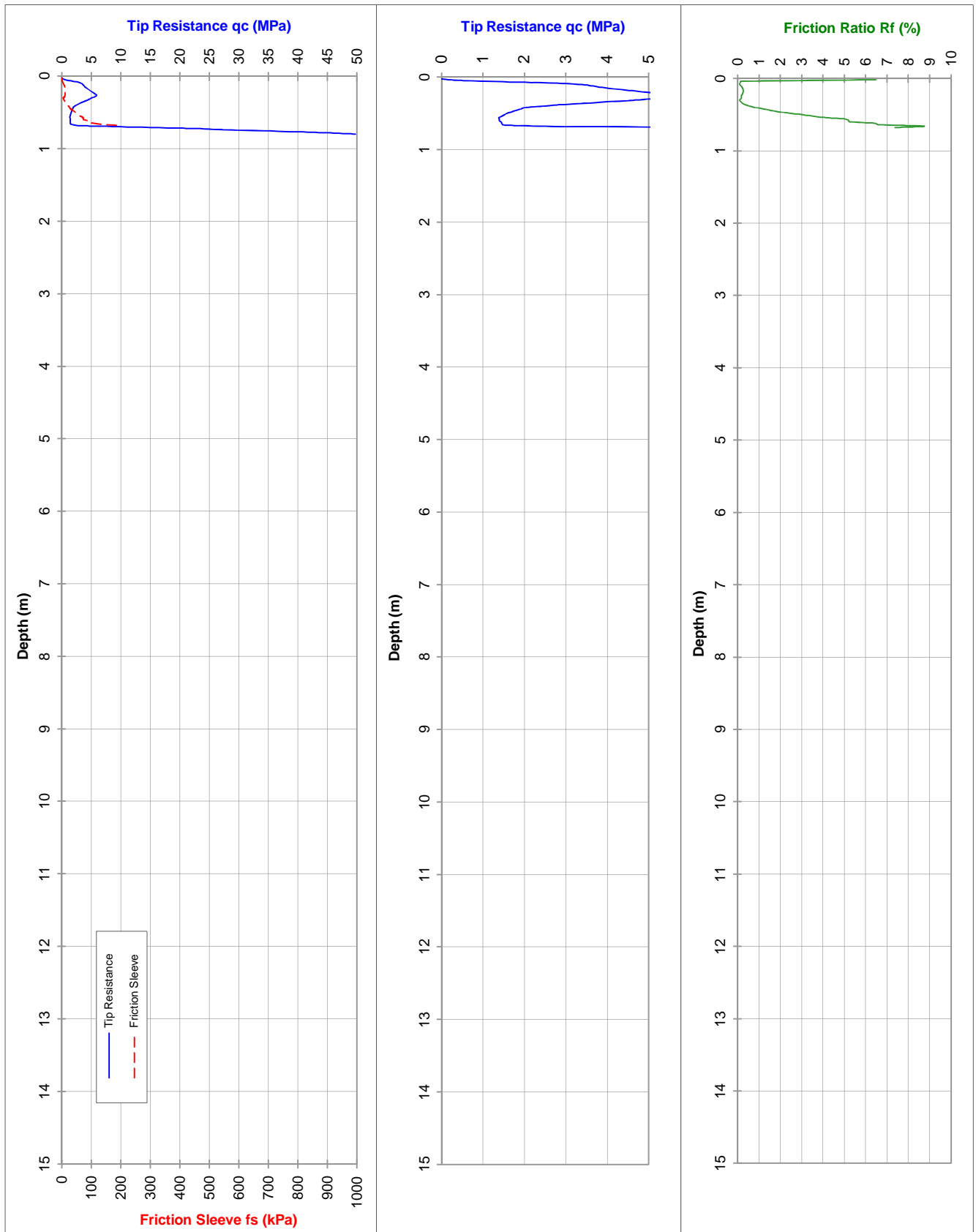
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 5.2

Job Number: 147645033

Co-ordinates: 462894E, 6469007N



Water (m): Dry to 0.70

Refusal: Inclination

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

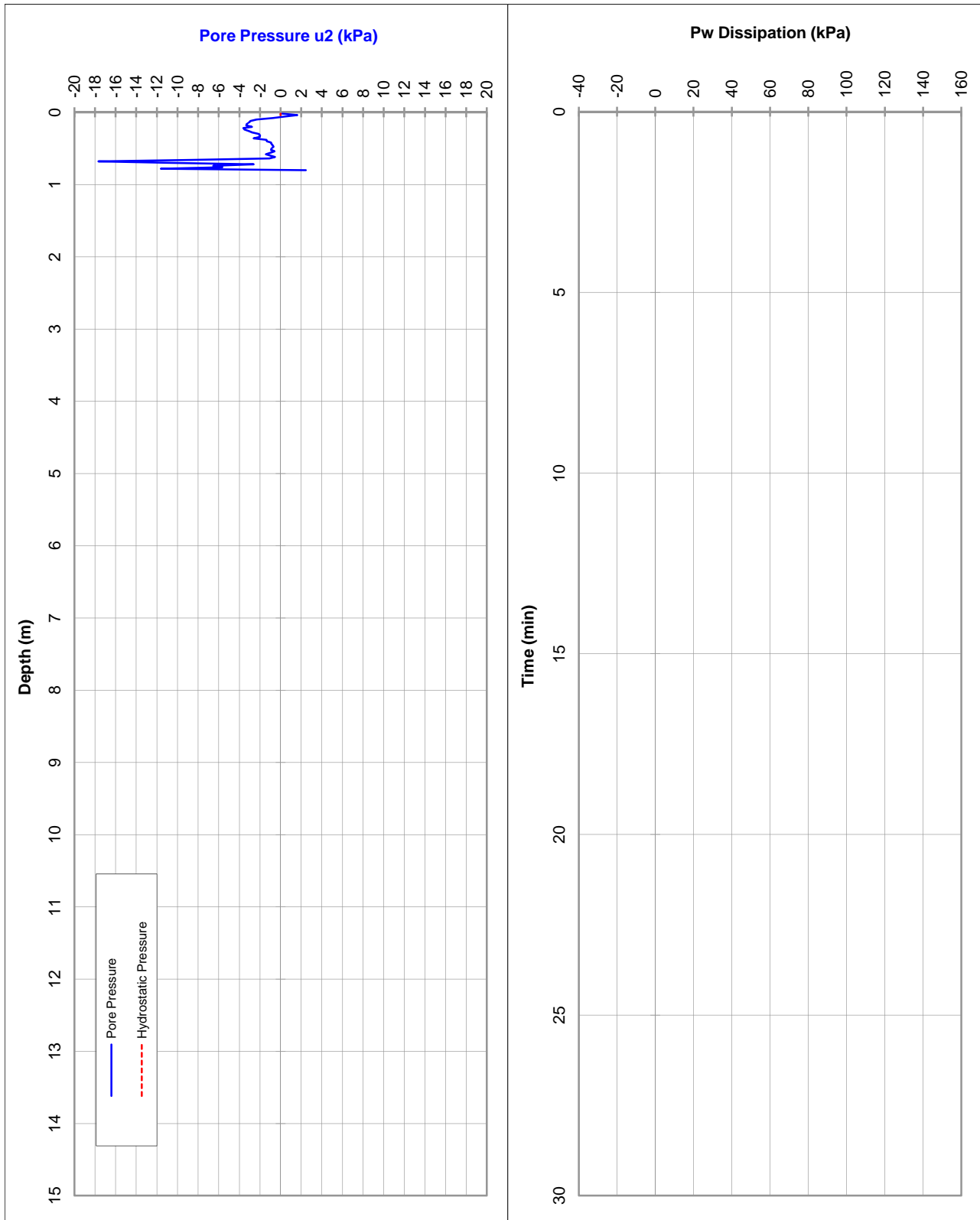
Project: Allawuna Farm

Probe No.: CPTU 5.2

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462894E, 6469007N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

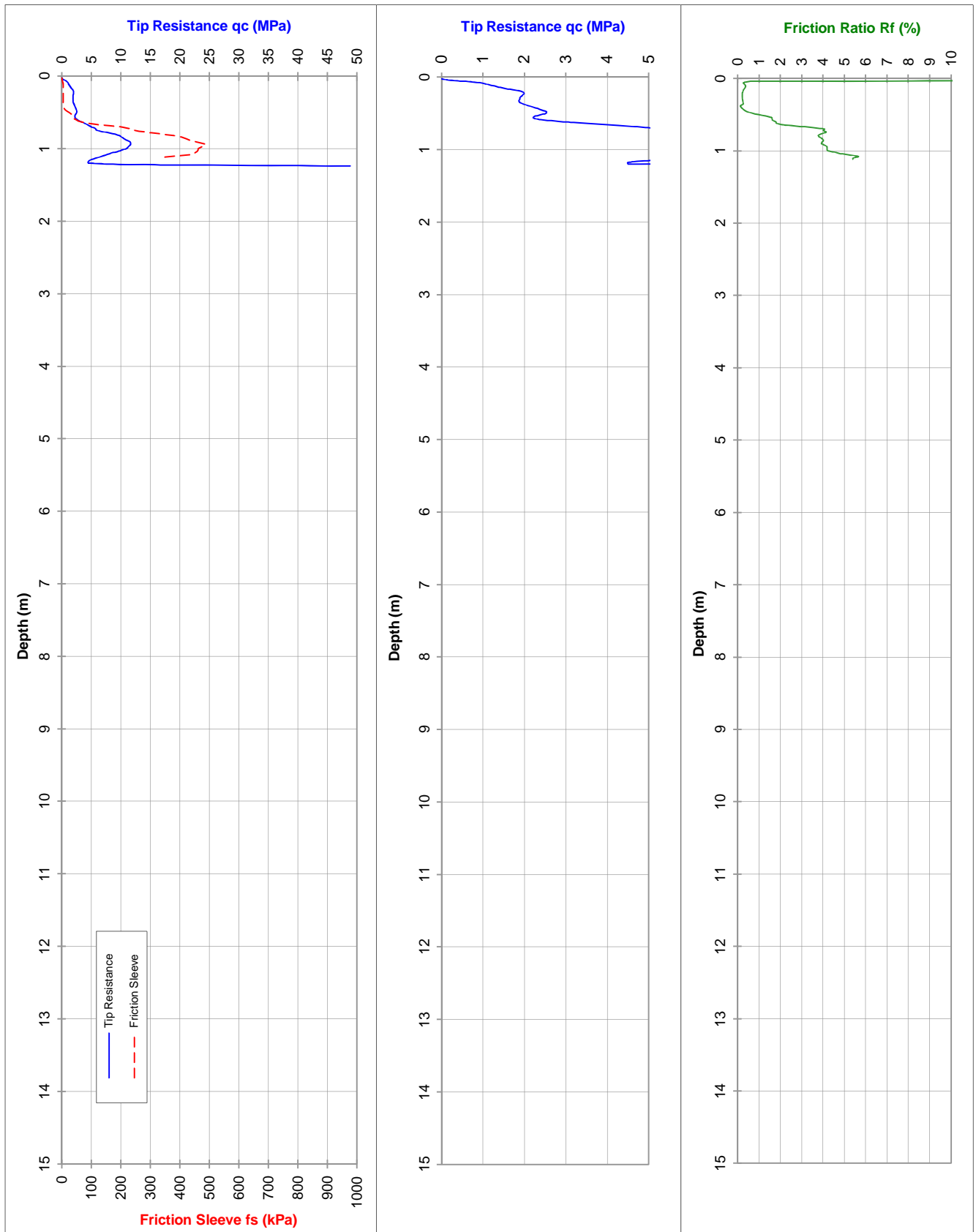
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 5.3

Job Number: 147645033

Co-ordinates: 462889E, 6469115N



Water (m): Dry to 1.15

Refusal: 65MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

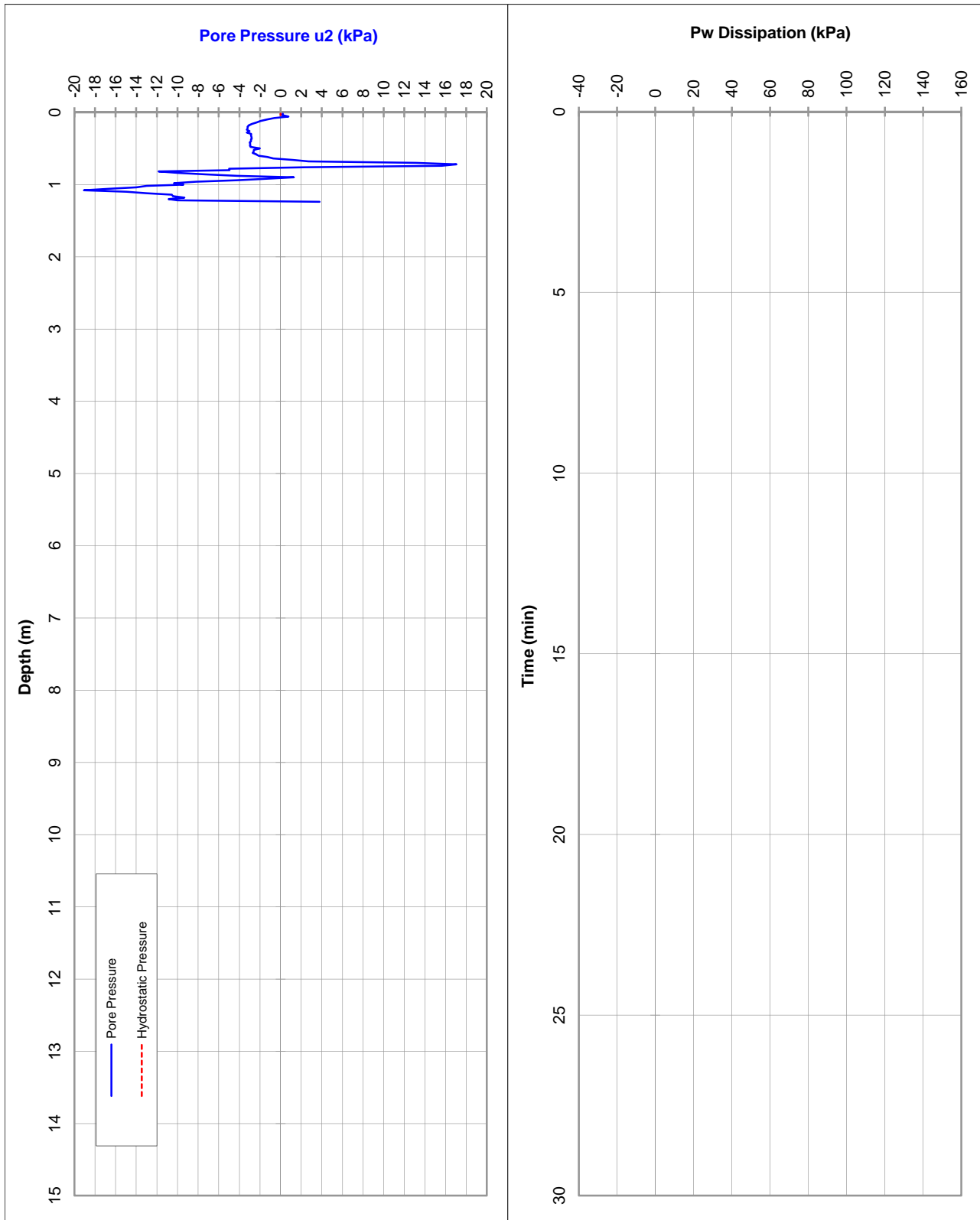
Project: Allawuna Farm

Probe No.: CPTU 5.3

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462889E, 6469115N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

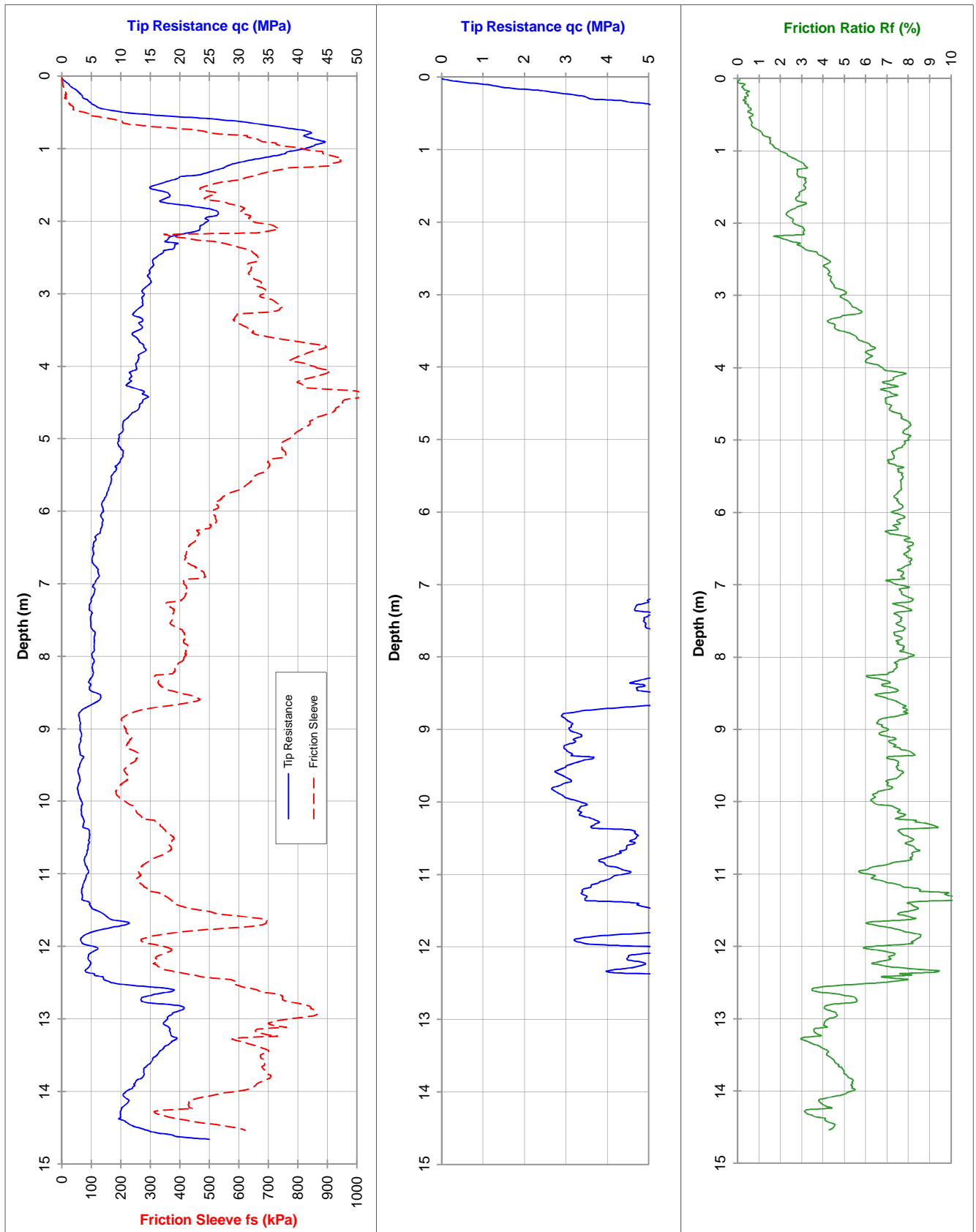
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 6

Job Number: 147645033

Co-ordinates: 462541E, 6469320N



Water (m): Dry to 4.30

Refusal: 25MPa + No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

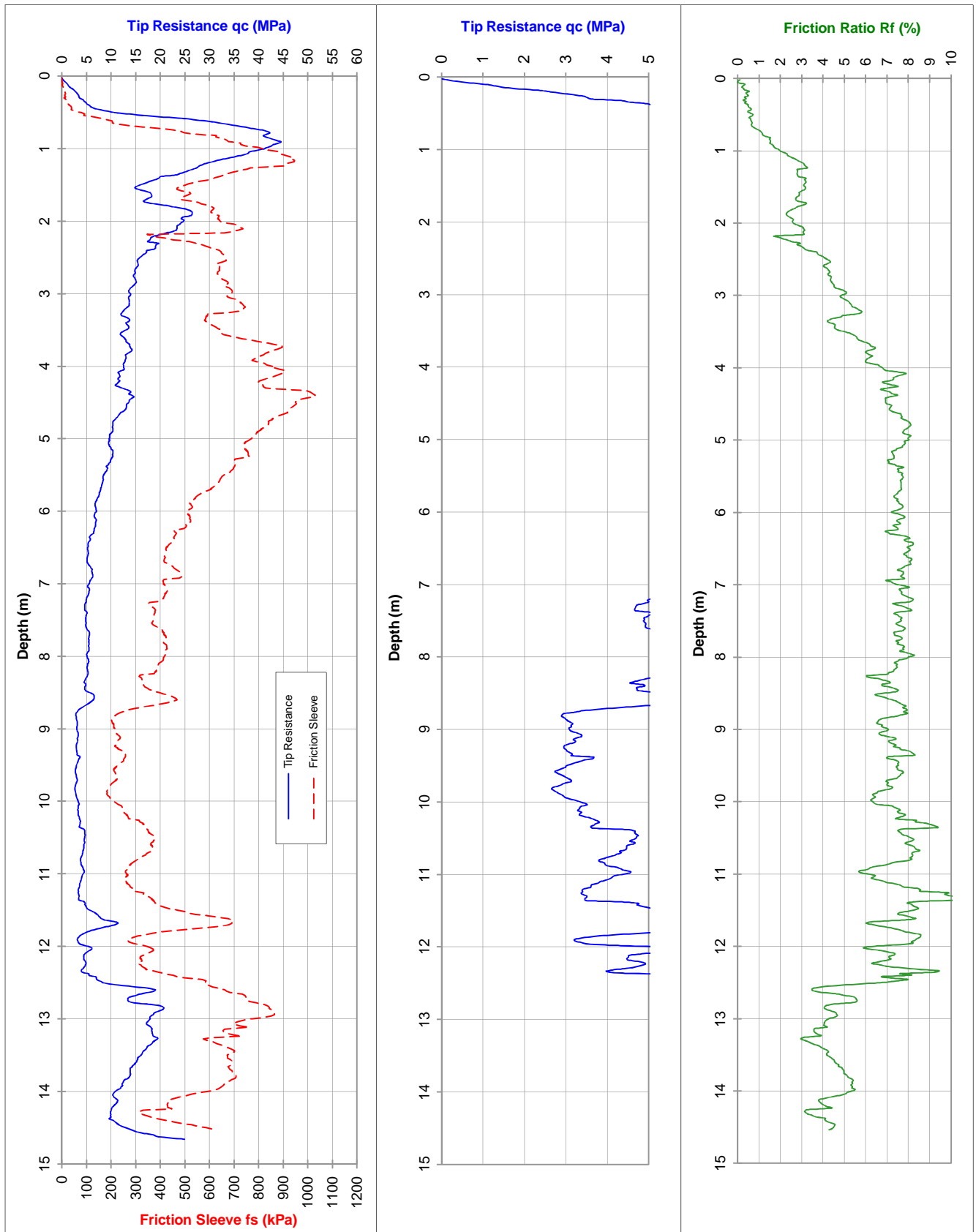
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 6

Job Number: 147645033

Co-ordinates: 462541E, 6469320N



Water (m): Dry to 4.30

Refusal: 25MPa + No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

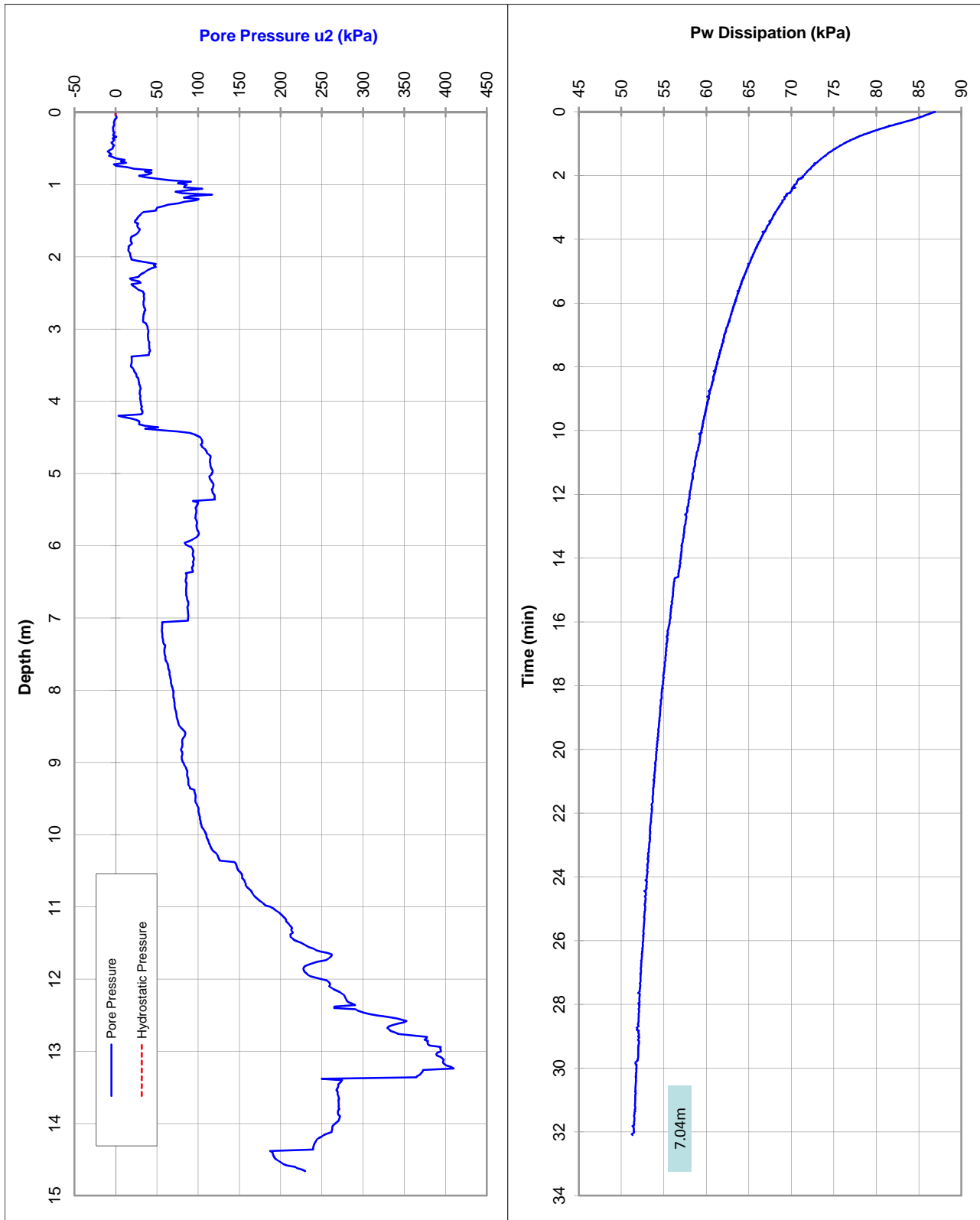
Project: Allawuna Farm

Probe No.: CPTU 6

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462541E, 6469320N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

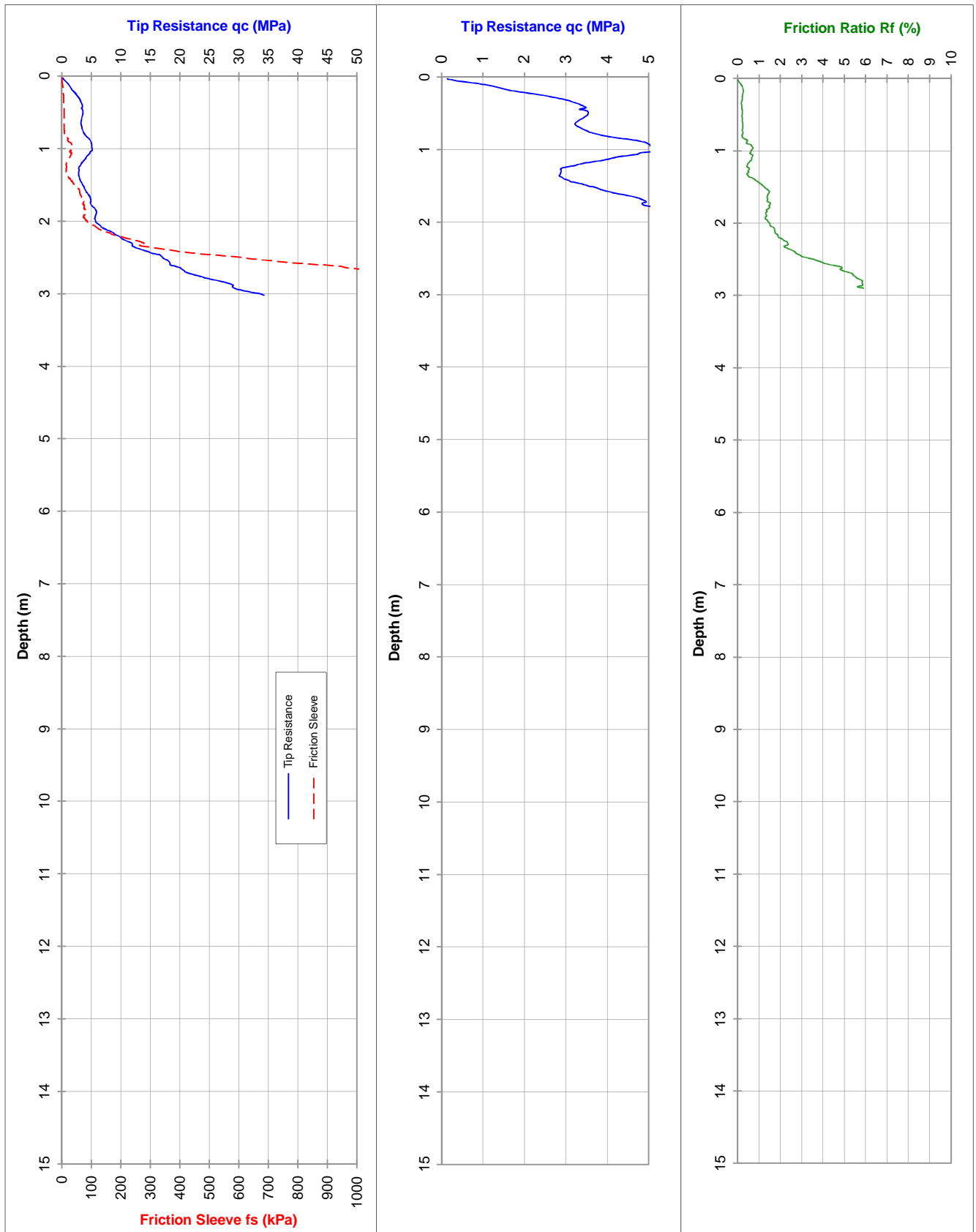
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 6.1

Job Number: 147645033

Co-ordinates: 462492E, 6469207N



Water (m): Dry to 2.70

Refusal: 35MPa + No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTF 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

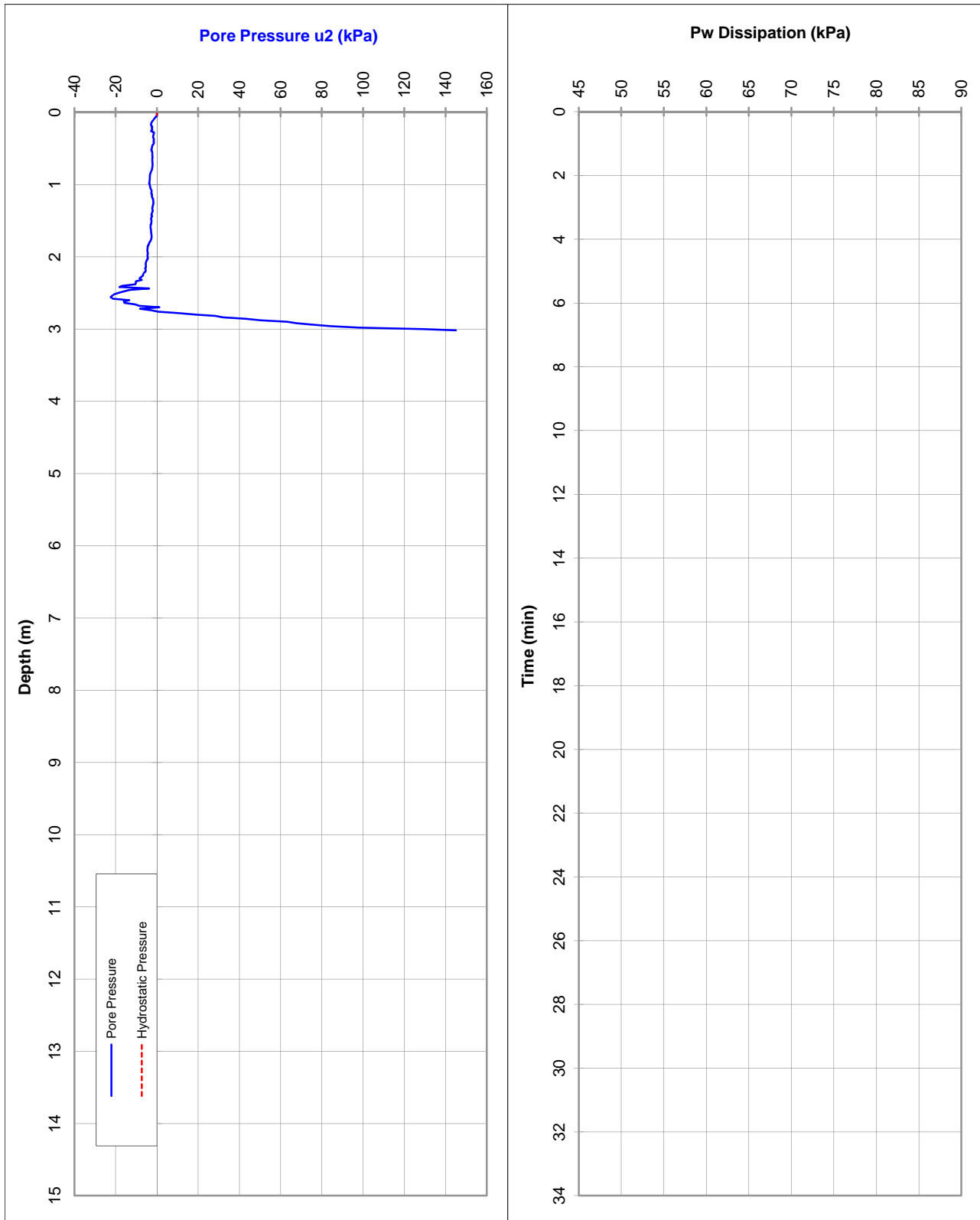
Project: Allawuna Farm

Probe No.: CPTU 6.1

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462492E, 6469207N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

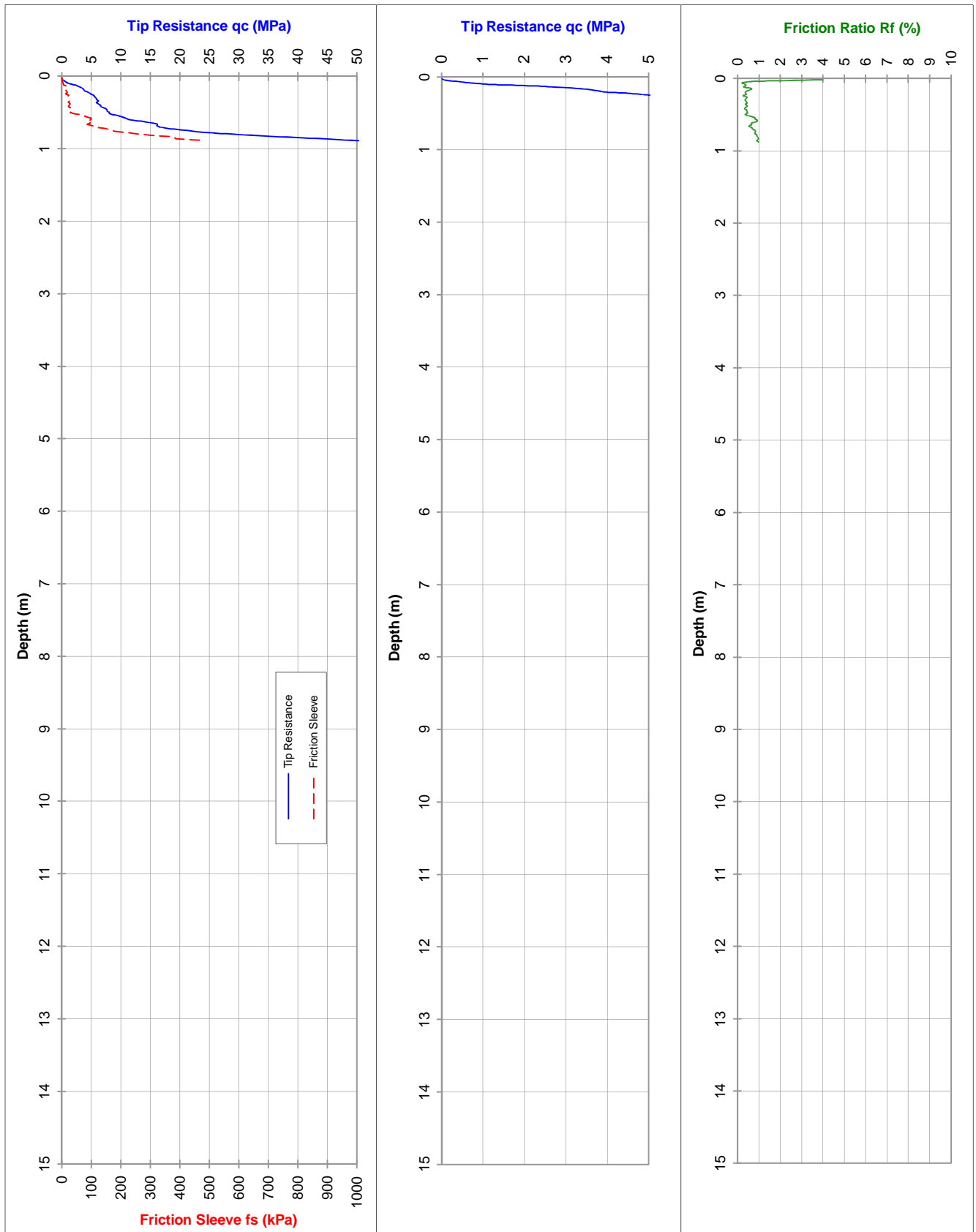
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 6.2

Job Number: 147645033

Co-ordinates: 462534E, 6469311N



Water (m): Dry to 0.9

Refusal: 85MPa

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTP 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

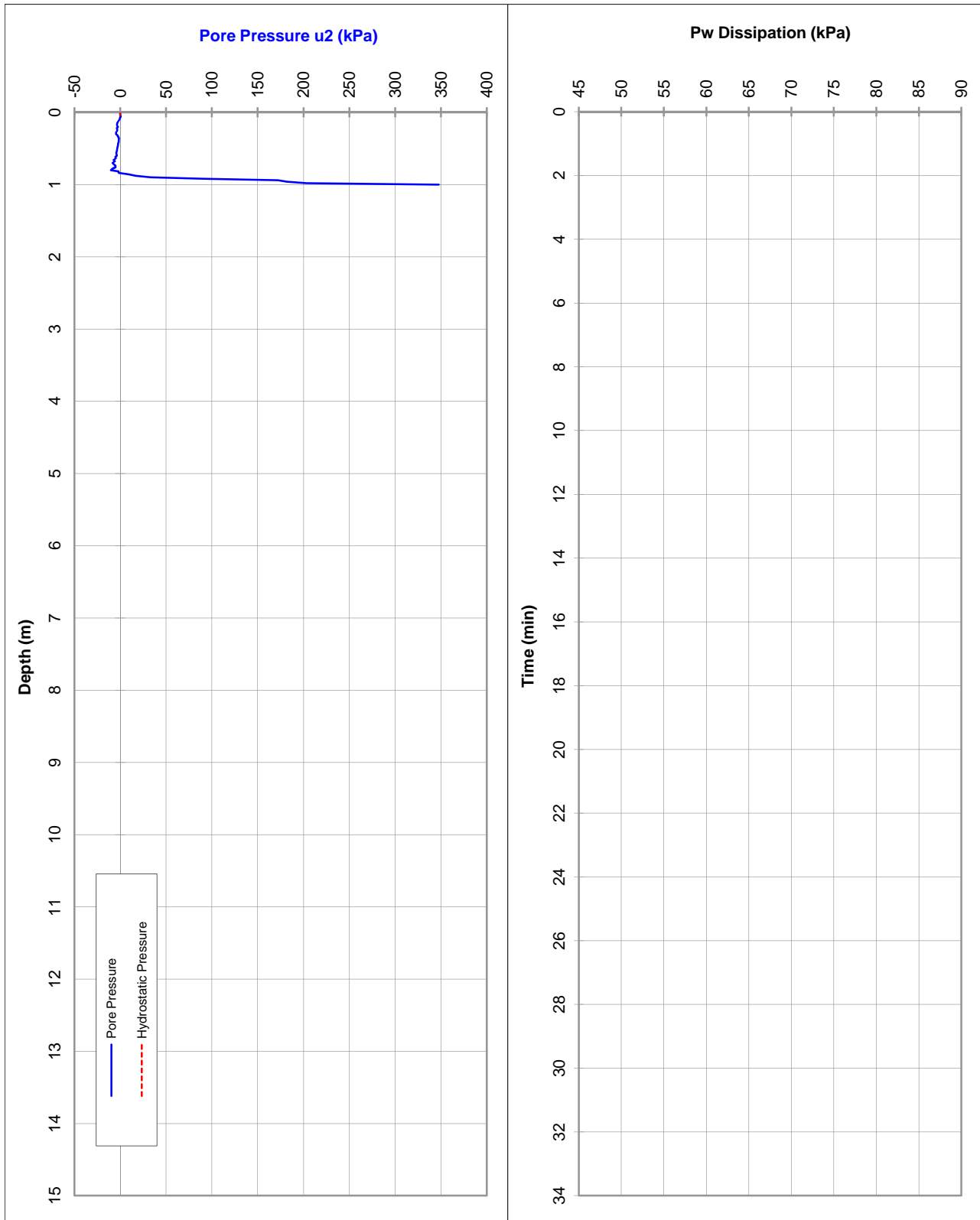
Project: Allawuna Farm

Probe No.: CPTU 6.2

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462534E, 6469311N



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: SITA

PROJECT: Allawuna Farm

LOCATION: York, W.A.

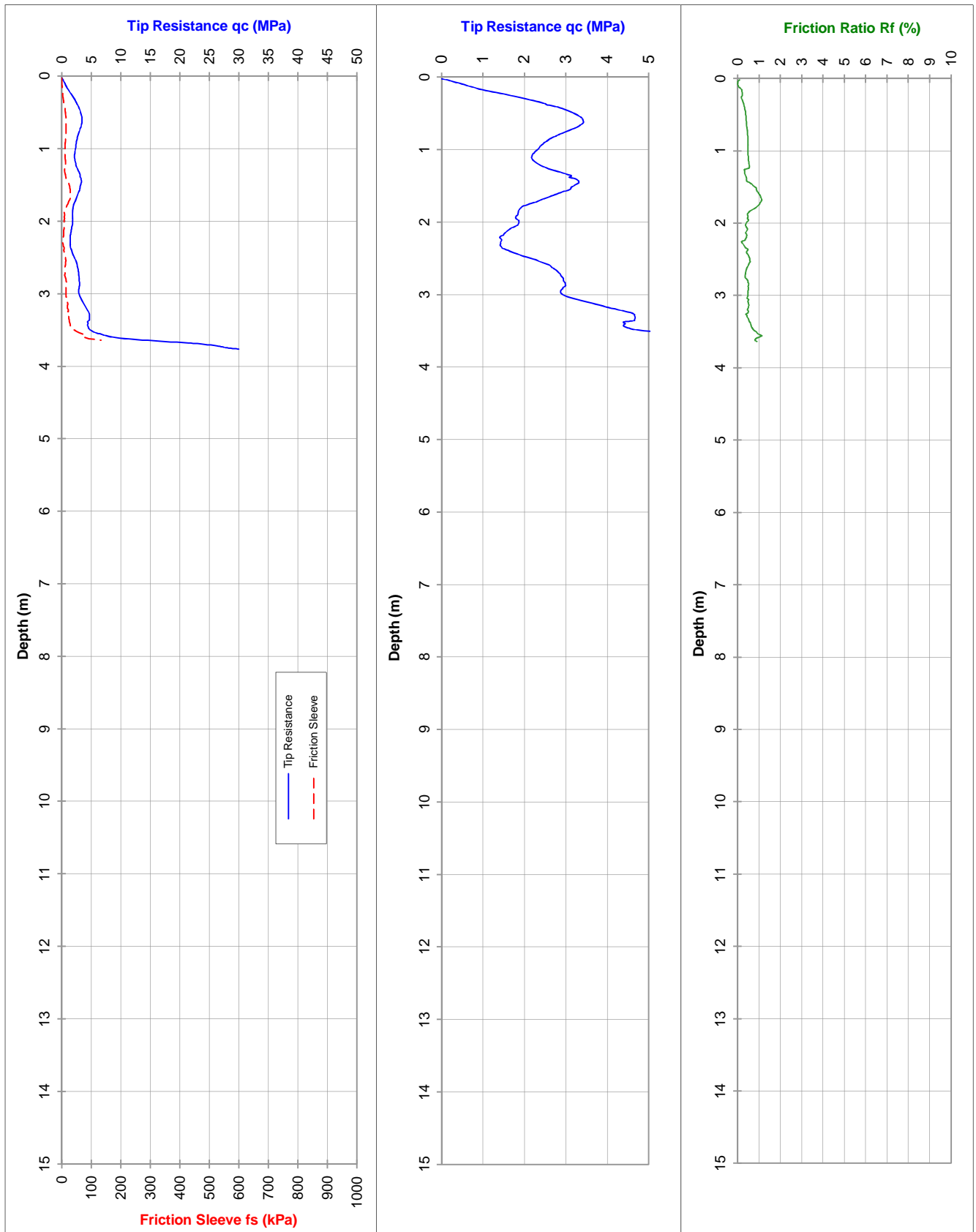
RL (m):

Date: Tuesday, 17 February 2015

Probe No.: CPTU 6.3

Job Number: 147645033

Co-ordinates: 462520E, 6469234N



Water (m): Dry to 2.25

Refusal: 30MPa + No Lateral Support

Tested in accordance with AS 1289.6.5.1 - 1999
and IRTP 2001 for friction reducer

ELECTRIC FRICTION-CONE PENETROMETER

Client: SITA

Date: Tuesday, 17 February 2015

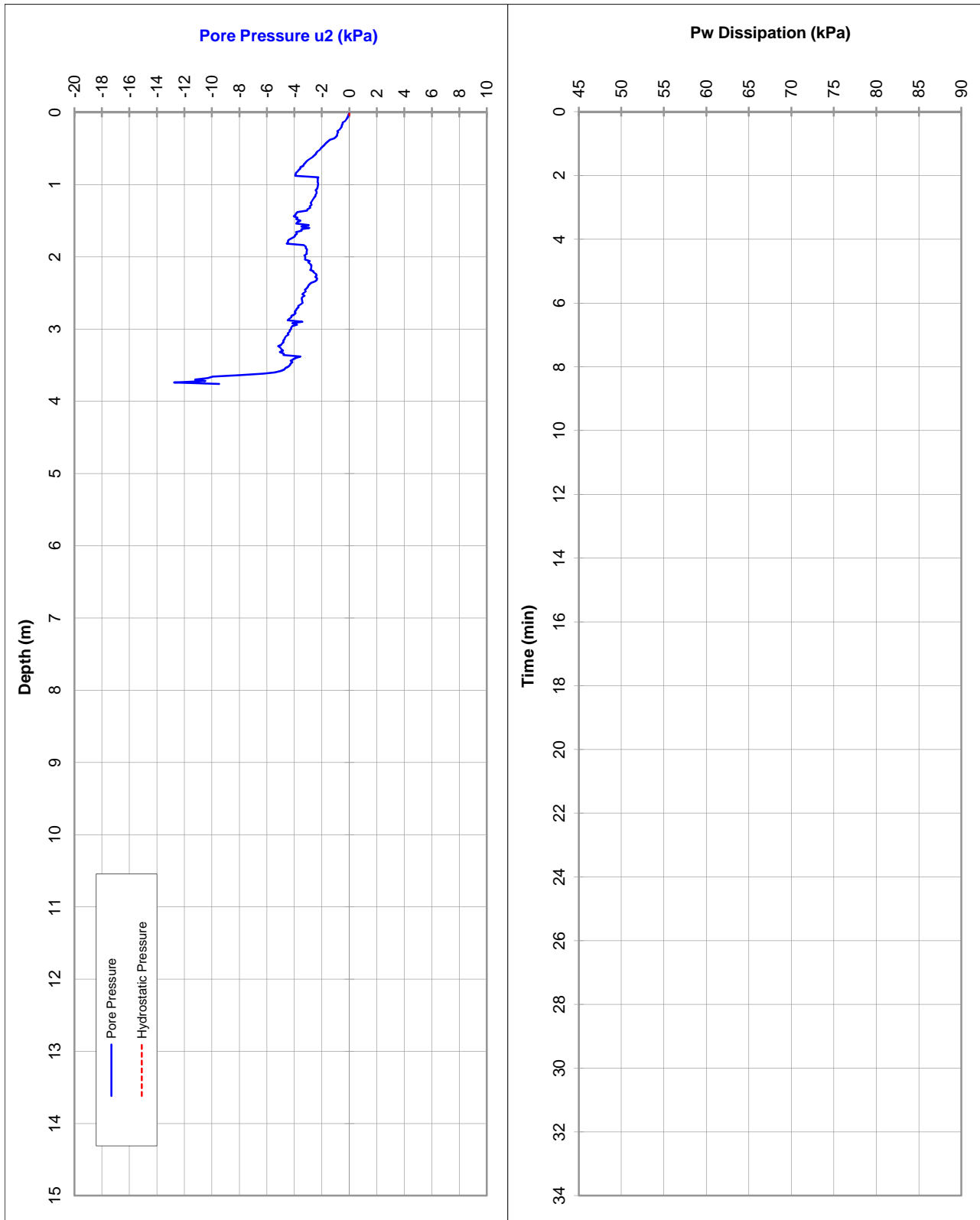
Project: Allawuna Farm

Probe No.: CPTU 6.3

Location: York, W.A.

Job Number: 147645033

Co-ordinates: 462520E, 6469234N





APPENDIX D

Test Pits – Summary



APPENDIX D

Test Pit Summary

Name	Easting (m)	Northing (m)	Depth Excavation	Refusal	Groundwater
TP1	462257	6469303	4.0	No	No
TP2	462555	6469346	4.0	No	No
TP3	462774	6469452	4.0	No	No
TP4	462900	6469588	3.7	No	No
TP5	462994	6469420	3.0	Yes	No
TP6	462749	6469255	4.0	Yes	No
TP7	462460	6469145	4.0	No	No
TP8	462234	6469167	3.0	Yes	No
TP9	462369	6469073	1.5	Yes	No
TP10	462642	6469116	4.0	No	No
TP11	462810	6469077	1.8	Yes	Yes
TP12	462889	6469114	1.4	Yes	Yes
TP13	463095	6469206	1.5	Yes	Yes
TP14	462532	6468982	2.8	Yes	No
TP15	462742	6468960	4.0	No	Yes
TP16	462599	6468918	4.0	No	Yes
TP17	462461	6468894	3.8	Yes	No
TP18	462344	6468807	2.9	Yes	No
TP19	462541	6468844	4.0	No	Yes
TP20	462725	6468874	3.8	No	Yes
TP21	462881	6468940	3.2	Yes	Yes
TP22	463230	6468999	1.9	Yes	No
TP23	463180	6468909	0.8	Yes	Yes
TP24	463044	6468802	2.9	Yes	No
TP25	462755	6468785	3.6	Yes	No
TP26	462431	6468685	1.8	Yes	Yes
TP27	462470	6468591	2.4	Yes	No
TP28	462350	6469090	0.7	Yes	No
TP29	462764	6469075	1.3	Yes	Yes
TP30	462631	6468894	4.0	No	Yes
TP31	462963	6469073	1.6	Yes	Yes
TP32	462987	6469267	2.0	Yes	Yes
TP83	462424	6469384	5.1	No	No
TP84	462548	6469464	5.2	No	No
TP85	462664	6469559	4.9	No	No
TP86	462790	6469647	6.0	No	No
TP87	462932	6469645	4.2	No	No
TP88	463017	6469535	4.2	No	No
TP89	462920	6469466	2.6	Yes	No
TP90	462778	6469528	5.6	No	No
TP91	462649	6469452	4.2	No	No
TP92	462813	6469390	4.4	No	No



APPENDIX D

Test Pit Summary

Name	Easting (m)	Northing (m)	Depth Excavation	Refusal	Groundwater
TP93	462674	6469343	4.2	No	No
TP94	462514	6469262	4.2	No	No
TP95	462376	6469194	4.2	No	No
TP96	462261	6469071	2.2	Yes	No
TP97	462348	6468950	4.3	No	No
TP98	462482	6469051	4.1	No	No
TP99	462610	6469196	4.9	No	No
TP100	462879	6469339	2.5	Yes	No
TP101	463107	6469414	4.2	Yes	Yes
TP102	463096	6469307	2.8	Yes	Yes
TP103	462880	6469214	2.2	Yes	Yes
TP104	462766	6469168	4.3	No	Yes
TP105	462666	6469002	3.2	Yes	No
TP106	462659	6468808	2.1	Yes	No
TP107	462594	6468708	2.5	Yes	No
TP108	462750	6468682	2.9	Yes	No
TP109	463007	6468975	2.1	Yes	No
TP110	463071	6469099	1.8	Yes	No
TP111	463173	6469106	2.6	Yes	Yes
TP112	463215	6469259	3.3	Yes	No
TP113	463331	6469108	3.1	Yes	Yes
TP114	463110	6468980	2.1	Yes	No
TP115	462942	6468873	2.0	Yes	No
TP116	462868	6468771	3.6	Yes	No
TP117	462934	6468685	4.1	No	No
TP118	463152	6468792	1.6	Yes	No
TP119	463322	6468914	1.0	Yes	No
BA01	462806	6469851	3.60	Yes	No
BA02	462702	6469755	4.80	No	No
BA03	462600	6469717	5.00	No	No
BA04	462494	6469671	4.80	No	No
BA05	462390	6469611	5.00	No	No
BA06	462286	6469552	4.80	No	No
BA07	462841	6469790	3.90	Yes	No
BA08	462737	6469705	5.00	No	No
BA09	462633	6469670	4.80	No	No
BA10	462529	6469611	4.80	No	No
BA11	462425	6469551	5.00	No	No
BA12	462321	6469491	4.80	No	No
BA13	462876	6469729	5.00	No	No
BA14	462564	6469550	5.00	No	No
BA15	462460	6469490	4.80	No	No



APPENDIX D

Test Pit Summary

Name	Easting (m)	Northing (m)	Depth Excavation	Refusal	Groundwater
BA16	462356	6469430	4.90	No	No
BA17	461931	6469935	5.00	No	No
BA18	462024	6469985	5.00	No	No
BA19	462129	6470018	5.00	No	No
BA20	462239	6470020	5.00	No	No
BA21	462340	6470018	2.80	Yes	No
BA22	462443	6470019	2.80	Yes	No
BA23	461973	6469862	4.20	Yes	No
BA24	462070	6469925	5.00	No	No
BA25	462210	6469948	5.00	No	No
BA26	462332	6469946	3.00	Yes	No
BA27	462445	6469942	3.00	Yes	No
BA28	462009	6469792	3.90	Yes	No
BA29	462097	6469866	5.00	No	No
BA30	462207	6469888	5.00	No	No
BA31	462329	6469882	5.00	No	No
BA32	462442	6469860	4.20	Yes	No
BA33	463564	6468822	3.20	Yes	No
BA34	463639	6468818	2.60	Yes	No
BA35	462934	6468528	5.00	No	No
BA36	462934	6468606	5.00	No	No
BA37	463010	6468690	5.20	No	No
BA38	463015	6468610	5.00	No	No
BA39	463020	6468535	5.00	No	No
BA40	463094	6468542	5.00	No	No
BA41	463090	6468620	4.20	Yes	No
BA42	463100	6468700	2.80	Yes	No
BA43	463180	6468700	2.80	Yes	No
BA44	463180	6468620	3.00	Yes	No
BA45	463190	6468542	3.10	Yes	No



APPENDIX E

Test Pits – Logging



METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT REPORTS



FILL



GRAVEL (GP or GW)



SAND (SP or SW)



SILT (ML or MH)



CLAY (CL, CI or CH)



ORGANIC SOILS (OL or OH or Pt)



COBBLES or BOULDERS

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

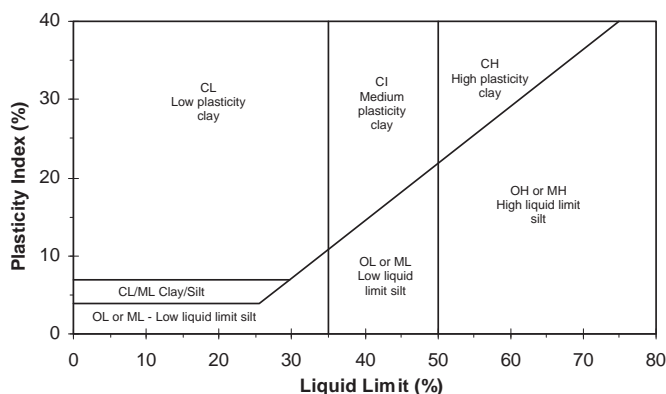
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726 – 1993, (Amdt1 – 1994 and Amdt2 – 1994), Appendix A. The material properties are assessed in the field by visual/tactile methods.

Particle Size

Major Division	Sub Division	Particle Size
BOULDERS		> 200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	20 to 63 mm
	Medium	6.0 to 20 mm
	Fine	2.0 to 6.0 mm
SAND	Coarse	0.6 to 2.0 mm
	Medium	0.2 to 0.6 mm
	Fine	0.075 to 0.2 mm
SILT		0.002 to 0.075 mm
CLAY		< 0.002 mm

Plasticity Properties



MOISTURE CONDITION

AS1726 - 1993

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays & Silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in the dry condition & may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sands and gravels tend to cohere.

CONSISTENCY AND DENSITY

AS1726 - 1993

Symbol	Term	Undrained Shear Strength	Symbol	Term	Density Index %	SPT "N" #
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15	0 to 4
S	Soft	12 to 25 kPa	L	Loose	15 to 35	4 to 10
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65	10 to 30
St	Stiff	50 to 100 kPa	D	Dense	65 to 85	30 to 50
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85	Above 50
H	Hard	Above 200 kPa				

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

SPT correlations are not stated in AS1726 – 1993, and may be subject to corrections for overburden pressure and equipment type.

EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT REPORTS

DRILLING/EXCAVATION METHOD

AS*	Auger Screwing	RD	Rotary blade or drag bit	NQ	Diamond Core - 47 mm
AD*	Auger Drilling	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
*V	V-Bit	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
*T	TC-Bit, e.g. ADT	RC	Reverse Circulation	HMLC	Diamond Core - 63mm
HA	Hand Auger	PT	Push Tube	BH	Tractor Mounted Backhoe
ADH	Hollow Auger	CT	Cable Tool Rig	EX	Tracked Hydraulic Excavator
DTC	Diatube Coring	JET	Jetting	EE	Existing Excavation
WB	Washbore or Bailer	NDD	Non-destructive digging	HAND	Excavated by Hand Methods

PENETRATION/EXCAVATION RESISTANCE

- L Low resistance.** Rapid penetration possible with little effort from the equipment used.
- M Medium resistance.** Excavation/possible at an acceptable rate with moderate effort from the equipment used.
- H High resistance** to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.
- R Refusal or Practical Refusal.** No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER



Water level at date shown



Partial water loss



Water inflow



Complete water loss

GROUNDWATER NOT
OBSERVED

The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.

GROUNDWATER NOT
ENCOUNTERED

The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating
30/80mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (s_v = peak value, s_r = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure tests
DCP	Dynamic cone penetration test
CPT	Static cone penetration test
CPT _u	Static cone penetration test with pore pressure (u) measurement

Ranking of Visually Observable Contamination and Odour (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)

SCR = Solid Core Recovery (%)

RQD = Rock Quality Designation (%)

$$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$$

$$= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$$

$$= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$$

TERMS FOR ROCK MATERIAL STRENGTH & WEATHERING AND ABBREVIATIONS FOR DEFECT DESCRIPTIONS

STRENGTH

Symbol	Term	Point Load Index, $I_s(50)$ (MPa)	Field Guide
EL	Extremely Low	< 0.03	Easily remoulded by hand to a material with soil properties.
VL	Very Low	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	0.1 to 0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	0.3 to 1	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	1 to 3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK STRENGTH TEST RESULTS

▼	Point Load Strength Index, $I_s(50)$, Axial test (MPa)
◀	Point Load Strength Index, $I_s(50)$, Diametral test (MPa)
Relationship between $I_s(50)$ and UCS (unconfined compressive strength) will vary with rock type and strength, and should be determined on a site-specific basis. UCS is typically 10 to 30 x $I_s(50)$, but can be as low as 5.	

ROCK MATERIAL WEATHERING

Symbol	Term	Field Guide
RS	Residual Soil	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
EW	Extremely Weathered	Rock is weathered to such an extent that it has soil properties - i.e. it either disintegrates or can be remoulded, in water.
DW	HW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores. In some environments it is convenient to subdivide into Highly Weathered and Moderately Weathered, with the degree of alteration typically less for MW.
	MW	
SW	Slightly Weathered	Rock is slightly discoloured but shows little or no change of strength relative to fresh rock.
FR	Fresh	Rock shows no sign of decomposition or staining.

ABBREVIATIONS FOR DEFECT TYPES AND DESCRIPTIONS

Defect Type	Coating or Infilling	Roughness
B Bedding parting	Cn Clean	Sl Slickensided
X Foliation	Sn Stain	Sm Smooth
C Contact	Vr Veneer	Ro Rough
L Cleavage	Ct Coating or Infill	
J Joint	Planarity	
SS/SZ Sheared seam/zone (Fault)	Pl Planar	Vertical Boreholes – The dip (inclination from horizontal) of the defect is given. Inclined Boreholes – The inclination is measured as the acute angle to the core axis.
CS/CZ Crushed seam/zone (Fault)	Un Undulating	
DS/DZ Decomposed seam/zone	St Stepped	
IS/IZ Infilled seam/zone		
S Schistosity		
V Vein		



APPENDIX E

Test Pits Logging

Test Pit Investigation 25-27 August 2014


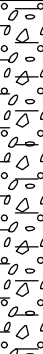


REPORT OF TEST PIT: TP1

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462257 m E 6469303 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					GC	TOPSOIL	M	L	Density inferred from observations
			0.30	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.								
EX	L-M		0.5					SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M	St - VSt	
			1.50									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0	4.00					TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m			
			4.5									
			5.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3



REPORT OF TEST PIT: TP2

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462555 m E 6469346 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	M	L	Density inferred from observations
			0.20					GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.			
			0.5									
			1.0									
			1.20					GC	Clayey GRAVEL fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.			
	M-H		1.40					SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M	St - VSt	
			1.5									
			2.0									
			2.5	BDS 2.50-3.00 m Rec = 500/500 mm 3 bags								
			3.0									
	L-M	4.0	4.00				TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m					
		4.5										
		5.0										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP2

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462555 m E 6469346 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



1.



2.

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REPORT OF TEST PIT: TP3

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462774 m E 6469452 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0				GC	TOPSOIL	M	L	Density inferred from observations	
			0.20	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.								
			0.5									
			1.00									
			1.30									
	L-M		1.5				SC / Cl	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white, weakly to moderately iron cemented with pisolitic gravel embedded.				
			2.0				SC / Cl	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.				
			2.5									
			3.0									
			3.5									
		4.0	4.00				TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m					
		4.5										
		5.0										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP3

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462774 m E 6469452 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



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2.

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REPORT OF TEST PIT: TP4

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462900 m E 6469588 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.70 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.30				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	M	L	
EX	M-H		0.80				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.			D - M St - VSt
			3.70					TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.70 m			
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP4

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462900 m E 6469588 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.70 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



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2.

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GAP gINT FN. F27
RL1



REPORT OF TEST PIT: TP5

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462994 m E 6469420 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.30-0.80 m Rec = 500/500 mm 1 bag		GC	TOPSOIL	M	L	Density inferred from observations		
			0.30									Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	
			0.5										
			0.80										
			1.0										
	M-H		1.20		SC	Clayey SAND fine to coarse grained, yellow with white and red staining, low to medium plasticity fines, with some roots and rootlets.	D						
			1.40										
	M		1.5		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M	St - VSt					
			2.0										
			2.5										
R	3.00		BDS 2.00-2.50 m Rec = 500/500 mm 3 bags		REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.00 m								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP5

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462994 m E 6469420 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



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2.

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REPORT OF TEST PIT: TP6

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462749 m E 6469255 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	M	L	Density inferred from observations
			0.20									
			0.40	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.				
			0.5	SC				Clayey SAND fine to coarse grained, pale brown with white and red staining, approx. 30%, low plasticity fines.				
	1.0	1.00		SC / Cl				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.				
	1.5											
	2.0											
	2.5									D - M	St - Vst	
	3.0											
	3.5											
R		4.0	4.00					REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m				
		4.5										
		5.0										

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP6

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462749 m E 6469255 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



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2.

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GAP gINT FN. F27
RL1



REPORT OF TEST PIT: TP7

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462460 m E 6469145 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL		Density inferred from observations
			0.20				SC	Clayey SAND fine to coarse grained, yellow with white and red staining, low to medium plasticity fines, with some roots and rootlets.	M L - MD	
			0.5							
	M		1.0				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M St - VST	
			1.40							
			1.5							
	M-H		2.0							
			2.5							
			3.0							
			3.5							
			4.0	4.00				TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m		
			4.5							
			5.0							

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP7

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462460 m E 6469145 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14



1.



2.

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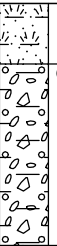



REPORT OF TEST PIT: TP8

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462234 m E 6469167 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 3.00 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 25/8/14
 CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					GC	TOPSOIL	M	L	Density inferred from observations
			0.20	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.								
			0.5					SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M	St - VSt	
	M-H		0.80									
			1.0									
			1.5									
			2.0									
			2.5									
			3.0	3.00					REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.00 m			
	R		3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP8

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462234 m E 6469167 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14



1.



REPORT OF TEST PIT: TP9

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462369 m E 6469073 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	M	L	Density inferred from observations	
			0.30	SC			Clayey SAND fine to coarse grained, brown with white and red staining, low to medium plasticity fines, with cobbles, with some roots and rootlets.						
	0.5		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.			D - M	St - VSt					
	0.60												
M-H	1.0												
R		1.5	1.50						REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 1.50 m				
		2.0											
		2.5											
		3.0											
		3.5											
		4.0											
		4.5											

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP9

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462369 m E 6469073 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14



1.



REPORT OF TEST PIT: TP10

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462642 m E 6469116 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.20		BDS 0.20-0.90 m Rec = 500/700 mm 1 bag		SC	Clayey SAND fine to coarse grained, yellow with white and red staining, low to medium plasticity fines, with some roots and rootlets.		M L	
			0.90		BDS 0.90-1.40 m Rec = 500/500 mm 1 bag		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.			
	M-H		2.5		BDS 2.50-3.00 m Rec = 500/500 mm 3 bags					D - M St - Vst	
			4.00					TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m			
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP10

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462642 m E 6469116 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14



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2.

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



REPORT OF TEST PIT: TP11

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462810 m E 6469077 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L-M		0.0						TOPSOIL			Density inferred from observations
			0.30									
			0.5				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	W	L - MD		
			1.40				SC	Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with some angular gravel.	M - W	D		
	R		1.80						REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 1.80 m			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP11

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462810 m E 6469077 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



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2.

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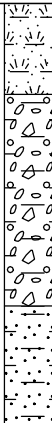


REPORT OF TEST PIT: TP12

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462889 m E 6469114 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 1.40 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 26/8/14
 CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L-M		0.0						TOPSOIL	W	L	Density inferred from observations
			0.30									
			0.5	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.				
			1.0	1.00				SC	Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with some angular gravel.		D	
	R		1.40						REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 1.40 m			
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP12

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462889 m E 6469114 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.40 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



1.

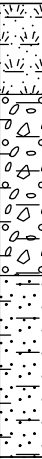


REPORT OF TEST PIT: TP13

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463095 m E 6469206 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 1.50 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 26/8/14
 CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L-M		0.0					TOPSOIL		L	Density inferred from observations
			0.30				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.			
			0.5								
			0.90				SC	Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with some angular gravel.			
	R		1.5	1.50				REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 1.50 m			
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

REPORT OF TEST PIT PHOTOGRAPHS: TP13

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463095 m E 6469206 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

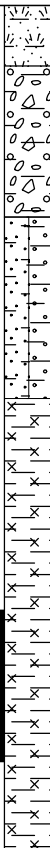


REPORT OF TEST PIT: TP14

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462532 m E 6468982 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	M	L	Density inferred from observations	
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.70	SC / CI				Clayey SAND to Sandy CLAY fine to coarse grained, orange and white, weakly to moderately iron cemented with pisolitic gravel embedded.					
	1.30	MH	Clayey SILT high plasticity clay to high plasticity silt, orange and white with red staining, between about 30% to 50% fine to coarse grained sand	D - M				St - VSt					
2.0	BDS 2.00-2.50 m Rec = 500/500 mm 3 bags												
	M-H		2.80					REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.80 m					
	R		3.0										
			3.5										
			4.0										
			4.5										
			5.0										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP14

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462532 m E 6468982 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



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2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

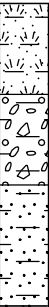
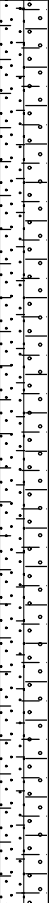


REPORT OF TEST PIT: TP15

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462742 m E 6468960 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	W	L	Density inferred from observations
			0.30				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.			
			0.5				SC	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to intermediate plasticity fines, with some roots and rootlets.			
	0.60			1.0	1.00	SC / Cl	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	M - W	St - VSt		
	1.5										
	2.0										
	2.5										
	3.0										
	3.5										
	4.0	4.00			TARGET DEPTH ACHIEVED. GROUNDWATER ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m						
			4.5								
			5.0								

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP15

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462742 m E 6468960 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 26/8/14
DATE: 23/9/14



1.



2.

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REPORT OF TEST PIT: TP16

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462599 m E 6468918 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.00 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 27/8/14
 CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description								
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0						TOPSOIL	W	L		Density inferred from observations	
			0.20					GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.5					SC	Clayey SAND fine to coarse grained, yellow with white and red staining, with 15% to 30% intermediate plasticity fines, with some roots and rootlets.					
			0.60					SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.					
	M-H		0.90											
			1.0											
			1.5											
			2.0											
			2.5								M - W	St - VSt		
			3.0											
			3.5											
			4.0	4.00						TARGET DEPTH ACHIEVED. GROUNDWATER ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m				
			4.5											
			5.0											

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP16

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462599 m E 6468918 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



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REPORT OF TEST PIT: TP17

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462461 m E 6468894 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	M	L		Density inferred from observations
			0.20					SC	Clayey SAND fine to coarse grained, yellow with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.				
			0.5										
	0.90		SC / Cl	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.			D - M	St - VSt					
	1.0												
	1.5												
	2.0												
	2.5												
	3.0												
	3.5												
3.80				REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.80 m									
R		4.0											
		4.5											
		5.0											

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP17

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462461 m E 6468894 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.



REPORT OF TEST PIT: TP18

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462344 m E 6468807 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL				Density inferred from observations
			0.30					SC	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.	M	L		
EX	M-H		0.5	0.50				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M	St - VSt		

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP18

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462344 m E 6468807 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 25/8/14
DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.



SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP19

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462541 m E 6468844 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 27/8/14
CHECKED: DB DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.










REPORT OF TEST PIT: TP20

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462725 m E 6468874 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	M	L	Density inferred from observations	
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
EX	M-H		0.5		BDS 2.00-2.50 m Rec = 500/500 mm 1 bag			Clayey SAND fine to coarse grained, white with red staining, medium plasticity fines, with some roots and rootlets.	D - M	D		
			1.00	SC								
EX			1.5									
			2.0									
EX			2.5									
			3.0									
EX			3.5									
			3.80									
EX			4.0					TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED BUT TOP LAYER WAS OBSERVED TO BE MOIST. BACKFILLED. TEST PIT DISCONTINUED @ 3.80 m				
			4.5									
EX			5.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

REPORT OF TEST PIT PHOTOGRAPHS: TP20

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462725 m E 6468874 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.




REPORT OF TEST PIT: TP21

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462881 m E 6468940 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 3.20 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 26/8/14
 CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0					TOPSOIL			Density inferred from observations	
			0.20				SC	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.	W	L		
			0.40				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.				
	0.5											
	1.0											
	1.5											
	2.0									M - W		St - VSt
	2.5											
	3.0											
	3.20											
R			3.5				REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 3.20 m					
			4.0									
			4.5									
			5.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

REPORT OF TEST PIT PHOTOGRAPHS: TP21

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462881 m E 6468940 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 26/8/14
DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.



REPORT OF TEST PIT: TP22

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463230 m E 6468999 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		1.00-1.50 m Rec = 500/500 mm 1 bag				TOPSOIL		L	Density inferred from observations
			0.15					SC	Clayey SAND fine to coarse grained, brown with white and red staining, low to medium plasticity fines, with gravel, with some roots and rootlets.			
			0.5									
	0.90		SC	Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with some roots and rootlets.								
	M-H		1.0							D	D	
			1.5									
			1.90									
	R		2.0						REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 1.90 m			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP22

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463230 m E 6468999 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 26/8/14
DATE: 23/9/14



1.



2.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.




REPORT OF TEST PIT: TP23

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463180 m E 6468909 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 0.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL		L	Density inferred from observations
			0.40								
	H		0.5				SC	Clayey GRAVEL fine to medium grained gravel, angular to sub-angular particles, white with red staining, with medium plasticity fines, presence of unweathered bedrock, with some roots and rootlets.	W	D	
	R		0.80					REFUSAL ON BEDROCK. GROUNDWATER ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 0.80 m			
			1.0								
			1.5								
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP23

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463180 m E 6468909 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 0.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



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2.

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REPORT OF TEST PIT: TP24

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463044 m E 6468802 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.90 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 26/8/14
 CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	M	L	Density inferred from observations
			0.20	SC			Clayey SAND fine to coarse grained, brown with white and red staining, low to medium plasticity fines, with gravel, with some roots and rootlets.				
			0.80	SC			Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with some roots and rootlets.				
			1.20	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.				
EX	M-H		1.5						D - M	St - VSt	
			2.0								
			2.5								
			2.90								
R			3.0					REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.90 m			
			3.5								
			4.0								
			4.5								
			5.0								

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REPORT OF TEST PIT PHOTOGRAPHS: TP24

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463044 m E 6468802 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



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2.

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REPORT OF TEST PIT: TP25

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462755 m E 6468785 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description										
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX	L		0.0						TOPSOIL				Density inferred from observations			
			0.30													
			0.5	0.60				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					L		
	M		1.0					SC	Clayey SAND fine to coarse grained, yellow and white and red staining, medium plasticity fines, with some roots and rootlets.	M	D					
			1.40													
	M-H		1.5						SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.	D - M	St - VSt				
			2.0													
			2.5													
			3.0													
			3.5													
R		3.60						REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.60 m								
		4.0														
		4.5														
		5.0														

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REPORT OF TEST PIT PHOTOGRAPHS: TP25

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462755 m E 6468785 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 26/8/14
CHECKED: DB DATE: 23/9/14



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2.

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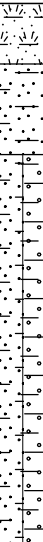


REPORT OF TEST PIT: TP26

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462431 m E 6468685 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 1.80 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 25/8/14
 CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	W	L	Density inferred from observations	
			0.20	SC				Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.					
	0.50		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.				M - W	St - VSt				
	1.0												
M-H		1.5											
		1.80											
R			2.0						REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 1.80 m				
			2.5										
			3.0										
			3.5										
			4.0										
			4.5										
			5.0										

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GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP26

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462431 m E 6468685 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 2
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 25/8/14
DATE: 23/9/14



1.



2.

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REPORT OF TEST PIT PHOTOGRAPHS: TP26

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462431 m E 6468685 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 1.80 m
 BUCKET TYPE: 900 mm toothed

SHEET: 2 OF 2
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 25/8/14
 CHECKED: DB DATE: 23/9/14



3.




REPORT OF TEST PIT: TP27

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462470 m E 6468591 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.40 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 30t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 25/8/14
 CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	M	L	Density inferred from observations	
			0.30	SC			Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.					
	0.5		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.			D - M	St - VSt				
	0.80											
M-H		1.0										
		1.5										
		2.0										
		2.40										
R		2.5						REFUSAL ON BEDROCK. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.40 m				
		3.0										
		3.5										
		4.0										
		4.5										
		5.0										

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REPORT OF TEST PIT PHOTOGRAPHS: TP27

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462470 m E 6468591 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.40 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 30t Excavator
CONTRACTOR:
LOGGED: RF DATE: 25/8/14
CHECKED: DB DATE: 23/9/14



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2.

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REPORT OF TEST PIT: TP28

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462350 m E 6469090 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 0.70 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	M	L	Density inferred from observations
			0.20					SC	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.			
			0.50					SC	Clayey SAND fine to coarse grained, white with red staining, medium plasticity fines, with angular gravel, with some roots and rootlets.			
	H		0.70									
R												
			1.0									
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP28

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462350 m E 6469090 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 0.70 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14



1.



REPORT OF TEST PIT: TP29

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462764 m E 6469075 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.20				SC	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.			
			0.5				SC	Clayey SAND fine to coarse grained, white with red staining, medium plasticity fines, with angular gravel, with some roots and rootlets.	M - W		
			0.60								
	M-H		1.0								
			1.30								
R								REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 1.30 m			
			1.5								
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP29

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462764 m E 6469075 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14



1.



REPORT OF TEST PIT: TP30

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462631 m E 6468894 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L-M		0.0					TOPSOIL			Density inferred from observations
			0.20				SC	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.			
			0.5	0.60			SC	Clayey SAND fine to coarse grained, yellow with white and red staining, with approximately 15% to 30% medium plasticity fines, with some roots and rootlets.	W	L - S	
			1.0								
EX	M-H		1.5								
			1.90				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white with red staining reducing at depth, medium plasticity fines, with some roots and rootlets.			
			2.0								
			2.5								
			3.0							M - W	
			3.5							St - VSt	
			4.0	4.00				TARGET DEPTH ACHIEVED. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 4.00 m			
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP30

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462631 m E 6468894 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 9/9/14
DATE: 23/9/14



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REPORT OF TEST PIT: TP31

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462963 m E 6469073 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0				SC	TOPSOIL	Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.	M - W	L	Density inferred from observations
			0.20									
			0.5									
			0.70									
	M-H		1.0				SC	Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with angular gravel, with some roots and rootlets.	D			
			1.5									
			1.60									
	R							REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 1.60 m				
		2.0										
		2.5										
	3.0											
	3.5											
	4.0											
	4.5											
	5.0											

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP31

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462963 m E 6469073 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF
CHECKED: DB
DATE: 9/9/14
DATE: 23/9/14



1.



2.

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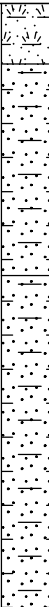


REPORT OF TEST PIT: TP32

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462987 m E 6469267 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.00 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 9/9/14
 CHECKED: DB DATE: 23/9/14

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	W	L	Density inferred from observations	
			0.20	SC			Clayey SAND fine to coarse grained, pale brown with white and red staining, low to medium plasticity fines, with some rounded to subrounded gravel, with some roots and rootlets.					
			0.5									
	0.90	SC	Clayey SAND fine to coarse grained, orange and white with red staining, medium plasticity fines, with angular gravel, with some roots and rootlets.	M - W			D					
	M-H		1.0									
			1.5									
			2.0	2.00				REFUSAL ON BEDROCK. GROUNDWATER ACCUMULATED IN BASE OF TEST PIT. BACKFILLED. TEST PIT DISCONTINUED @ 2.00 m				
	R		2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP32

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462987 m E 6469267 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/9/14
CHECKED: DB DATE: 23/9/14



1.



APPENDIX E

Test Pits Logging

Test Pit Investigation November 2014



REPORT OF TEST PIT: TP83

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462424 m E 6469384 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL				Density inferred from observations
			0.20				GC	Clayey GRAVEL fine to medium grained gravel (laterite), rounded to sub-rounded particles, pale orange to pale brown, with some fine to medium sand, low plasticity fines.		D	L	
			1		BDS 0.70-1.00 m Rec = 300/300 mm 3/4 bag							
			1.30				SC	Clayey SAND fine to medium grained, orange, with red-brown (oxidised) cemented pea gravel, medium plasticity fines.			D	
	M		2		BDS 1.70-2.00 m Rec = 300/300 mm 3/4 bag							St - VST
			2.50				SC / CI	Sandy Silty CLAY to Silty Clayey SAND white with orange and red, medium plasticity fines, with some roots and rootlets. Fine to coarse grained sand, pockets of predominantly sand and gravel angular to subangular, poorly sorted quartz - from weathered granite		M		
EX	M		3									
			4		BDS 4.20-4.50 m Rec = 300/300 mm 3/4 bag							
EX			5									
			5.10					TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 5.10 m				
EX			6									

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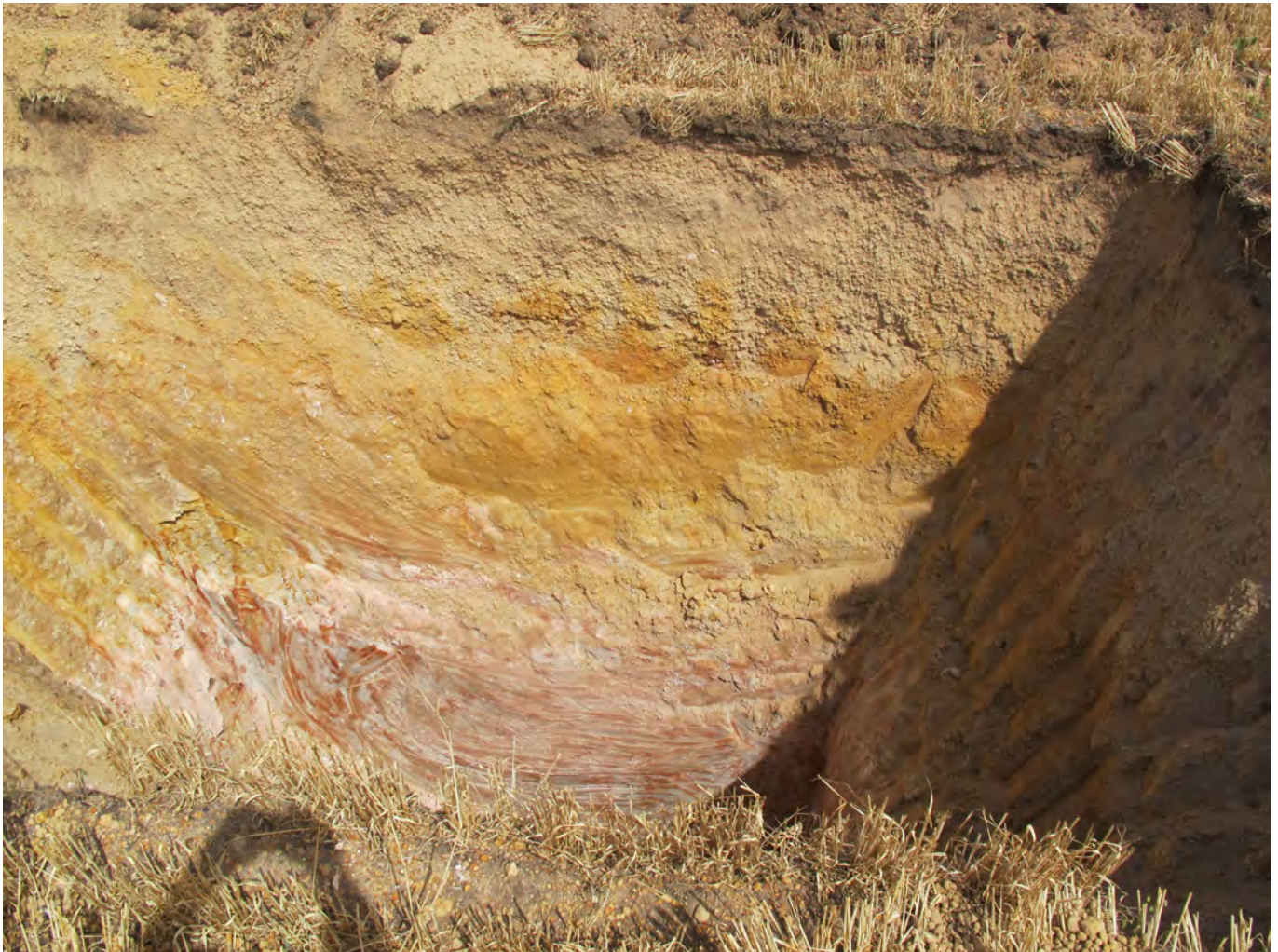
GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP83

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462424 m E 6469384 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1






REPORT OF TEST PIT: TP84

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462548 m E 6469464 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 0.50-0.80 m Rec = 300/300 mm 3/4 Bag		GC	TOPSOIL	D	L	Density inferred from observations		
			0.20	Clayey GRAVEL fine to medium grained gravel (laterite), rounded to sub-rounded particles, pale orange to pale brown, with some fine to medium sand, low plasticity fines.									
			1	1.00				SC				Clayey SAND fine to medium grained, orange and yellow, with red-brown (oxidised) cemented pea gravel, medium plasticity fines, with some roots and rootlets.	
			3		BDS 3.00-3.30 m Rec = 300/300 mm 3/4 Bag			D - M	D				
			5	5.00						SC / CI		Sandy Silty CLAY to Silty Clayey SAND fine to coarse grained sand, white with red staining, medium plasticity fines, with some roots and rootlets. Pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite)	M	St - VSt
			5.20		5.00-5.20 m Rec = 200/200 mm 3/4 Bag			TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 5.20 m					

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP84

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462548 m E 6469464 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1


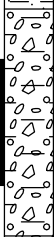
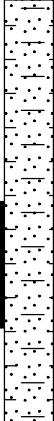
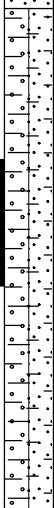


REPORT OF TEST PIT: TP85

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462664 m E 6469559 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL			Density inferred from observations	
			0.30				GC	Clayey GRAVEL fine to medium grained gravel (laterite), rounded to sub-rounded particles, pale orange to pale brown, with some minor fine to medium sand, low plasticity fines, with some roots and rootlets.	D	L			
			1.20		BDS 0.50-1.00 m Rec = 500/500 mm 2 bags		SC	Clayey SAND fine to medium grained, orange and yellow, with red-brown (oxidised) cemented pea gravel, with pockets of silt. Medium plasticity fines, with some roots and rootlets.		D			
	M		2.90		BDS 2.00-2.50 m Rec = 500/500 mm 2 bags		SC / CI	Sandy Silty CLAY to Silty Clayey SAND fine to coarse grained sand, white with red staining, medium plasticity fines, with some roots and rootlets. Zones of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite.	M		St - VSt		
			4.90		BDS 3.50-4.00 m Rec = 500/500 mm 2 bags			TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.90 m					
			5										
			6										

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REPORT OF TEST PIT PHOTOGRAPHS: TP85

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462664 m E 6469559 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1













REPORT OF TEST PIT: TP86

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462790 m E 6469647 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 6.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL	D - M	L	Density inferred from observations
			0.30		BDS 0.40-0.80 m Rec = 400/400 mm 2 bags		GC	Clayey GRAVEL fine to medium grained gravel (laterite), rounded to sub-rounded particles, pale orange to pale brown, with low plasticity fines, with some roots and rootlets.			
			0.90				GC	Durricrust medium to coarse cemented gravels, with clay matrix, orange with red stains			
			1.10		BDS 1.30-1.80 m Rec = 500/500 mm 2 bags		SC	Clayey SAND fine to medium grained, orange, with red-brown (oxidised) cemented pea gravel, medium plasticity fines, with some roots and rootlets.			
			2.00				SC / CI	Sandy Silty CLAY to Silty Clayey SAND fine to coarse grained sand, white with red staining, medium plasticity fines, with some roots and rootlets. Zones of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite).			
	M		3						M - M	St - VSt	
			4		BDS 4.00-4.50 m Rec = 500/500 mm 2 bags						
			5								
			6								
			6.00								
			6				TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 6.00 m				

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP86

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462790 m E 6469647 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 6.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1




REPORT OF TEST PIT: TP87

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462932 m E 6469645 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0				GC	TOPSOIL			D	L	Density inferred from observations
			0.20	Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.									
			0.5					Clayey SAND fine to coarse grained, orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines, with some angular quartz (medium to coarse).					
			0.90										
			1.0	BDS 1.50-1.80 m Rec = 300/300 mm 3/4 Bag						D - M				D
	1.5												
	2.0												
	M		2.40	BDS 3.50-3.80 m Rec = 300/300 mm 3/4 Bag		SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red (mottled), medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite).		M	St - VSt			
			2.5										
			3.0										
3.5													
4.0													
		4.20				TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m							
		4.5											
		5.0											

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP87

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462932 m E 6469645 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1




REPORT OF TEST PIT: TP88

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463017 m E 6469535 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.20 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 19/11/14
 CHECKED: RF DATE: 19/2/15

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	D	L	Density inferred from observations	
			0.20	GC			Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.					
			0.5									
			0.90	SC			Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines, pockets of angular to subangular quartz particles.					
			1.0									
	1.5		BDS 1.50-1.80 m Rec = 300/300 mm 3/4 Bag				M	D				
	2.0											
	2.40		SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay, with some talcy texture (smooth clay- stiff and friable).								
	2.5											
	3.0		BDS 3.00-3.30 m Rec = 300/300 mm 3/4 Bag						St - VSt			
3.5												
4.0												
4.20												
		4.5				TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m						
		5.0										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

REPORT OF TEST PIT PHOTOGRAPHS: TP88

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463017 m E 6469535 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1









REPORT OF TEST PIT: TP89

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462920 m E 6469466 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.60 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 18/11/14
 CHECKED: RF DATE: 19/2/15

Excavation					Sampling	Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0					TOPSOIL		D	L		
			0.20				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, orange pale brown, with low plasticity fines					
	0.5			BDS 0.50-0.80 m Rec = 300/300 mm 3/4 bag									
	0.90					SC	Clayey SAND fine to medium grained, orange and dark yellow, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines throughout.						
	1.0												
L	1.5			BDS 1.70-2.00 m Rec = 300/300 mm 3/4 bag					M	D			
	2.0												
M-H	2.30		BDS 2.30-2.60 m Rec = 300/300 mm 3/4 bag		SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines. Fine to coarse grained sand, zones of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite)			St - VSt				
	2.5												
R			2.60					REFUSAL @ 2.6m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.60 m					
			3.0										

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GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP89

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462920 m E 6469466 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP90

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462778 m E 6469528 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations
			0.20				SP / GM	SAND and GRAVEL fine to medium sand, fine to medium grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown (laterite).	D	L	
			1	1.00	BDS 0.70-1.00 m Rec = 300/300 mm 3/4 Bag		SC	Silty Clayey SAND fine to medium grained, orange, some weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines, roots (up to 1cm) and rootlets throughout.		D	
			2		BDS 2.00-2.30 m Rec = 300/300 mm 3/4 Bag		SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines, with roots and rootlets. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite)		M	
			3	2.60							
M			4		BDS 4.50-4.80 m Rec = 300/300 mm 3/4 Bag					St - VSt	
			5								
			5.60					TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 5.60 m			
			6								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP90

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462778 m E 6469528 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP91

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462649 m E 6469452 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	D	L - MD	
			0.30	BDS 0.30-0.60 m Rec = 300/300 mm 3/4 bag		GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.60	BDS 0.60-0.90 m Rec = 300/300 mm 3/4 bag		SC	Silty Clayey SAND fine to coarse grained, orange and white, weakly to moderately iron cemented with pisolitic gravel embedded.					
			1.00			SC / Cl	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained, orange and white, medium plasticity fines, weakly to moderately iron cemented with pisolitic gravel embedded, with some roots and rootlets	St				
			1.80	BDS 1.50-1.80 m Rec = 300/300 mm 3/4 bag		SC / Cl	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, imedium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite)					
			2.0					M	St - VSt			
			2.5									
			3.0	BDS 3.00-3.30 m Rec = 300/300 mm 3/4 bag								
			3.5									
			4.0									
4.20							TARGET DEPTH ACHIEVED. GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m					
			4.5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP91

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462649 m E 6469452 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 18/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP92

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462813 m E 6469390 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.40 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.20-0.50 m Rec = 300/300 mm 3/4 BAG				TOPSOIL		L	Density inferred from observations
			0.20				GC	Clayey GRAVEL fine to medium grained gravel (laterite), rounded to sub-rounded particles, orange pale brown, with low plasticity fines.				
			0.50				SC	Clayey SAND fine to medium grained, orange, weakly to moderately iron cemented with pisolitic gravel embedded. With some coarse sand and gravel (angular to subangular). Medium plasticity fines.				
			1.0		BDS 1.00-1.30 m Rec = 300/300 mm 3/4 BAG			SC / Cl	Silty Clayey SAND to Sandy Silty CLAY white with orange and red (mottled), progressing from more red to white at depth, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite)	M	St - VSt	
			1.40									
	M		4.40						TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.40 m			
			4.5									

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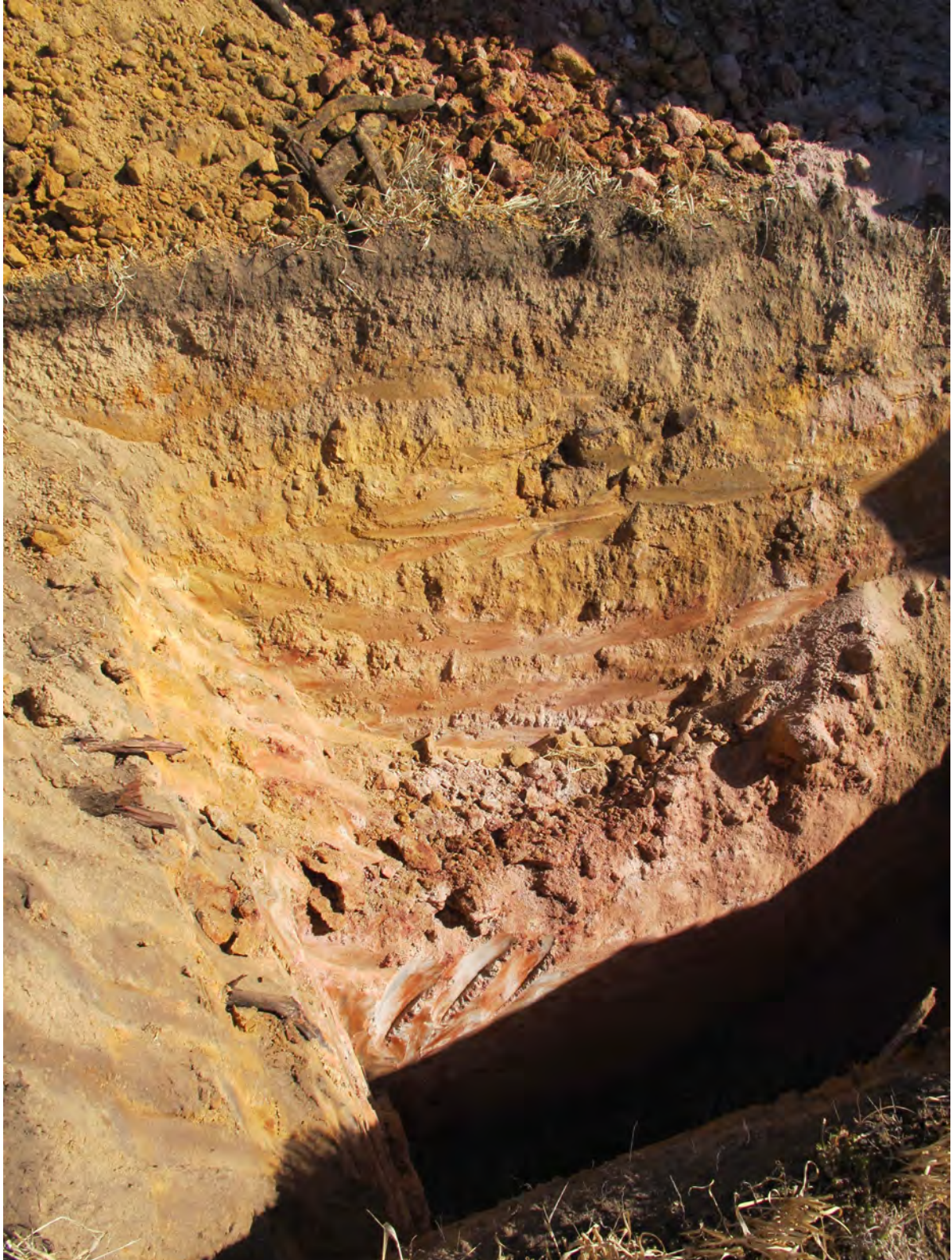
GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP92

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462813 m E 6469390 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.40 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1


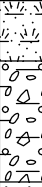



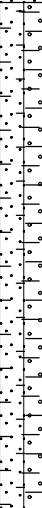


REPORT OF TEST PIT: TP93

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462674 m E 6469343 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.20 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 19/11/14
 CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.30-0.60 m Rec = 300/300 mm 3/4 Bag				TOPSOIL	D	L	Density inferred from observations	
			0.20	GC				Clayey GRAVEL fine to medium grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.					
			0.5										
			0.60										
	M		1.0	BDS 1.70-2.00 m Rec = 300/300 mm 3/4 Bag			SC	Clayey SAND fine to medium grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	M	D			
			1.5										
			2.0										
			2.5										
			2.50										
		3.0	BDS 3.00-3.30 m Rec = 300/300 mm 3/4 bag			SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red (mottled), imedium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz -from weathered granite). Pockets of predominantly clay.	St - VSt					
		3.5											
		4.0											
		4.20											
		4.5											
							TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m						
			5.0										

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REPORT OF TEST PIT PHOTOGRAPHS: TP93

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462674 m E 6469343 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1






REPORT OF TEST PIT: TP94

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462514 m E 6469262 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling	Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	L		Density inferred from observations
			0.20					SP	SAND fine to medium, pale yellow to grey, poorly graded, angular to subrounded, loose.			
			0.5									
			1.0	BDS 1.00-1.30 m Rec = 300/300 mm 3/4 Bag								
			1.80				SP	SAND fine to medium, orange, poorly graded, angular to subrounded, loose, with trace of silt and clay,				
EX	L		2.0							L - MD		
			2.5									
			3.0	BDS 3.00-3.30 m Rec = 300/300 mm 3/4 Bag								
			3.5									
			4.0									
			4.20						TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m			
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP94

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462514 m E 6469262 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP95

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462376 m E 6469194 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.20				GC	Clayey GRAVEL fine to coarse grained gravel, some larger cobbles (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.5		BDS 0.50-0.80 m Rec = 300/300 mm 3/4 Bag						
			1.0	1.00			SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.			
			1.5								
EX	M		2.0		BDS 2.00-2.30 m Rec = 300/300 mm 3/4 Bag					D	
			2.5								
			2.80						M		
			3.0				SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.			
			3.5		BDS 3.50-3.80 m Rec = 300/300 mm 3/4 Bag					St - VSt	
			4.0								
			4.20					TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m			
			4.5								
			5.0								

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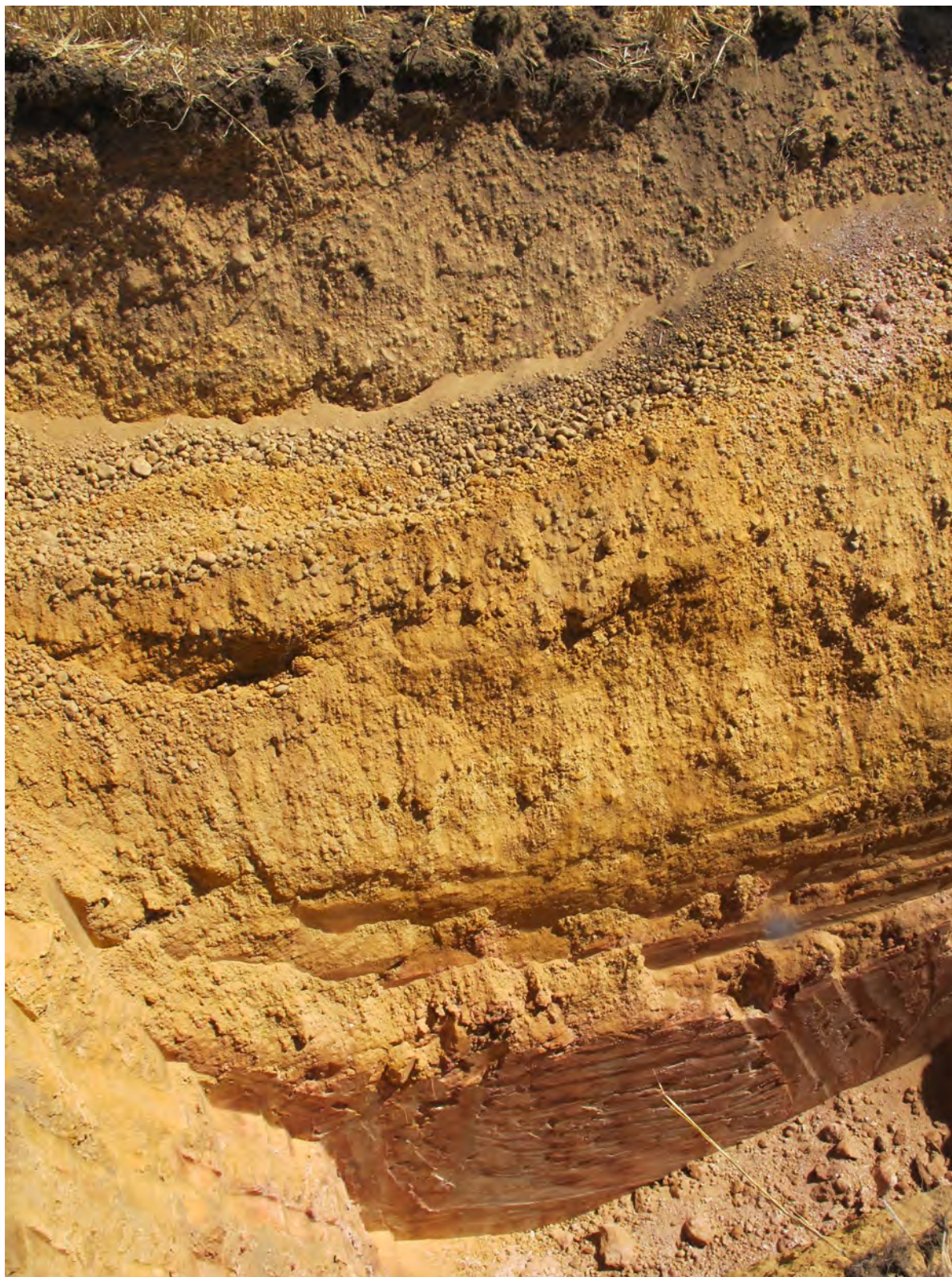
GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP95

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462376 m E 6469194 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1







REPORT OF TEST PIT: TP96

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462261 m E 6469071 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.20 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 21/11/14
 CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations	
			0.15				SC / GC	Clayey SAND and GRAVEL fine to medium, dark grey grading to light grey with depth, predominantly gravel (laterite), rounded to sub-rounded particles, orange to pale brown. Low plasticity fines, with some roots and rootlets.	D	L		
			0.70				SC	Clayey SAND fine to coarse grained, orange to yellow, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	D - M	D		
	1.10					SC / CI	Silty Clayey SAND to Sandy Silty CLAY white/grey with red/pink (mottled), medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.	M	St - VSt			
	2.20								REFUSAL @ 2.2m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.20 m			
	R		2.5									
			3.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

REPORT OF TEST PIT PHOTOGRAPHS: TP96

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462261 m E 6469071 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1

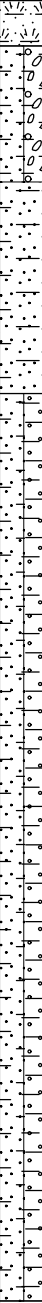
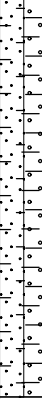


REPORT OF TEST PIT: TP97

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462348 m E 6468950 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.30 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 21/11/14
 CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0		BDS 0.80-1.10 m Rec = 300/300 mm 3/4 Bag			TOPSOIL	D	L	Density inferred from observations		
			0.15	SC / GC			Clayey SAND and GRAVEL fine to medium, dark grey grading to light grey with depth, predominantly gravel (laterite), rounded to sub-rounded particles, orange to pale brown. Low plasticity fines, with some roots and rootlets.						
			0.5	SC			Clayey SAND fine to coarse grained, orange to red, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	D - M	D				
			0.60	SC / CI			Silty Clayey SAND to Sandy Silty CLAY white/grey with red/pink (mottled), medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.			M		St - VSt	
			1.30										
	M		3.0				BDS 3.00-3.30 m Rec = 300/300 mm 3/4 Bag						TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.30 m
			4.30										
			4.5										
			5.0										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

REPORT OF TEST PIT PHOTOGRAPHS: TP97

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462348 m E 6468950 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP98

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462482 m E 6469051 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.60-0.90 m Rec = 300/300 mm 3/4 Bag			GC	TOPSOIL	D	L	Density inferred from observations	
			0.20	Clayey GRAVEL and SAND fine to medium sand grading to fine to coarse grained gravel at depth, rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.									
			0.5										
			0.90										
			1.0	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.									
	M		1.5		BDS 1.50-1.80 m Rec = 300/300 mm 3/4 Bag			SC / Cl		D - M	D		
			2.0	Silty Clayey SAND to Sandy Silty CLAY white with orange and red (mottled), grading to mostly white at base, medium plasticity fines, with roots and rootlets . Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.									
			2.5										
			3.0										
			3.5										
			4.0		BDS 3.00-3.30 m Rec = 300/300 mm 3/4 Bag			SC / Cl		M	St - VSt		
			4.10										
			4.5	TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.10 m									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP98

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462482 m E 6469051 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1





REPORT OF TEST PIT: TP99

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462610 m E 6469196 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.90 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 19/11/14
 CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL	D	L	Density inferred from observations	
			0.20	SW				SAND fine to medium, pale yellow to grey, moderately to well graded, subangular to rounded, loose.				
			0.5									
			1.0									
			1.5									
	2.0		2.10		SC	Clayey SAND fine to medium, orange, moderately to well graded, subangular to rounded, loose, minor pea gravels, with some silt and clay, low plasticity fines.	M	D				
	2.5											
	3.0											
	3.5											
	4.0											
M		4.5	4.50		SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.	M - W	St - VSt				
		4.90				TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.90 m						
		5.0										
			5.5									

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REPORT OF TEST PIT PHOTOGRAPHS: TP99

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462610 m E 6469196 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1





REPORT OF TEST PIT: TP100

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462879 m E 6469339 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 1.00-1.30 m Rec = 300/300 mm 3/4 Bag				TOPSOIL	D	L	Density inferred from observations	
			0.20			GC	Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.						
			0.5										
	0.70			SC		Clayey SAND fine to coarse grained, orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	D - M	D					
	1.0												
M-H		1.30		BDS 1.80-2.10 m Rec = 300/300 mm 3/4 Bag			SC / Cl	Silty Clayey SAND to Sandy Silty CLAY white with orange and red mottled, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.	M	St - VSt			
		1.5											
		2.0											
	R		2.5	2.50					REFUSAL @ 2.5m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.50 m				

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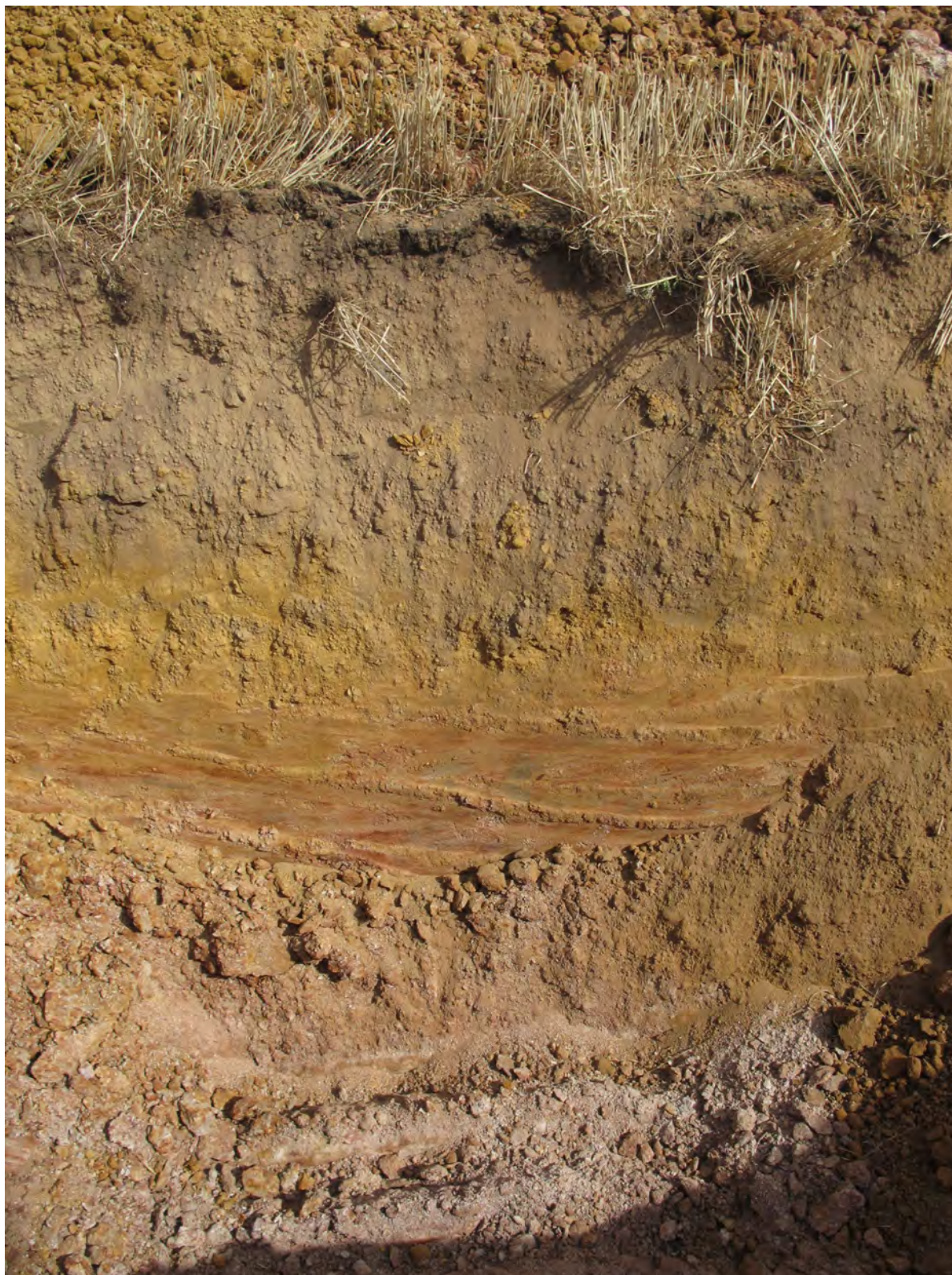
GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP100

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462879 m E 6469339 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP101

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463107 m E 6469414 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.20 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 20/11/14
 CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L	M-H	0.0		BDS 0.80-1.30 m Rec = 500/500 mm 2 Bags			TOPSOIL	D	L	Density inferred from observations		
			0.20	Clayey SAND and GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.				M					
			0.5										
			1.0										
			1.5										
			1.80						Silty Clayey SAND fine to medium grained, orange and white, weakly to moderately iron cemented with pisolitic gravel embedded, medium plasticity fines.	D			
			2.0										
			2.5										
			3.0						M - W				
			3.20							Silty Clayey SAND to Sandy Silty CLAY Fine to coarse grained sand, white with orange and red clay, medium plasticity fines. Pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite)		St - VSt	
			3.5										
			4.0										
			4.20						REFUSAL AT 4.2m GROUNDWATER ENCOUNTERED @ 3.6m - minor seepage inflows. BACKFILLED. TEST PIT DISCONTINUED @ 4.20 m				
			4.5										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP101

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463107 m E 6469414 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP102

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463096 m E 6469307 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
L			0.0		BDS 0.30-0.80 m Rec = 500/500 mm 2 Bags			GC	TOPSOIL	D	L	Density inferred from observations
			0.20	Clayey GRAVEL fine to coarse grained gravel, some larger cobbles (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.								
			0.80	Silty CLAY white to grey, with red mottled zones, some weakly to moderately iron cemented with pisolitic gravel embedded. Silty at the top grading to more clayey with depth. Medium plasticity fines.								
			1.40	BDS 2.00-2.50 m Rec = 500/500 mm 2 Bags		SC / CI	Silty Clayey SAND to Sandy Silty CLAY mostly white with orange and red, laminated in part, medium plasticity fines, with roots and rootlets (some up to 1cm). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.	M - W	St - VSt			
			2.80							REFUSAL @ 2.8m GROUNDWATER ENCOUNTERED @ 2.6m - seepage inflows. BACKFILLED. TEST PIT DISCONTINUED @ 2.80 m		
R			3.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP102

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463096 m E 6469307 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP103

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462880 m E 6469214 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX			0.0						TOPSOIL some weathered dolerite cobbles at surface	D	L	Density inferred from observations
			0.20				CL	CLAY Green to dark grey CLAY, medium plasticity, with sand and gravel rock fragments, and weathered blocks increasing with depth - weathered Dolerite	M	St		
			1.5	BDS 1.50-1.80 m Rec = 300/300 mm 3/4 Bag				W				
			2.0							St - VSt		
			2.20						REFUSAL @ 2.2m GROUNDWATER ENCOUNTERED @ 1.9m - seepage inflows BACKFILLED. Part hole intersects similar profile: 0.2 - 0.9 Clayey SAND, 0.9 - 2.2 Silty Clayey SAND to Sandy Silty Clay TEST PIT DISCONTINUED @ 2.20 m			
			2.5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP103

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462880 m E 6469214 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP104

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462766 m E 6469168 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.20				GC	Clayey GRAVEL fine to coarse grained gravel, rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.70		BDS 0.70-1.20 m Rec = 500/500 mm 2 Bags		SC	Clayey SAND fine to coarse grained, orange, weakly to moderately iron cemented with pisolitic gravel embedded. Pockets of low plasticity clay.	D - M	D	
			1.50		BDS 1.80-2.30 m Rec = 500/500 mm 2 Bags		SC / CI	Silty Clayey SAND to Sandy Silty CLAY mostly red, with some white and orange, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.		St	
			2.50		BDS 3.00-3.50 m Rec = 500/500 mm 2 Bags		SC / CI	Silty Clayey SAND to Sandy Silty CLAY mostly white, with orange and red, laminated in part, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.	M - W	St - VSt	
	M	19/11/14, 2 springs observed @ ~2.5m	4.30					TARGET DEPTH ACHIEVED GROUNDWATER ENCOUNTERED @ 1.9m - seepage inflows BACKFILLED. TEST PIT DISCONTINUED @ 4.30 m			

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP104

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462766 m E 6469168 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP105

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462666 m E 6469002 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.50-0.80 m Rec = 300/300 mm 3/4 bag				TOPSOIL with large quartz fragments at surface	D	L	Density inferred from observations
			0.20	SW				SAND fine to medium, with minor gravels, pale grey to dark grey, sub-angular to subrounded, moderately well graded, loose.				
			0.5	SC			Clayey SAND fine to medium grained, orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines, with some large quartz fragments.	D - M	D			
	0.90			SC / CI			Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay with some large quartz fragments.	M	St - VSt			
	1.5											
R		3.20		BDS 2.50-2.80 m Rec = 300/300 mm 3/4 bag				REFUSAL @ 3.2m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.20 m				
		3.5										

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP105

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462666 m E 6469002 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 19/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP106

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462659 m E 6468808 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.20				GC	Clayey GRAVEL fine to coarse grained gravel, (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.40				SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.		D	
	M-H		0.5		BDS 0.50-0.80 m Rec = 300/300 mm 3/4 Bag						
			0.90				SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red/pink (mottled), medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.	M	St - VSt	
	R		2.10					REFUSAL @ 2.1m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.10 m			
			2.5								
			3.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP106

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462659 m E 6468808 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP107

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462594 m E 6468708 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.15				GC	Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.5	0.50	BDS 0.70-1.00 m Rec = /300 mm 3/4 Bag		SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.		D	
	M-H		1.0	1.10			SC / CI	Silty Clayey SAND to Sandy Silty CLAY red/orange/pink with some white, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.		M	
			1.5		BDS 1.80-1.10 m Rec = /-700 mm 3/4 Bag					St - VSt	
	R		2.5	2.50				Refusal @ 2.5m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.50 m			
			3.0								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP107

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462594 m E 6468708 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.50 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1








REPORT OF TEST PIT: TP108

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462750 m E 6468682 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.60-0.90 m Rec = 300/300 mm 3/4 Bag				TOPSOIL	D	L	Density inferred from observations
			0.15	GC			Clayey GRAVEL fine to coarse grained gravel, (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.					
	0.5		0.50				SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded, with roots and rootlets. Medium plasticity fines.	D			
	1.0		1.00				SC / Cl	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.				
EX	M-H		1.5		BDS 2.00-2.30 m Rec = 300/300 mm 3/4 Bag					M	St - VSt	
			2.0									
2.5												
2.90												
	R		3.0						REFUSAL @ 2.9m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.90 m			

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP108

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462750 m E 6468682 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1




REPORT OF TEST PIT: TP109

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463007 m E 6468975 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.10 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: AW DATE: 20/11/14
 CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	D	L	Density inferred from observations	
			0.20	GC			Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.						
			0.70	SC			Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded, roots and rootlets. Medium plasticity fines.	D					
	1.10	SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red (mottled), medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Weathered granite visible at the base.	M			St - VSt						
	R		2.10						REFUSAL @ 2.1m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.10 m				
			2.5										

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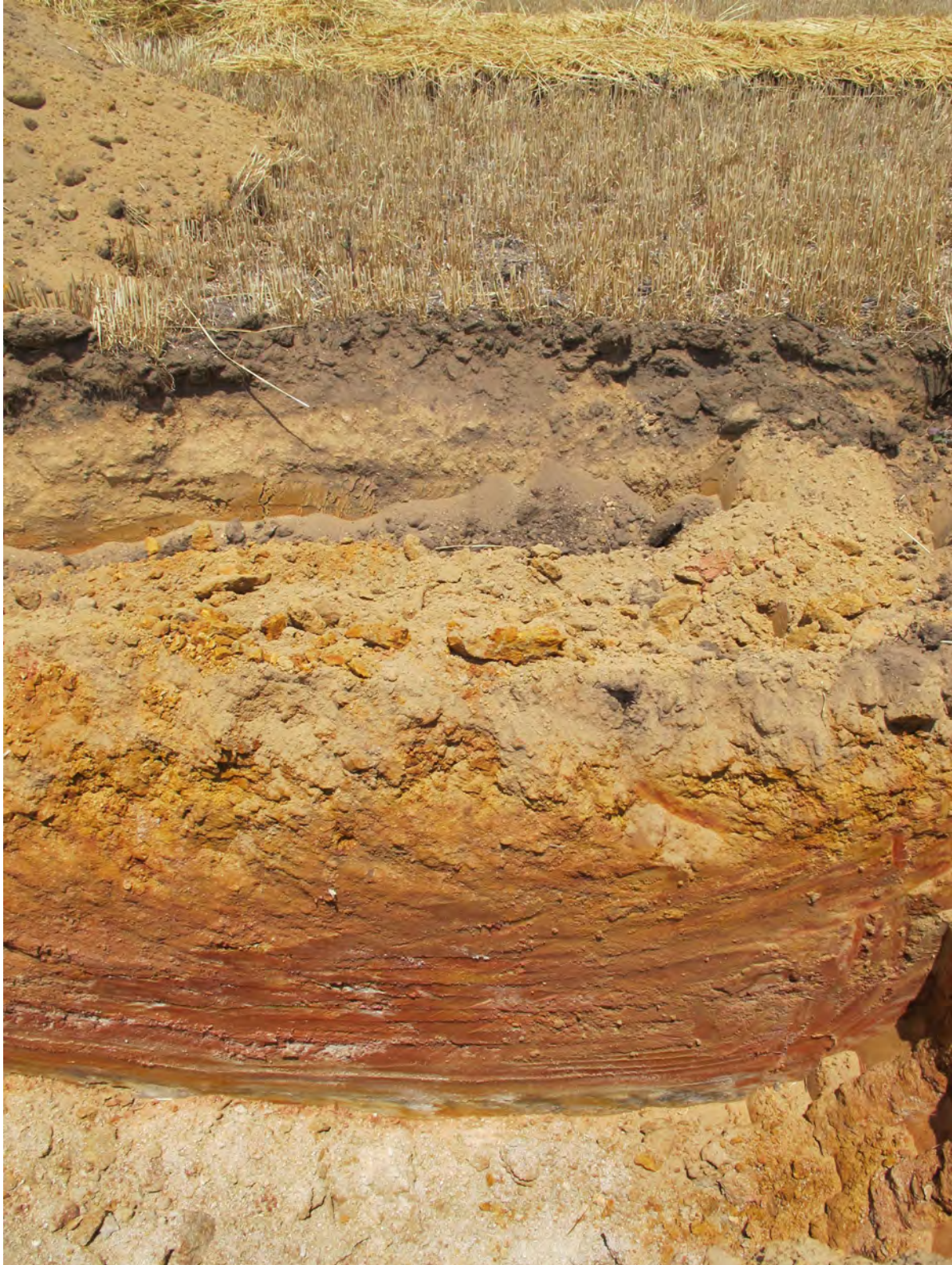
GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP109

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463007 m E 6468975 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1

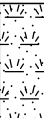


REPORT OF TEST PIT: TP110

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463071 m E 6469099 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description								
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0						TOPSOIL	D	L			Density inferred from observations	
			0.20	GC			Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.								
			0.80	SC			Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines. With some medium to coarse angular to sub-angular quartz fragments.	M	St - VSt						
			1.20	SC / CI			Silty Clayey SAND to Sandy Silty CLAY white with orange and red (mottled), medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.								
	R		1.80					REFUSAL @ 1.8m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 1.80 m							
			2.0												

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP110

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463071 m E 6469099 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1




REPORT OF TEST PIT: TP111

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463173 m E 6469106 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	D	L	Density inferred from observations	
			0.15				GC	Clayey GRAVEL fine to coarse grained gravel, rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.					
			0.5	0.50			SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	M	D			
	1.5		1.50	SC / CI			Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.	M - W			St - VSt		
	2.5		2.60										
	R	Water pooling at base of pit @ 2.6m							REFUSAL @ 2.6m GROUNDWATER ENCOUNTERED @ 2.6m - Clay wet at base - water pooling at bottom of hole. BACKFILLED. TEST PIT DISCONTINUED @ 2.60 m				

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP111

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463173 m E 6469106 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1







REPORT OF TEST PIT: TP112

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463215 m E 6469259 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0					TOPSOIL	D	L	Density inferred from observations	
			0.20			GC	Clayey GRAVEL fine to coarse grained gravel (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.					
			0.5	0.50			SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	D - M	D		
	1.0			SC / CI		Silty Clayey SAND to Sandy Silty CLAY mostly white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.	M	St - VSt				
	1.5	1.50										
	M-H		2.0									
			2.5									
			3.0									
			3.30									
	R		3.5					REFUSAL @ 3.3m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.30 m				

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP112

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463215 m E 6469259 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.30 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP113

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463331 m E 6469108 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL with gravels and boulders (laterite) at the surface	D	L	Density inferred from observations
			0.30				SC	Clayey SAND fine to coarse grained, orange to red-brown, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.		D	
			0.90				SC / CI	Silty Clayey SAND to Sandy Silty CLAY white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand. Pockets of predominantly clay.			
	M-H		1.0		BDS 1.20-1.50 m Rec = 300/300 mm 3/4 Bag				M	St - VSt	
R			2.0		BDS 2.20-2.50 m Rec = 300/300 mm 3/4 Bag						
			3.10					REFUSAL AT 3.1m NO GROUNDWATER ENCOUNTERED BACKFILLED. Part of hole intersected grey to dark grey clay (weathered Dolerite) @ 0.9m to full depth. Mostly stiff to very stiff, more friable at the top, moist, intermediate plasticity, with roots and rootlets TEST PIT DISCONTINUED @ 3.10 m			

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP113

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463331 m E 6469108 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP114

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463110 m E 6468980 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0.0					TOPSOIL with large quartz boulders on the surface			Density inferred from observations	
			0.15				GC	Clayey GRAVEL fine to coarse grained gravel, (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.	D	L		
			0.60				SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines, with some medium to coarse angular to subangular quartz.	D - M	D		
	M-H		1.10				SC / Cl	Silty Clayey SAND to Sandy Silty CLAY red/pink, grading to white with depth, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay. Blocks of weathered granite at 2.0-2.1m.	M	St - Vst		
	R		2.10					REFUSAL @ 2.1m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 2.10 m				
			2.5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP114

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463110 m E 6468980 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP115

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462942 m E 6468873 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0					TOPSOIL			Density inferred from observations
			0.15				SP	Silty SAND fine to medium grained, grey, some laterite gravels, soft.	D	L	
			0.70				SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	M	D	
	M-H		1.50				SC / CI	Silty Clayey SAND to Sandy Silty CLAY mostly white with orange and red, medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.	M - W	St - VSt	
R			2.00					REFUSAL @ 2.0m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. Part Hole intersected weathered Dolerite at approximately 1m - Dark grey clay, stiff, friable, intermediate plasticity, moist to wet, weathered dolerite fragments at depth TEST PIT DISCONTINUED @ 2.00 m			
			2.5								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP115

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462942 m E 6468873 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 20/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1

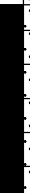








REPORT OF TEST PIT: TP116

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462868 m E 6468771 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0		BDS 0.30-0.80 m Rec = 500/500 mm 2 Bags				TOPSOIL	D	L	Density inferred from observations	
				GC			Clayey GRAVEL fine to coarse grained gravel, (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.						
				SC			Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	D					
				SC / CI			Silty Clayey SAND to Sandy Silty CLAY pink and red, some white, medium plasticity fines, with roots and rootlets. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.		M				
	0.15												
	0.30												
	0.5												
	0.80												
	1.0												
	1.5												
2.0													
2.5					BDS 2.50-3.00 m Rec = 500/500 mm 2 Bags								
3.0													
3.5													
	R			3.60					REFUSAL @ 3.6m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 3.60 m				

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP116

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462868 m E 6468771 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1


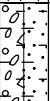




REPORT OF TEST PIT: TP117

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462934 m E 6468685 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	D	L	Density inferred from observations
			0.20					GC / SC	Clayey GRAVEL and SAND fine to coarse grained gravel, (laterite), rounded to sub-rounded particles, orange to pale brown, with dark grey silt and fine sand. Low plasticity fines, with some roots and rootlets.			
			0.50					SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	D		
			0.90					SC / CI	Silty Clayey SAND to Sandy Silty CLAY red/ pink and white/grey (mottled), medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly sorted quartz - from weathered granite). Pockets of predominantly clay.			
			1.0									
1.5												
2.0												
2.5												
3.0												
3.5												
4.0												
			4.10									
									TARGET DEPTH ACHIEVED GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 4.10 m			

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP117

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462934 m E 6468685 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: TP118

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463152 m E 6468792 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	D	L	Density inferred from observations	
			0.15	SC				Clayey SAND fine to medium, with minor gravel, (laterite), rounded to sub-rounded particles, orange to pale brown, with low plasticity fines, with some roots and rootlets.					
			0.50	SC				Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded. Medium plasticity fines.	M	D			
	1.30	SC / CI	Silty Clayey SAND to Sandy Silty CLAY red/pink with white and orange (mottled), medium plasticity fines, with roots and rootlets (up to 1cm thick). Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay. Weathered granite boulders at 1.6m.	St - VSt									
R			1.60					REFUSAL @ 1.6m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 1.60 m					

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP118

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463152 m E 6468792 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1

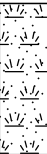
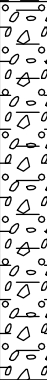
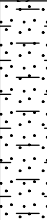



REPORT OF TEST PIT: TP119

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463322 m E 6468914 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0						TOPSOIL	D	L	Density inferred from observations
			0.20				SC	Clayey SAND fine to coarse grained, yellow to orange, weakly to moderately iron cemented with pisolitic gravel embedded, with roots and rootlets. Medium plasticity fines.		D		
			0.5				SC	Silty Clayey SAND to Sandy Silty CLAY mostly white, with orange and red, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.	M			
	0.70					SC	Silty Clayey SAND to Sandy Silty CLAY mostly white, with orange and red, medium plasticity fines. Fine to coarse grained sand, pockets of predominantly sand and gravel (angular to subangular, poorly graded quartz - from weathered granite). Pockets of predominantly clay.		St - VSt			
	R		1.0	1.00					REFUSAL @ 1.0m GROUNDWATER NOT ENCOUNTERED. BACKFILLED. TEST PIT DISCONTINUED @ 1.00 m			
			1.5									
			2.0									

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: TP119

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463322 m E 6468914 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: AW DATE: 21/11/14
CHECKED: RF DATE: 19/2/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1



APPENDIX E

Test Pits Logging

Test Pit Investigation February 2014



REPORT OF TEST PIT: BA01

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462806 m E 6469851 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX			0					TOPSOIL		Density inferred from observations.
			0.20							
			0.50				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	D - M L	
			1				SC	Clayey SAND fine to coarse grained sand, yellow with white and red staining, medium plasticity fines, with some roots and rootlets.	MD - D	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1.20				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M (<PL)	
			2							
			3				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.	M (c PL)	
			3.40				GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M	
			4					TEST PIT DISCONTINUED @ 3.60 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE		
			5							
			6							

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA01

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462806 m E 6469851 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA02

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462702 m E 6469755 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0		BDS 0.40-0.70 m Rec = 300/300 mm 2 bags				TOPSOIL		Density inferred from observations.				
			0.20	GP / GC			GRAVEL to Clayey GRAVEL medium to coarse grained gravel, rounded to sub-rounded particles, pale brown, with some low plasticity fines, with some roots and rootlets.	L							
	H		0.80	GC			LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.	D							
			1					VD							
	M-H		1.80	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.					
			2												
	3														
	4														
				5								TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA02

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462702 m E 6469755 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA03

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462600 m E 6469717 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 3.00-3.30 m Rec = 300/300 mm 2 bags			TOPSOIL	L	D	VD	Density inferred from observations.	
			0.30	GP / GC			GRAVEL to Clayey GRAVEL medium to coarse grained gravel, rounded to sub-rounded particles, pale brown, with some low plasticity fines, with some roots and rootlets.						
			0.50										
	H		1	GC			LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.						
	M-H		1.80	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.						
			2										
			3										
			4										
			5		TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED								

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA03

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462600 m E 6469717 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1







REPORT OF TEST PIT: BA04

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462494 m E 6469671 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.80 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 5/2/15
 CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL	D	L	Density inferred from observations.	
				GP / GC			GRAVEL to Clayey GRAVEL medium to coarse grained gravel, rounded to sub-rounded particles, pale brown, with some low plasticity fines, with some roots and rootlets.						
			0.20					SC	Clayey SAND fine to coarse grained sand, yellow with white and red staining, medium plasticity fines, with some roots and rootlets.	MD			
			0.70					SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.		M (<PL)		VSt
1		1.80											
	M-H		2										
			3										
			4										
			5						TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA04

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462494 m E 6469671 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA05

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462390 m E 6469611 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



PRELIMINARY REPORT OF TEST PIT: BA06

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462286 m E 6469552 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations.
			0.20				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.90				SC	Clayey SAND fine to coarse grained, yellow with white and red staining, low to medium plasticity fines, with some roots and rootlets.	D - M	MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1.80				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	VSt	
			5					TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			6								

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GAP gINT FN. F01e
RL3



PRELIMINARY REPORT OF TEST PIT PHOTOGRAPHS: BA06

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462286 m E 6469552 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA07

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462841 m E 6469790 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations.
			0.20								
			0.90				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
	M		1		BDS 2.50-2.80 m Rec = 300/300 mm 2 bags		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.			Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
H-R			3.70								
							GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M		
			4					TEST PIT DISCONTINUED @ 3.90 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON DOLERITE			
			5								
			6								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA07

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462841 m E 6469790 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15




1.

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GAP gINT FN. F29
RL1



SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL	D	L	Density inferred from observations.
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.				
			0.70	SC				Clayey SAND fine to coarse grained sand, yellow with white and red staining, low to medium plasticity fines, with some rounded/subrounded pisolitic gravel, with some roots and rootlets.	MD			
			1	1.20				SC / CI		Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.		
	2								M (<PL)	VSt		
	3											
	4											
	5											
	6											

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA08

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462737 m E 6469705 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA09

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462633 m E 6469670 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX	L		0						TOPSOIL	D	L	Density inferred from observations.		
			0.30					GP / GC	GRAVEL to Clayey GRAVEL medium to coarse grained gravel, rounded to sub-rounded particles, pale brown, with some low plasticity fines, with some roots and rootlets.					
			0.50									GC	LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.	
	H		0.90				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	VSt				Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1											
	M-H		2											
			3											
			4											
			5											
												TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED		

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA09

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462633 m E 6469670 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA10

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462529 m E 6469611 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 1.30-1.60 m Rec = 300/300 mm 2 bags			GP / GC	TOPSOIL	D	L	Density inferred from observations.	
			0.30	GRAVEL to Clayey GRAVEL medium to coarse grained gravel, rounded to sub-rounded particles, pale brown, with some low plasticity fines, with some roots and rootlets.									
			1.00	Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse gravel, yellow and white with red staining, with medium plasticity fines.									
	2	2.00	SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.			M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
	3	BDS 3.00-3.30 m Rec = 300/300 mm 2 bags											
			5				TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED						

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA10

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462529 m E 6469611 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA11

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462425 m E 6469551 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 3.00-3.30 m Rec = 300/300 mm 2 bags			TOPSOIL	D	L	Density inferred from observations.	
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.50	SC / GC			Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse gravel, yellow and white with red staining, with medium plasticity fines.					
	1		1.10	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.		
	2											
	3											
	4											
				5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA11

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462425 m E 6469551 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1








PRELIMINARY REPORT OF TEST PIT: BA12

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462321 m E 6469491 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 1.50-1.80 m Rec = 300/300 mm 2 bags				TOPSOIL gravelly	D	L	Density inferred from observations.	
			0.30				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			1	1.00				SC	Clayey SAND fine to coarse grained, yellow, orange and white with red staining, medium plasticity fines.	MD			
	2	2.00				SC / Cl	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)					
	3								VSt				
			5						TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				

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GAP gINT FN. F01e
RL3

PRELIMINARY REPORT OF TEST PIT PHOTOGRAPHS: BA12

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462321 m E 6469491 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA13

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462876 m E 6469729 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL		L	Density inferred from observations.
			0.20					GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.			
			0.60					GC	LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.			
	1								D	H		
	1.30						SC	Clayey SAND fine to coarse grained, yellow with white and red staining, low to medium plasticity fines, with some roots and rootlets.				
	2											
	2.60			SC / Cl				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.				
	3											
	4											
			M-H	5							TEST PIT DISCONTINUED @ 5.00 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE	

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA13

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462876 m E 6469729 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA14

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462564 m E 6469550 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1

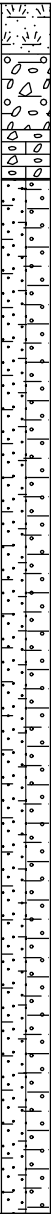


REPORT OF TEST PIT: BA15

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462460 m E 6469490 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL	D	L		Density inferred from observations.
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.50	GC				LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.					
			0.70	SC / Cl				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.					
			1										
			2										
			3							M (<PL)	VSt		
			4										
			5						TEST PIT DISCONTINUED @ 4.80 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA15

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462460 m E 6469490 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA16

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462356 m E 6469430 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description								
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0						TOPSOIL		L	Density inferred from observations.			
			0.30				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			1	1.10			GC	LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.							
			2	2.00			SC	Clayey SAND fine to coarse grained, yellow, orange and white with red staining, medium plasticity fines.							
	M-H		3	3.00			SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	Vst	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
			4												
			5								TEST PIT DISCONTINUED @ 4.90 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA16

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462356 m E 6469430 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 5/2/15
CHECKED: DATE: 1/3/15



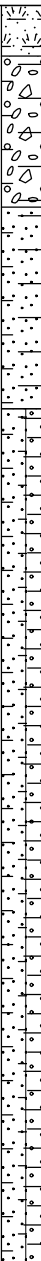
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GAP gINT FN. F29
RL1



SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0					TOPSOIL	D	L	Density inferred from observations.			
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.							
	0.80		SC	Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.			MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.						
	1		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets. Pockets of degraded roots at 3.0m.										
	1.60													
	2													
	3													
	4													
	5										TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
	6													

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA17

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 461931 m E 6469935 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA18

CLIENT: SITA Australia

PROJECT: Allawuna Farm Landfill

LOCATION: Allawuna Farm

JOB NO: 147645033

COORDS: 462024 m E 6469985 m N MGA94 50

SURFACE RL: DATUM: AHD

PIT DEPTH: 5.00 m

BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1

MACHINE: 25t Excavator

CONTRACTOR:

LOGGED: RF

DATE: 6/2/15

CHECKED:

DATE: 1/3/15

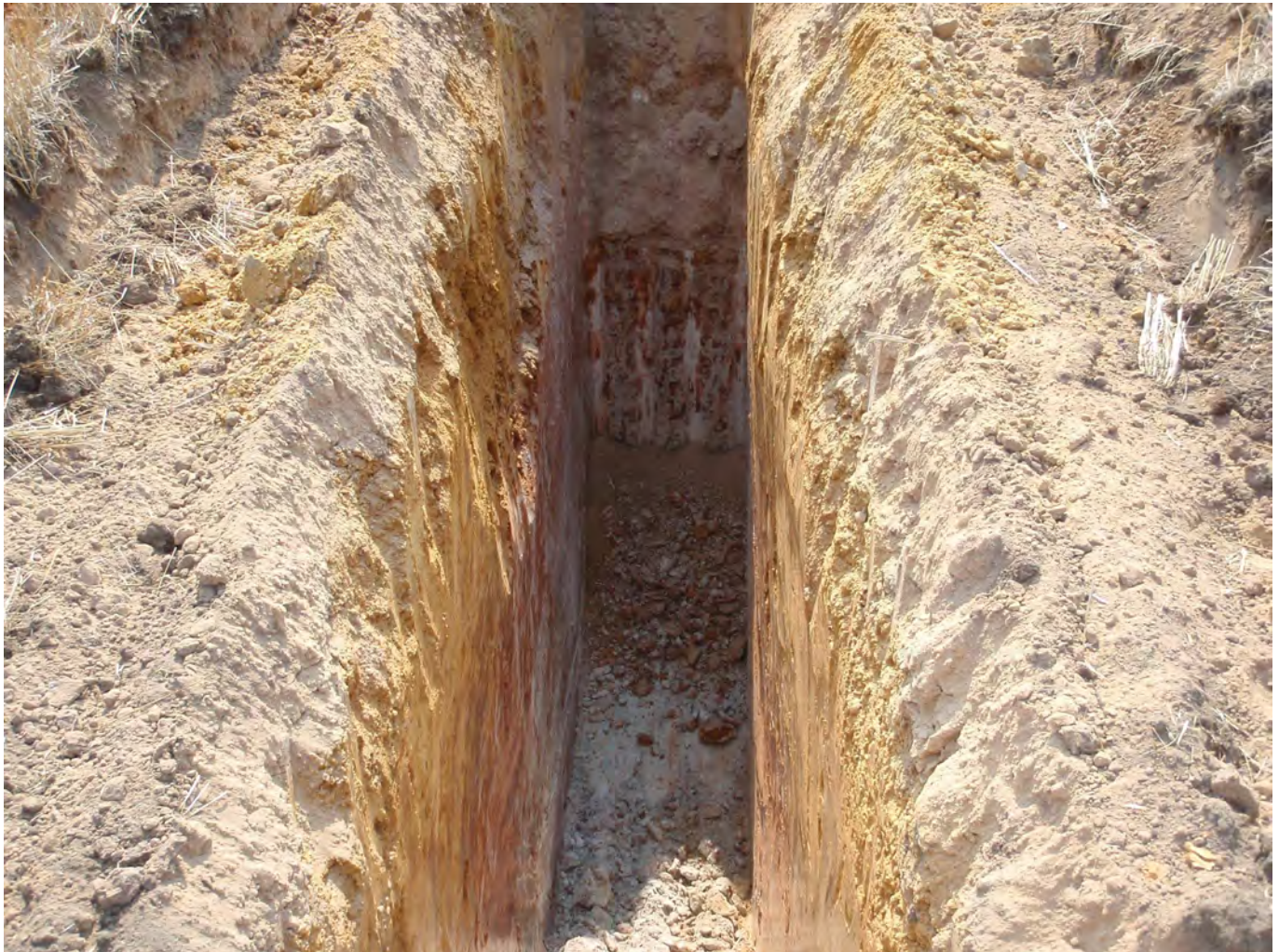
Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL	D	L	Density inferred from observations.	
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.60	SC				Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	M (<PL)	MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.		
			1										
	1.80		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.			M (c PL)	VSt					
	2												
	2.80		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.			M (c PL)	VSt					
	3												
	4						M (c PL)	VSt					
	5												
								TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED					

REPORT OF TEST PIT PHOTOGRAPHS: BA18

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462024 m E 6469985 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1













REPORT OF TEST PIT: BA19

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462129 m E 6470018 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL		L	Density inferred from observations.	
			0.30				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
	0.70			GC			LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.	D	H				
	1			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.						
	1.30			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.	M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.			
	2			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.						
	3			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.						
	3.40			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.						
	4			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.	M (c PL)					
	5			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.						
			5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED					

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA19

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462129 m E 6470018 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1

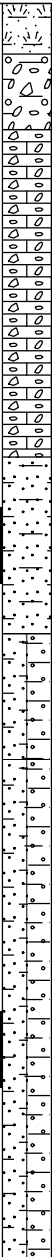


REPORT OF TEST PIT: BA20

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462239 m E 6470020 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 2.00-2.30 m Rec = 300/300 mm 1 bag			TOPSOIL	L	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.		
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.50	GC			LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.					
	H		1					D	H			
			1.80	SC			Clayey SAND fine to coarse grained sand, yellow with white and red staining, low to medium plasticity fines, with some rounded/subrounded pisolitic gravel, with some roots and rootlets.	M (<PL)	MD			
			2.50	SC / Cl			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M (c PL)	VSt			
	M		3	SC / Cl			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.					
			4									
			5						TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA20

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462239 m E 6470020 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1








REPORT OF TEST PIT: BA21

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 462340 m E 6470018 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.80 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 9/2/15
 CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0						TOPSOIL	D	L		Density inferred from observations.			
			0.20				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.								
			0.60				SC	Clayey SAND fine to coarse grained sand, yellow with white and red staining, low to medium plasticity fines, with some rounded/subrounded pisolitic gravel, with some roots and rootlets.	M (<PL)	MD		Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
	1															
	1.80															
	2			SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel and blocky granite, with some roots and rootlets.	VSt								
	2.60			GP			SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.				M					
	H-R											TEST PIT DISCONTINUED @ 2.80 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE				
							3									
							4									
			5													

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GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA21

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462340 m E 6470018 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA22

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462443 m E 6470019 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0				GC / SC	TOPSOIL	Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.	L	D	H	Density inferred from observations.			
			0.20													
	0.50		LATERITE (DURICRUST) fine to coarse grained, rounded to sub-rounded particles, orange, weakly cemented laterite.													
	1		1.00	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel and blocky granite, with some roots and rootlets.									
	2		2.60	GP			SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.									
	3						TEST PIT DISCONTINUED @ 2.80 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE									
	4															
	5															

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA22

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462443 m E 6470019 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1

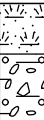
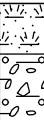






REPORT OF TEST PIT: BA23

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 461973 m E 6469862 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 4.20 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 6/2/15
 CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 0.80-1.10 m Rec = 300/300 mm 2 bags				TOPSOIL	D	L	Density inferred from observations.
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.				
			0.50	SC				Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.				
	M-H		1	BDS 3.00-3.30 m Rec = 300/300 mm 2 bags			SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.	
			1.40									
			2									
	H-R		3	BDS 3.00-3.30 m Rec = 300/300 mm 2 bags			GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M	VSt		
			4									4.00
			4									
					5							
									TEST PIT DISCONTINUED @ 4.20 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE			

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA23

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 461973 m E 6469862 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1





REPORT OF TEST PIT: BA24

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462070 m E 6469925 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 2.50-2.80 m Rec = 300/300 mm 2 bags				TOPSOIL	D	L	Density inferred from observations.	
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.70	SC				Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	MD				
			1.00	SC / CI				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.					
	2							M (<PL)	VSt				
	3												
	4												
	5												

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA24

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462070 m E 6469925 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA25

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462210 m E 6469948 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
EX	L		0		BDS 1.20-1.50 m Rec = 300/300 mm 2 bags				TOPSOIL	D	L	Density inferred from observations.				
			0.20				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.								
			0.50				SC / GC	Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse gravel, yellow and white with red staining, with medium plasticity fines.								
	M-H		0.80				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M (<PL)		Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.					
			1.80				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.								
	M		2						BDS 3.00-3.30 m Rec = 300/300 mm 2 bags				VSt	M (c PL)		
			3													
			4													
			5													
								TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA25

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462210 m E 6469948 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA26

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462332 m E 6469946 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0						TOPSOIL	D	L	Density inferred from observations.			
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			0.50	SC / GC				Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse gravel, yellow and white with red staining, with medium plasticity fines.							
	1		1.10	SC / CI				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
	2														
	2.80														
	H-R								GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M				
				3							TEST PIT DISCONTINUED @ 3.00 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE				
				4											
				5											

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA26

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462332 m E 6469946 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA27

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462445 m E 6469942 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
EX	L		0						TOPSOIL	D	L	Density inferred from observations.				
			0.20					SC / SW	Clayey SAND to SAND fine to medium grained sand, well graded, with some rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			0.50					SC / GC	Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse rounded to subrounded pisolitic gravel, predominantly yellow and white with some red staining, with medium plasticity fines.	M	MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
	1		1.10					SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M (<PL)	VSt					
	2															
	2.50			GP				SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M							
	M-H		H-R	3							TEST PIT DISCONTINUED @ 3.00 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE					
				4												
				5												

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA27

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462445 m E 6469942 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1




REPORT OF TEST PIT: BA28

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462009 m E 6469792 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0						TOPSOIL	D	L		Density inferred from observations.			
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.									
			0.70	SC			Clayey SAND fine to coarse grained, yellow, orange and white with red staining, medium plasticity fines.	MD								
			1	1.30			SC / CI		Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.	M (<PL)	VSt					
	2															
	3															
	3.70		GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.			M									
	H-R															
				4								TEST PIT DISCONTINUED @ 3.90 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE				
				5												

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA28

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462009 m E 6469792 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.90 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA29

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462097 m E 6469866 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations.
			0.20				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.70				SC	Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.		MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1.10				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.			
EX	M-H		2								
			3						M (<PL)	VSt	
			4								
			5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
EX			6								

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA29

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462097 m E 6469866 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1

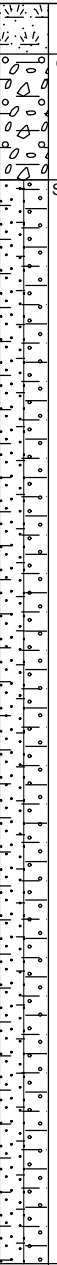


REPORT OF TEST PIT: BA30

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462207 m E 6469888 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL	D	L		Density inferred from observations.
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.70	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.			Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.		
			1									
			2									
	M-H		3						M (<PL)	VSt		
			4									
			5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA30

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462207 m E 6469888 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 6/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA31

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462329 m E 6469882 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX	L		0					TOPSOIL	D	L	Density inferred from observations.		
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.						
			0.60	SC / GC			Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse gravel, yellow and white with red staining, with medium plasticity fines.	M			MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.	
	1		1.30	SC / CI		Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M (<PL)	VSt					
	2		2.90	SC / CI		Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.			M (c PL)				
	3												
	M-H		4										
	M		5										

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA31

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462329 m E 6469882 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA32

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462442 m E 6469860 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description								
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX	L		0		BDS 0.80-1.00 m Rec = 200/200 mm 1 bag				TOPSOIL	D	L	MD	Density inferred from observations.		
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			0.50	SC / GC				Clayey SAND to Clayey GRAVEL medium to coarse grained sand with medium to coarse gravel, yellow and white with red staining, with medium plasticity fines.							
			1	SC / CI				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.							
	H		2		BDS 3.00-3.30 m Rec = 300/300 mm 1 bag				M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
			3												
	M-H		4	4.00					GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M				
			H-R							TEST PIT DISCONTINUED @ 4.20 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE					
					5										

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA32

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462442 m E 6469860 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 9/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1





REPORT OF TEST PIT: BA33

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463564 m E 6468822 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description									
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0						TOPSOIL	D	L		Density inferred from observations.			
			0.20	GC / SC				Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.								
			0.40	SC				Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.								
	M-H		1	1.10				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.	M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
			3	3.00				GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.							
	H-R									TEST PIT DISCONTINUED @ 3.20 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE						

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA33

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463564 m E 6468822 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1

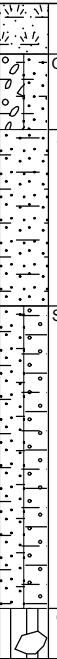


REPORT OF TEST PIT: BA34

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463639 m E 6468818 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX	L		0					TOPSOIL	D	L	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.			
			0.20	GC / SC			Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			0.50	SC			Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	MD						
	1		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining, with gravel, with some roots and rootlets.			M (<PL)		VSt					
	1.20													
	2													
	H-R		2.40	GP			SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M						
			3	TEST PIT DISCONTINUED @ 2.60 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE										
				4										
				5										

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA34

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463639 m E 6468818 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.60 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA35

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462934 m E 6468528 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations.
			0.20				GC / SC	Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.60				SC	Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.		MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1.20				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, light orange and white with red staining, with gravel, with some roots and rootlets.			
			4.00				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.		M (c PL)	
EX	M				BDS 2.50-2.80 m Rec = 300/300 mm 1 bag				M (<PL)		
					BDS 4.50-4.80 m Rec = 300/300 mm 1 bag						
			5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			6								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA35

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462934 m E 6468528 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA36

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462934 m E 6468606 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations.
			0.20				GC / SC	Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.60				SC	Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.		MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1.20				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, light orange and white with red staining, with gravel, with some roots and rootlets.			
			4.00				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.	M (<PL)	VSt	
			5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			6								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA36

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 462934 m E 6468606 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15




1.

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GAP gINT FN. F29
RL1



SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0						TOPSOIL	D	L	Density inferred from observations.		
			GC / SC	Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.										
	0.20			SC				Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	MD	Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.				
	0.60			SC / CI				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, light orange and white with red staining, with gravel, with some roots and rootlets.						
	1			M (<PL) - M (c PL)				VSt						
	1.30													
	2													
	3													
	4													
	5		4.90	SC / CI				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, white with limited red staining, with gravel, with some roots and rootlets.	M (c PL)					
		TEST PIT DISCONTINUED @ 5.20 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED												
6														

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA37

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463010 m E 6468690 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA38

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463015 m E 6468610 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 3.00-3.30 m Rec = 300/300 mm 1 bag			TOPSOIL	D	L	Density inferred from observations.	
			0.20	GC / SC			Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.60	SC			Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	MD				
	1		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, light orange and white with red staining, with gravel, with some roots and rootlets.			M (<PL)		VSt			
	1.80											
M		2										Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
		3										
		4										
		5							TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA38

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463015 m E 6468610 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA39

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463020 m E 6468535 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL	D	L		Density inferred from observations.	
			0.20	GC / SC			Clayey GRAVEL to Clayey SAND fine to medium grained gravel to coarse to medium grained sand, with rounded to sub-rounded pisolitic gravel particles, pale brown, with low plasticity fines, with some roots and rootlets.						
			0.50	SC			Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.						
			0.70	SC / CI			Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, light orange and white with red staining, trace of gravel, with some roots and rootlets.						
	1												
	2												
	3									M (<PL)	VSt		Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
	4												
	5												
								TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED					

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA39

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463020 m E 6468535 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



REPORT OF TEST PIT: BA40

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463094 m E 6468542 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0					TOPSOIL			Density inferred from observations.
			0.20				GC	Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.	D	L	
			0.50				SC	Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.		MD	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.
			1.00				SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.			
EX	M-H		2								
			5					TEST PIT DISCONTINUED @ 5.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			6								

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA40

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463094 m E 6468542 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 5.00 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1





REPORT OF TEST PIT: BA41

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463090 m E 6468620 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
EX	L		0		BDS 2.50-2.80 m Rec = 300/300 mm 1 bag			TOPSOIL	D	L	Density inferred from observations.	
			0.20	GC		Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.						
			0.50	SC		Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.			
			1	SC / CI		Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.						
			1.50									
	M-H		2			GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M				
			3									
			4							4.00		
	H-R			5					TEST PIT DISCONTINUED @ 4.20 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE			

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA41

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463090 m E 6468620 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 4.20 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1




REPORT OF TEST PIT: BA42

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463100 m E 6468700 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description								
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
EX	L		0						TOPSOIL	D	L	Density inferred from observations.			
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			0.50	SC				Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.							
			1	SC / Cl				Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.							
	2		M (<PL)	VSt											
	2.60							GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.						
	H-R														
				3								TEST PIT DISCONTINUED @ 2.80 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE			
				4											
				5											

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GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA42

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463100 m E 6468700 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1




REPORT OF TEST PIT: BA43

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463180 m E 6468700 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 2.80 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 10/2/15
 CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0						TOPSOIL	D	L	Density inferred from observations.
			0.20	GC			Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.60	SC			Clayey SAND fine to coarse grained, yellow, white with red staining, medium plasticity fines.	M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.		
	1		SC / CI	Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.								
	1.20											
	M-H		2	GP			SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.	M				
			2.60									
	H-R		3	TEST PIT DISCONTINUED @ 2.80 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE								
			4									
			5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA43

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463180 m E 6468700 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.80 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
RL1


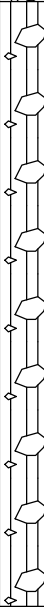


REPORT OF TEST PIT: BA44

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463180 m E 6468620 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 3.00 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 10/2/15
 CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description								
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX	L		0						TOPSOIL	D	L	Density inferred from observations.			
			0.20	GC				Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.							
			0.60	GC / GP				SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 200 mm) of low weathered granite embedded in a clayey/silty soil matrix.							
	1						M	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.						
	2														
	R			3								TEST PIT DISCONTINUED @ 3.00 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE			
4															
5															

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
 RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA44

CLIENT: SITA Australia
 PROJECT: Allawuna Farm Landfill
 LOCATION: Allawuna Farm
 JOB NO: 147645033

COORDS: 463180 m E 6468620 m N MGA94 50
 SURFACE RL: DATUM: AHD
 PIT DEPTH: 3.00 m
 BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
 MACHINE: 25t Excavator
 CONTRACTOR:
 LOGGED: RF DATE: 10/2/15
 CHECKED: DATE: 1/3/15



1.

This report of test pit photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F29
 RL1




REPORT OF TEST PIT: BA45

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463190 m E 6468542 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0		BDS 2.00-2.30 m Rec = 300/300 mm 1 bag			TOPSOIL	D	L	Density inferred from observations.
			0.20	GC		Clayey GRAVEL fine to medium grained gravel, rounded to sub-rounded particles, pale brown, with low plasticity fines, with some roots and rootlets.					
			0.50	SC / CI		Silty Clayey SAND to Sandy Silty CLAY fine to coarse grained sand to medium plasticity clay, orange and white with red staining reducing at depth, with gravel, with some roots and rootlets.					
	2					M (<PL)	VSt	Density inferred from observations. Vertical fissures (possibly due to degraded roots) filled with sand size particles are present throughout the entire test pit depth.			
	2.90		GP	SAPROLITE to SAPROCK. Mixtures of large rock fragments (approximately 60 mm) of low weathered granite embedded in a clayey/silty soil matrix.		M					
H-R		3					TEST PIT DISCONTINUED @ 3.10 m GROUNDWATER NOT ENCOUNTERED BACKFILLED REFUSAL ON GRANITE				
			4								
			5								

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01e
RL3

REPORT OF TEST PIT PHOTOGRAPHS: BA45

CLIENT: SITA Australia
PROJECT: Allawuna Farm Landfill
LOCATION: Allawuna Farm
JOB NO: 147645033

COORDS: 463190 m E 6468542 m N MGA94 50
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.10 m
BUCKET TYPE: 900 mm toothed

SHEET: 1 OF 1
MACHINE: 25t Excavator
CONTRACTOR:
LOGGED: RF DATE: 10/2/15
CHECKED: DATE: 1/3/15



1.

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GAP gINT FN. F29
RL1



APPENDIX F

Laboratory Testing – Interpretation



GEOCHEMICAL LABORATORY TESTING

Electrical conductivity and pH of soil pore water

Laboratory test certificates and quality control & quality assurance certificates are presented in Appendix G.

The pH and electrical conductivity (EC) of the soil samples taken during the test pit investigations were assessed using a solid to liquid ratio of 1:5. The results are summarised in Table F1 and Table F2.

Table F1: pH and electrical conductivity (solid to liquid ratio 1:5) summary

Test Pit Name	TP2	TP5	TP5	TP10	TP10	TP10	TP14	TP20	TP22
Depth interval (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0	1.3-2.8	1.0-3.8	0.9-1.9
EC (µs/cm)	38	18	20	24	330	599	710	660	1100
pH (-)	6.1	6.3	5.9	5.9	4.4	4.2	4.3	4.6	4.4

Table F2: pH and electrical conductivity (solid to liquid ratio 1:5) summary

Test Pit Name	TP86	TP86	TP102	TP102	TP116
Depth interval (m)	0.3-0.9	2.0-6.0	0.8-1.4	1.4-2.8	0.3-0.8
EC (µs/cm)	40	60	140	130	20
pH (-)	8.5	6.6	6.5	6.0	5.6

Based on the results summarised in the table above, samples TP10 (at a depth interval of 0.2 m to 0.9 m), TP2, TP5, TP86, TP102 and TP116 showed to be circum-neutral (approximately pH = 6) with a low EC. The low EC is possibly maintained through adsorption of any free ions onto the clay surface. If the pH is below 5.5 it is considered acidic. At acidic pH, metal ions are commonly released from the solid surface (they are desorbed leading to a higher EC in the solution that the solid is in contact with).

Cation Exchangeable Capacity

The total negative electric charge per mass of soil is called the soil's cation exchange capacity (CEC). This can be considered as the capacity of a clay mineral to retain cations. The CEC is measured in cmol(+)/kg, which is equivalent to a unit of meq/100 g. Depending on the pore water chemistry, soils with low CEC are more susceptible to flocculation rather than swelling resulting in reduced hydraulic conductivity. Based on Victoria BPEM (2014)¹ a clayey soil is considered suitable for use as a compacted clay liner material if its CEC is greater than 10 meq/100 g and its hydraulic conductivity is lower than 1×10^{-9} m/s.

The CEC was measured according to the Rayment & Higginson method.

The CEC results are presented graphically in Figure F1. Laboratory test certificates, quality control and quality assurance, and the procedure method are presented in Appendix G.

Based on Figure F1, the material has a low CEC, below 10. Therefore, the material does not meet the CEC criteria specified by Victoria BPEM guidelines for use as a compacted clay liner. This low value could be attributable to the exchange of magnesium and calcium cations with sodium cations in the clay platelets due to the high sodicity of the local soil and low presence of clay minerals within the soil. Based on typical CEC of clay minerals, the soil appears to be in the low CEC range of kaolinite (between 3meq/100g and 15meq/100g).

¹ Victoria BPEM, 2014. Siting, Design, Operation and Rehabilitation of Landfills, Best Practice Environmental Management. Published in September 2010.



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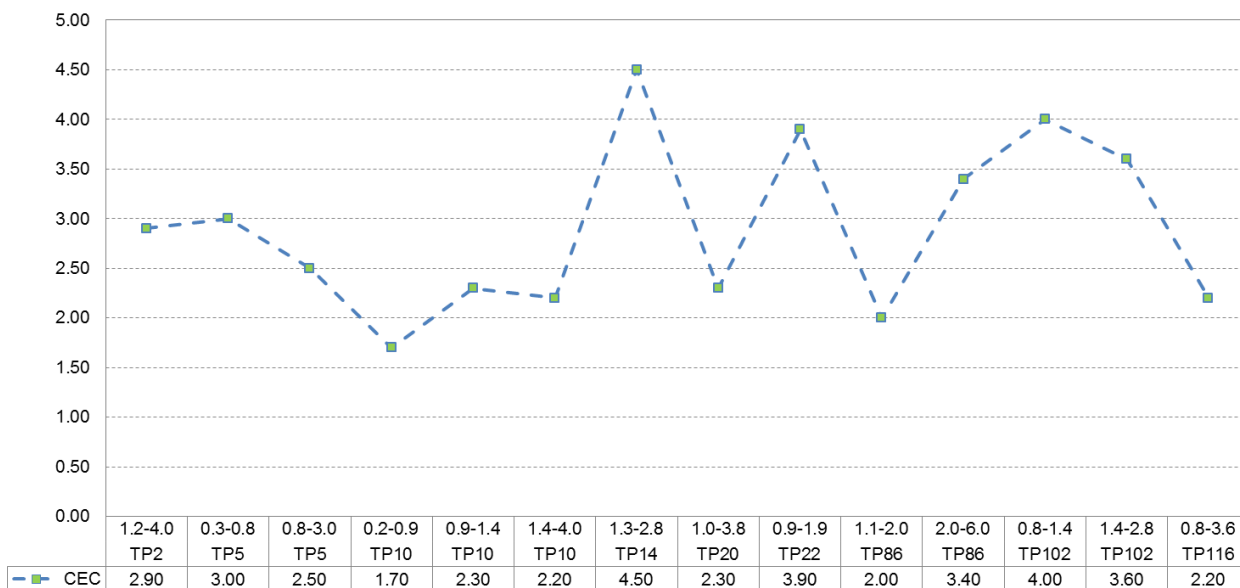


Figure F1: Cationic Exchange Capacity of soil samples

Exchangeable sodium percentage and sodium absorption ratio

A soil is considered potentially dispersive if classified as sodic. The sodicity of a soil can be assessed through two key parameters: the exchangeable sodium percentage (ESP) and the sodium absorption ratio (SAR).

The proportion of exchangeable sodium relative to the sum of total exchangeable cations is called the ESP of a soil. This parameter is an indication of the structural stability of a soil. A high ESP value implies predominance of exchangeable sodium and a greater propensity for the soil to be dispersive (as sodium ions favour dispersion). On the other hand, a low ESP implies predominance of exchangeable calcium and magnesium and greater propensity of the soil to flocculate, as these ions favour flocculation of clay minerals. Traditionally in Australia soils are classified as potentially dispersive if the ESP is higher than 6% (Vacker, 2004)².

The SAR is commonly used to assess the sodicity of water for use in agricultural irrigation. It is also often used to establish if a soil containing clay minerals has the potential to disperse. It measures the percentage of soluble sodium present in the pore water in relation to calcium and magnesium cations in solution. Generally water with a SAR greater than 3 are considered sodic.

The typical ESP of the *in situ* soil and the typical SAR of groundwater from boreholes installed by Golder at the site location is shown graphically in Figure F2 and Figure F3, respectively.

² Vacker, 2004. Identification and management of dispersive mine spoils. C.A. Vacker, R.J. Loch and S.R. Raine. June 2004.



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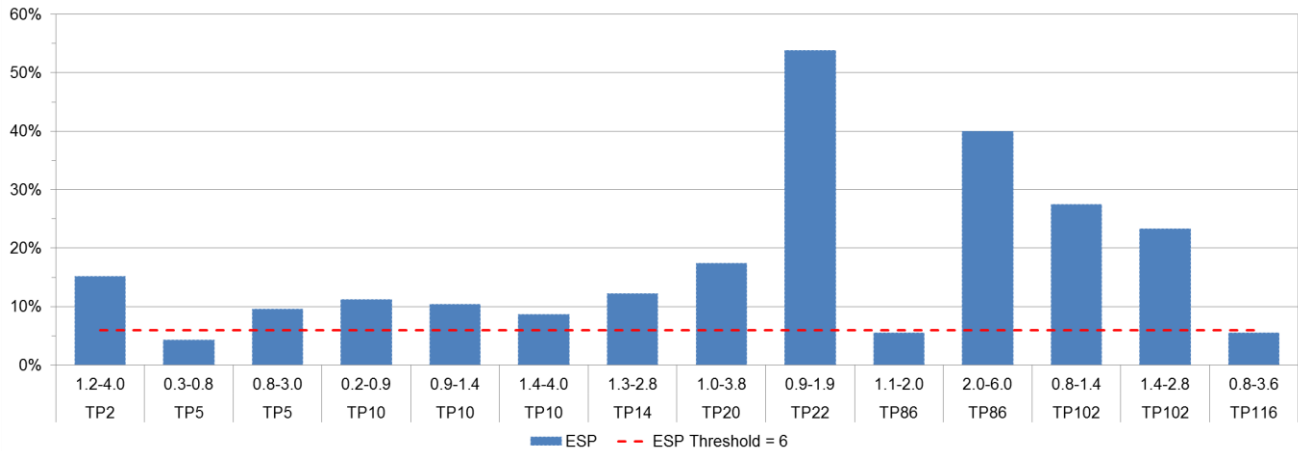


Figure F2: ESP soil.

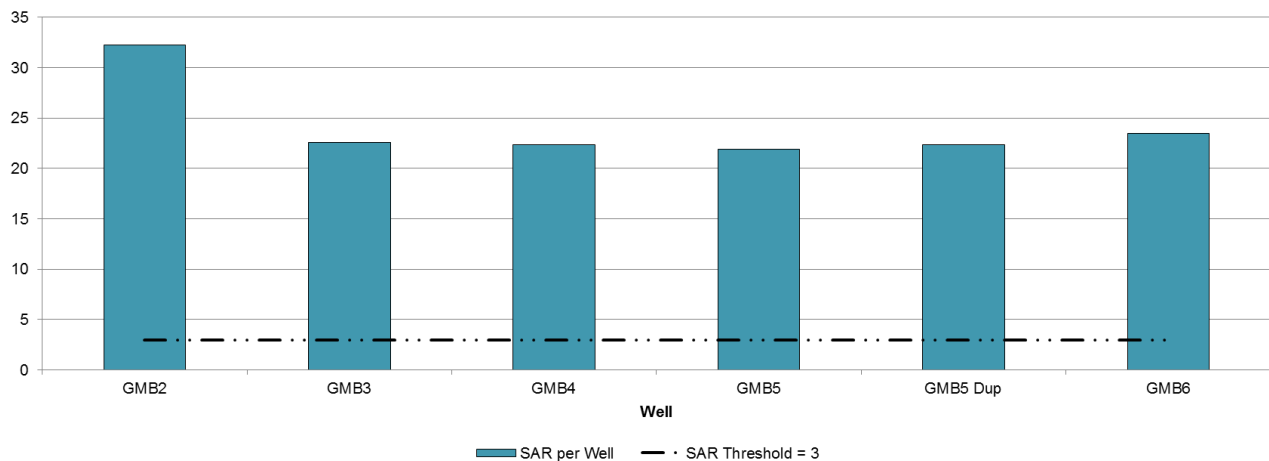


Figure F3: SAR groundwater at boreholes GMB2 to GMB6.

Based on Figure F2 and Figure F3, the soil is classified as sodic.

It is important to acknowledge that not all sodic soils are dispersive, and that not all dispersive soils are sodic. The structural stability of a soil should be studied by interpreting not only its ESP but also its CEC and typical pore water chemistry (EC, pH and SAR).

In spite of high ESP and high SAR, clays in contact with high sodicity solutions may be very stable (flocculate) under an acid environment (below 5.0) but could disperse under a basic environment with low salts concentration (rainfall infiltrating through the soil or runoff). Rainfall or runoff increases the swelling of sodic clay minerals enhancing its mobility. Nevertheless, considering that the clay has shown low CEC values (less than 5.0), its susceptibility to disperse under a rainfall/runoff event is considered to be low because the propensity of the material to swell and become mobile is reduced.

The dispersivity of the in situ clay material has also been assessed by undertaking Emerson crumb, and pinhole testing on compacted soil material. According to these tests, the material has a low potential to be dispersive. This is discussed further in Section 0.



GEOTECHNICAL LABORATORY TESTING

Characterisation

Particle size distribution and Atterberg limits are two key tests used to classify a material in terms of the Unified Soil Classification System (USCS), which allows comparison of the geotechnical properties of a material with typical literature values.

PSD by sieve, Atterberg limits, particle density and moisture content were undertaken in accordance with the Australian Standard (AS) 1289. Additional PSDs were undertaken using X-ray sedimentation by Sedigraph. This test enables the clay fractions to be distinguished from the silt size fractions. Laboratory test certificates are presented in Appendix G.

Figure F4 to Figure F7 presents the PSD of the materials and Figure F8 to Figure F9 their plasticity index and liquid limit plotted in the plasticity chart.

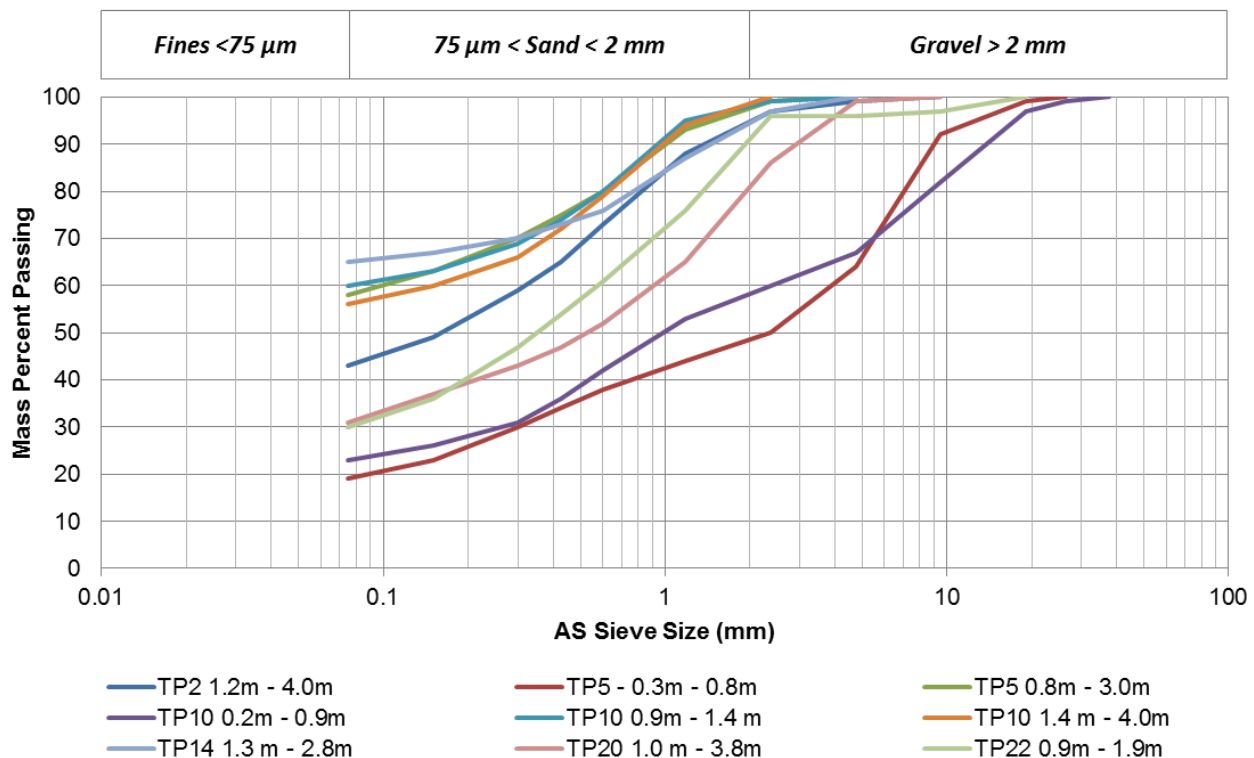


Figure F4: Material PSD by sieve.



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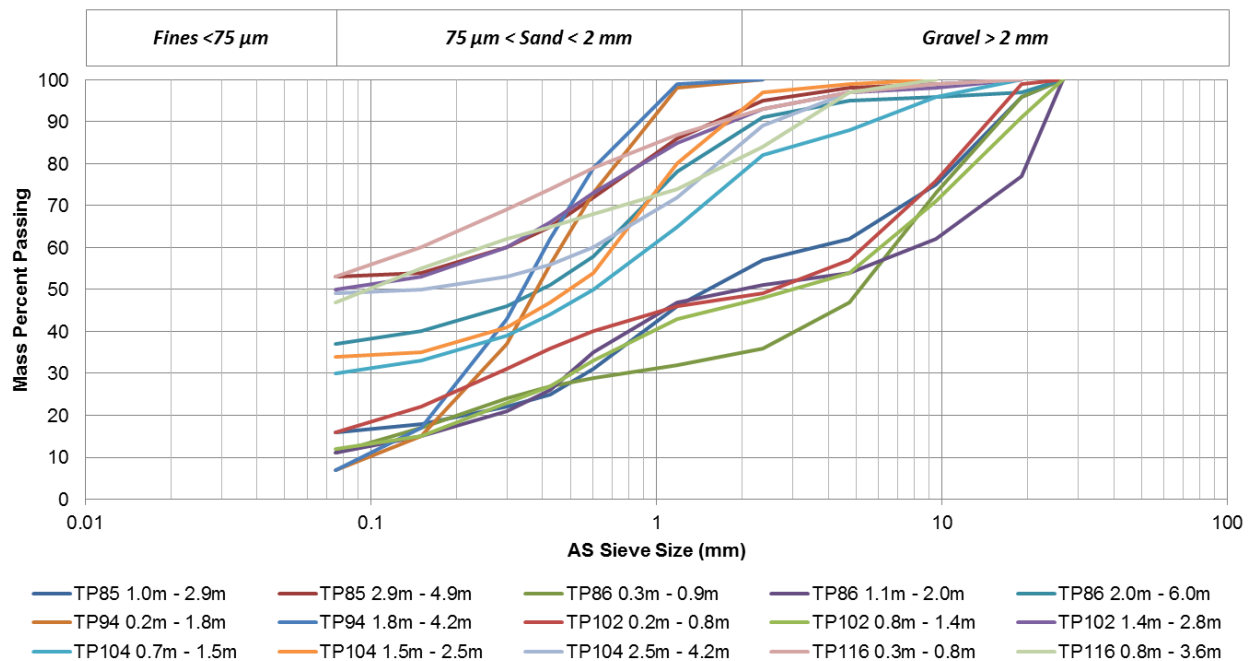


Figure F5: Material PSD by sieve.

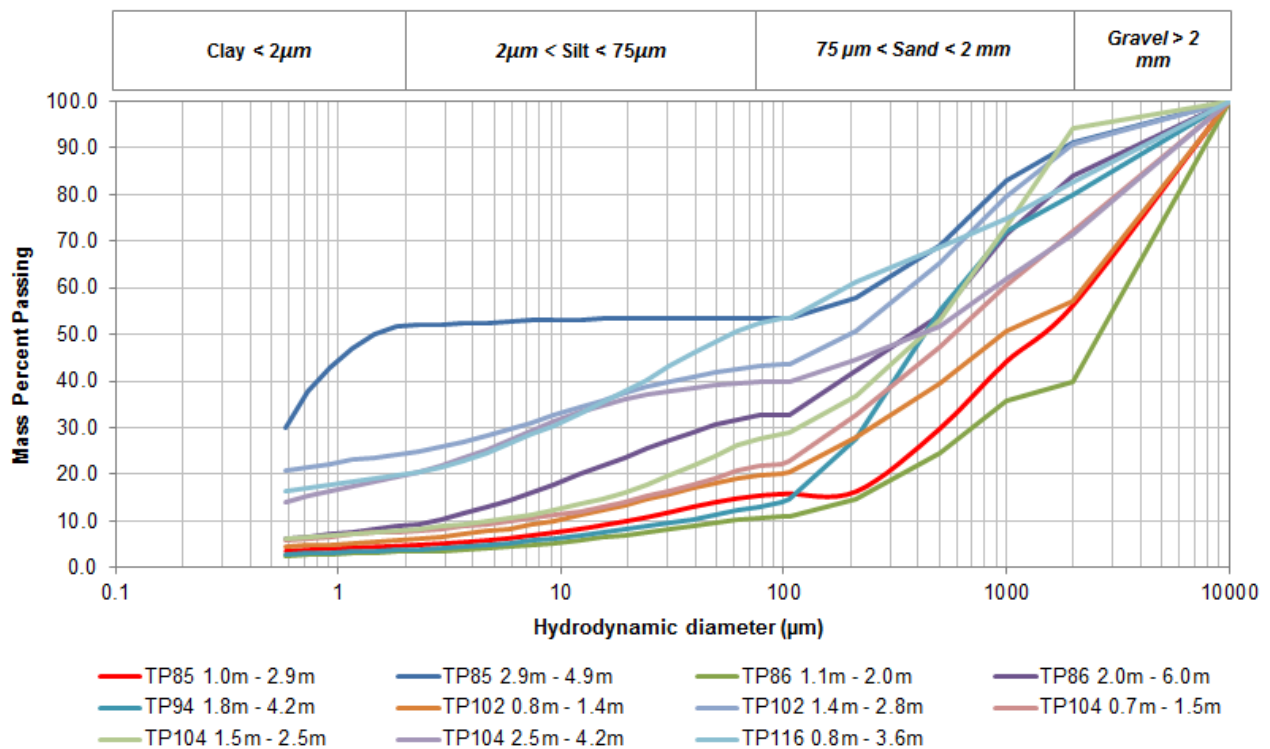


Figure F6: Material PSD by Sedigraph.



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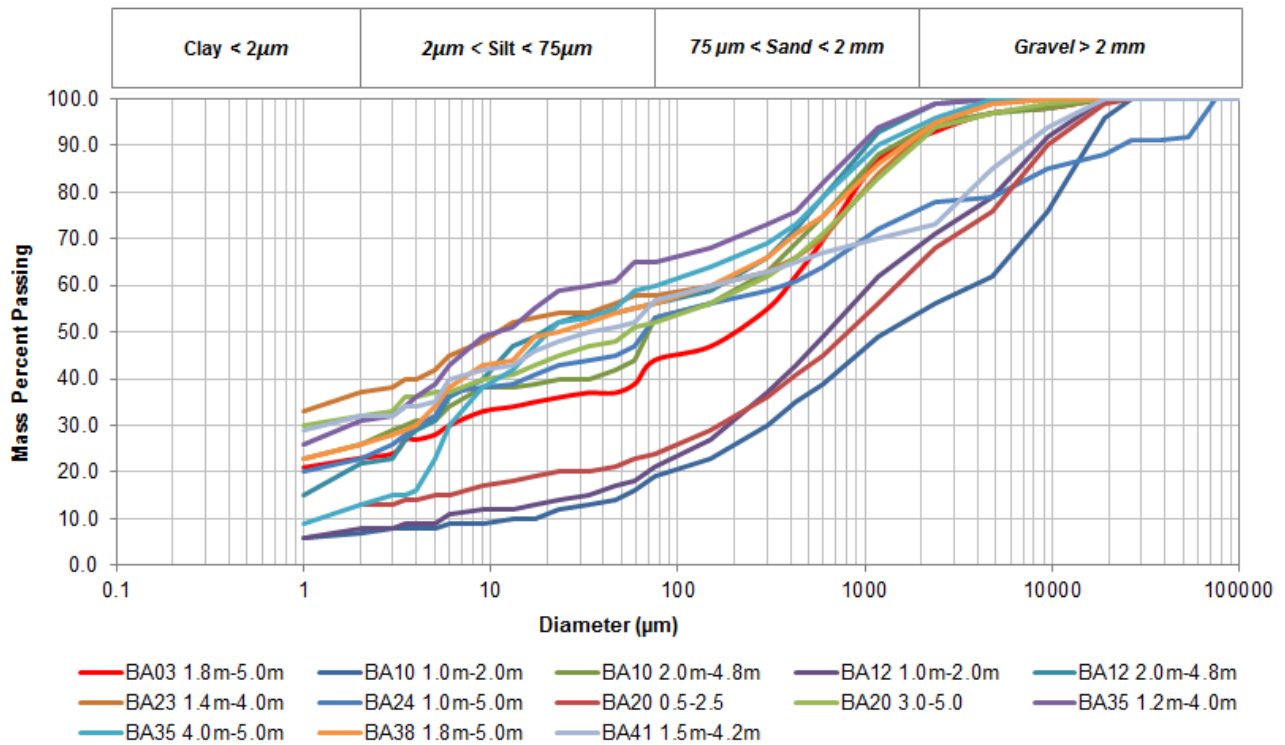


Figure F7: Material PSD by hydrometer.

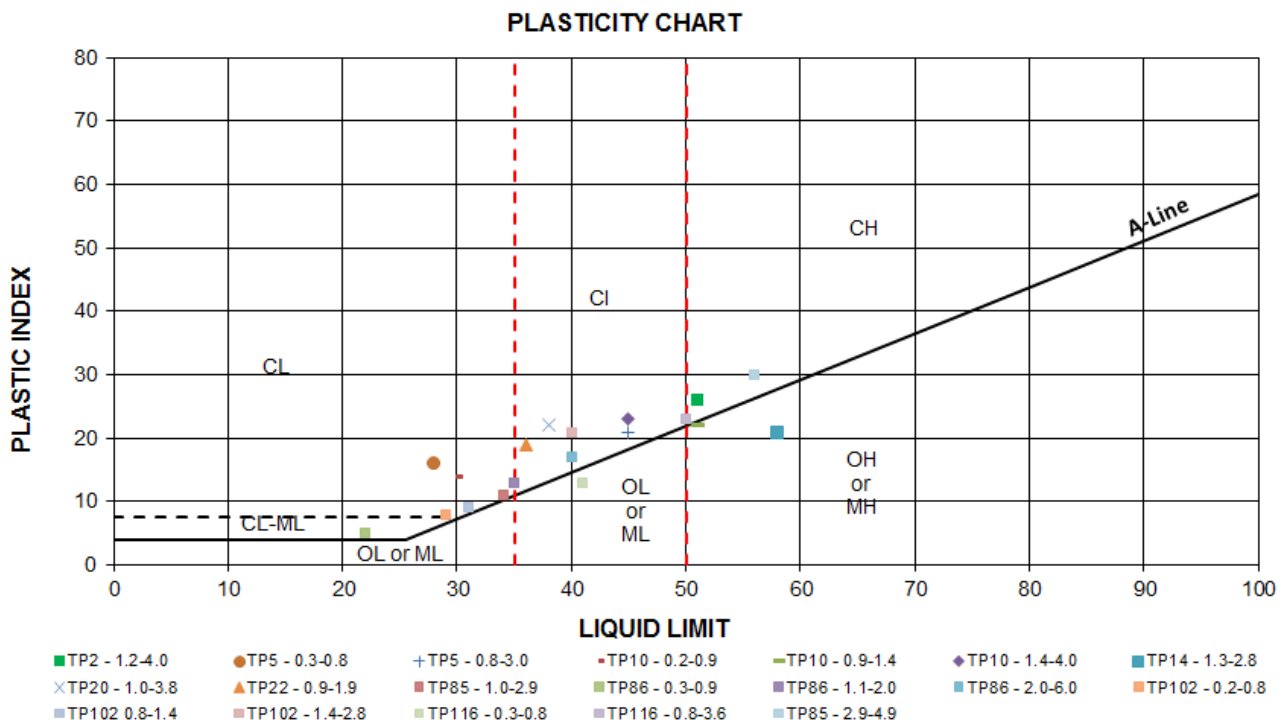


Figure F8: Material plasticity classification.



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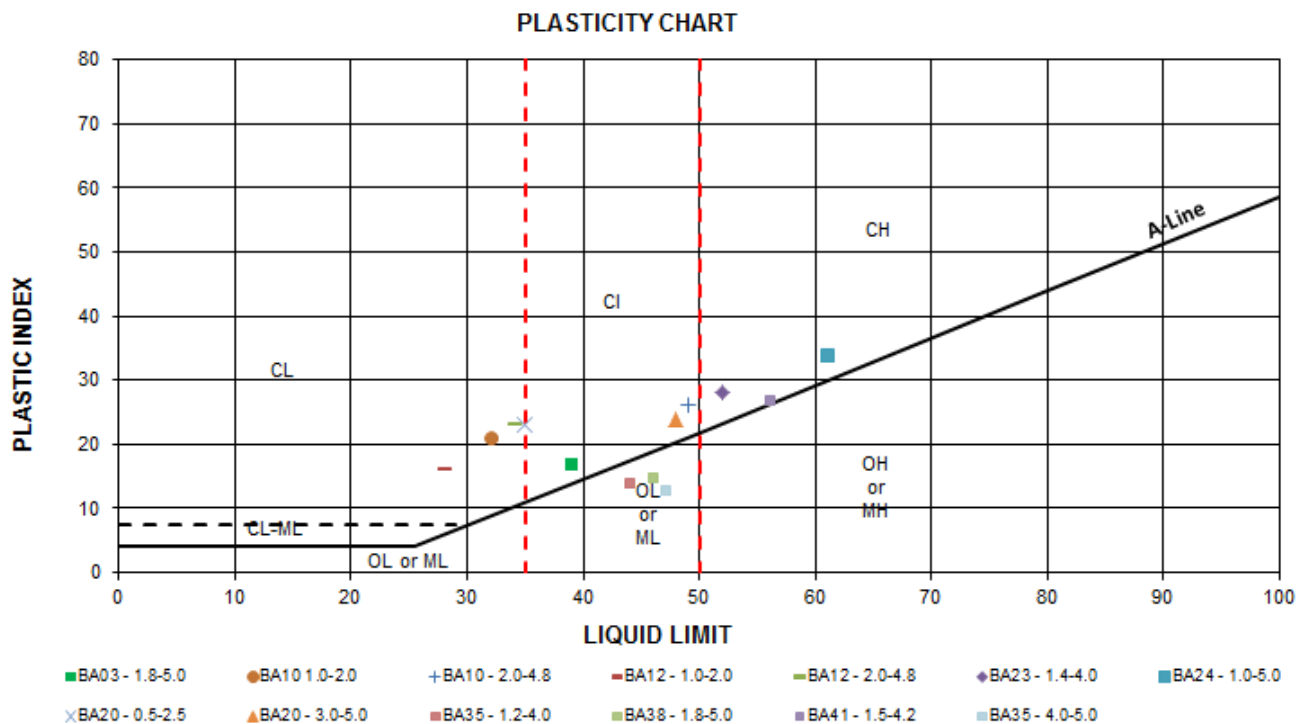


Figure F9: Material plasticity classification.

Based on the PSD and their plasticity properties of the tested materials, the top layer of the test pit profile can either be classified as a low plasticity clayey GRAVEL or as a low plasticity clayey SAND in accordance with USCS. Generally the amount of fines appears to be between 15% and 30%. Its colour was generally pale brown and yellow. This material was pisolithic, generally of rounded to sub-rounded shape (formed by pea-sized grains of red brown oxides). Pisolites generally consist of red brown oxides (hematite, goethite and possibly maghemite) with an inner core containing kaolinite and sometimes gibbsite. This material can be characterised by higher hydraulic conductivity than the underlying materials.

This coarse top layer generally overlays material with medium to high plasticity fines and variable amount of gravel, sand and fines size fraction. Based on the PSD and plasticity characteristics of the tested materials, this layer can vary from a silty clayey GRAVEL or silty clayey SAND with medium to high plasticity fines, to a medium to high plasticity CLAY, to a low to high plasticity SILT. This behaviour is typical of a lateritic weathering profile from granite derived soils. The colour of this layer was generally white with patches of yellow and red (this layer is generally called the “mottled” zone). The yellow and red staining was generally found to decrease at depth, with the white and grey being the predominant colour (“pallid” or “bleached” zone). The plasticity characteristics obtained for these materials falls within the typical range for lateritic soils. Based on literature that describes typical lateritic profile in Australia and South-east Asia from granite derived soils, the pale white material is generally kaolinite clay, with the yellow and red patches consisting of iron and aluminium sesquioxides (Fell et al, 1992)³.

The material excavated from test pit TP94 differed from the other test pits. In this test pit, the soil is classified according to the USCS as a poorly graded sand material (the fraction of fines below 75 µm was approximately 7%). This material could be of colluvium origin. It could have been formed as a result of transportation of material by gravity from the surrounding hills to eroded gullies that developed in the granite due to erosion.

³ Fell et al., 1992. Geotechnical Engineering of Embankment Dams. Published in 1992 by A.A. Balkema.



The particle density of the fine fraction material varies between 2.6 t/m^3 to 2.7 t/m^3 . Coarse size material was detected in 2 of the 9 samples tested (TP5 0.3-0.8 m; TP10 0.2-0.9 m). The particle density of this coarse size material varies between 2.2 t/m^3 to 2.4 t/m^3 . The particle densities detected for the fine and coarse materials fall within typical particle density range found for a lateritic profile derived from granite soils.

The linear shrinkage is generally between 3% and 10%. This is typical of material with a relatively high percentage of sand (as encountered) with medium plasticity fines (such as kaolinite). Material with this linear shrinkage indicates a low to medium propensity to shrink/swell and form surface cracks when exposed to air drying cycles typical of a semi-arid climate such as the Allawuna Landfill site.

The in situ moisture content was generally high, ranging between 10% and 13% for the top layer and 15% and 20% for the fine bottom layer.

Emerson crumb and pinhole testing

Dispersive soils are soils susceptible to separation of the individual clay particles and subsequent internal erosion of these fine clay particles through established fine fissures or cracks in the soil under seepage flows.

The dispersivity of the material sampled during the field investigation was assessed using the Emerson Crumb test in accordance with AS 1289.3.8.1 and the pinhole test in accordance with AS 1289.3.8.3. Laboratory test certificates are presented in Appendix G.

Based on the Emerson Crumb tests undertaken, only one sample out of the six tested indicated dispersivity. The sample that dispersed (TP5 0.3-0.8 m depth) classified as Class 3 (typical of illite material), which is more representative of material conditions above the mottled or pallid zone.

The pinhole tests were undertaken by remoulding the material to 95% SMDD at OMC to represent the typical conditions of the embankment fill. Based on the pinhole tests, one sample out of the three samples indicated to be potentially dispersive (PD2) (TP86 2.0-6.0 m depth). This material is classified as SC according to the USCS. The amount of clay size fraction present in this material is approximately 9%, which is considered low. Therefore, the potential dispersive behaviour could be due to instability of the soil matrix rather than dispersion of the clay minerals. The remaining two samples contained more than 20% clay size fraction and classified not dispersive (ND1 and ND2).

Overall, the observed materials can be considered to have low susceptibility to dispersion.

Compaction

Standard compaction testing was undertaken in a standard mould size in accordance with AS 1289.5.1.1. Laboratory test certificates are presented in Appendix G.

The standard mould size was selected, as standard density testing is proposed to be adopted as compliance testing during construction. The material selected for compaction testing were TP2 (1.2-4.0 m), TP10 (1.4-4.0 m), TP14 (1.3-2.8 m), TP86 (1.1-2.0 m), TP86 (2.0-6.0 m), TP102 (0.8-1.4 m), TP102 (1.4-2.8 m) and TP116 (0.8-3.6 m). This material was selected as it represents the majority of the material available for construction.

Table F3 summarises the results of the compaction testing.

Based on the results presented in Table F3, the standard maximum dry density (SMDD) and optimum moisture content (OMC) of TP10, TP14 and TP116 are similar. The material sampled from TP2 presents the lowest SMDD and highest OMC. This could be due to the presence of a greater amount of clay minerals, which can be inferred by the higher plasticity shown in Figure F8. The material from TP86 and TP102 presents the highest SMDD and lowest OMC, which is typical of gravel and sand material.



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Based on comparison between the OMC of the material and the *in situ* moisture content, the material may not require a significant amount of water for construction. This is obviously seasonally dependent as during sampling of TP2, TP10 and TP14 the investigation was undertaken during the wet season. However, considering the type of material, the soil should retain a significant amount of water also during the dry season.

Table F3: Compaction summary results.

Property	Test Pit Name	TP2	TP10	TP14	TP86	TP86	TP102		TP116
	Depth Interval (m)	1.2-4.0	1.4-4.0	1.3-2.8	1.1-2.0	2.0-6.0	0.8-1.4	1.4-2.8	0.8-3.6
Standard Maximum Dry Density (SMDD)	t/m ³	1.65	1.76	1.74	1.90	1.83	1.90	1.85	1.75
Optimum Moisture Content (OMC)	%	20.5	15.5	17.0	12.0	13.3	12.1	13.5	16.4
<i>In Situ</i> Moisture Content	%	19.5	17.3	14.7	Not detected				
Moisture content required for compaction	%	-1 (deficit)	+1.8 (surplus)	-2.3 (deficit)					

Permeability

Permeability testing was undertaken in accordance with AS 1289.6.7.3, which provides a procedure for undertaking permeability testing using a flexible wall permeameter. Laboratory test certificates are presented in Appendix G.

The testing was undertaken in a flexible wall permeameter (triaxial apparatus) using both Perth tap water (3 tests) and 50 000 ppm NaCl solution (3 tests). The permeability testing using NaCl solution was undertaken with the intention to simulate the leachate solution from the landfill. The material was prepared to 95% SMDD at OMC and left to saturate for 24 hours. A B-check (pore pressure saturation check) was undertaken to assess that saturation was achieved prior to applying a constant head pressure. After this period, a constant head pressure of 25 kPa was then applied and the flow recorded at different time intervals. The test was terminated when a constant flow (and therefore constant hydraulic conductivity) was recorded.

The materials selected for testing, using tap water, were TP2 (1.2-4.0 m), TP10 (1.4-4.0 m) and TP14 (1.3-2.8 m). The materials selected for testing, using 50 000 ppm NaCl solution, were TP86 (2.0-6.0 m), TP102 (1.4-2.8 m) and TP116 (0.8-3.6 m).

Based on the test outcomes, the saturated hydraulic conductivity at 20°C (K₂₀) of the material compacted at 95% SMDD at OMC using tap water is generally below 1×10^{-9} m/s, as presented below:

- TP2 – K₂₀ equal to 1.4×10^{-10} m/s
- TP10 – K₂₀ equal to 7.9×10^{-10} m/s
- TP14 – K₂₀ equal to 1.08×10^{-10} m/s

Based on the test outcomes, the saturated hydraulic conductivity at 20°C (K₂₀) of the material compacted at 95% SMDD at OMC using 50 000 ppm NaCl solution is generally above 1×10^{-9} m/s, as presented below:

- TP86 – K₂₀ equal to 7.2×10^{-9} m/s
- TP102 – K₂₀ equal to 2.8×10^{-8} m/s
- TP116 – K₂₀ equal to 5.0×10^{-9} m/s



The test on TP14 was undertaken twice by Trilab with the second test being reported by the laboratory as a replacement for the original lab report. The first test showed a K20 of 2.0×10^{-8} m/s, while the second test indicated a lower permeability of 1.08×10^{-10} m/s. The laboratory technician suggested that the difference may have been due to piping while undertaking the first test.

The test using 50 000 ppm salt solution has shown that the material is sensitive to the presence of salt in solution. This value below the 1×10^{-9} m/s threshold, established by the Victoria BPEM guidelines, could be due to low percentage of clay in the soil (TP86) or flocculation of the clay mineral (TP102 and TP116). Overall, the material is not considered suitable for use as compacted clay liner, however, it will provide attenuation if leakage occurs through the primary containment barrier.

Strength

Isotropically consolidated undrained (CIU) triaxial testing was undertaken on relatively un-remoulded bulk samples of material representative of TP20 (1.0 m to 3.8 m depth) and TP14 (1.3 m to 2.8 m depth) and a remoulded sample of material representative of TP86 (2.0 m to 6.0 m depth). TP86 was remoulded to 95% SMDD at OMC. The tests were undertaken in accordance with AS 1289.6.4.2.

Laboratory test certificates are presented in Appendix G.

The tests were undertaken using Perth tap water at approximately 100 kPa, 250 kPa and 500 kPa of effective confining pressure. The CIU tests on TP14 and TP86 were run as a single stage test. The test on TP20 was a multistage test. In multistage strength testing, the same material is used for all three stages by interrupting the shearing stage at an observed strain that is considered sufficient to mobilise the peak strength. For the test undertaken by Trilab, the shearing was interrupted by the laboratory technician prior to peak being attained to avoid sudden failure of the material. The last stage was however strained past peak strength.

Figure F10 and Figure F11 presents the drained and undrained strength estimated from the triaxial testing, respectively. From the figures the following observations can be made:

- TP14 dilated while shearing
- TP20 contracted while shearing
- TP86 dilated while shearing at 100 kPa; at approximately 250 kPa the material is contracting slightly while shearing; at 500 kPa the material is contracting while shearing
- TP14, TP20 and TP86 show good agreement in terms of drained friction angle
- The materials show a peak friction angle of approximately 28° and cohesion of approximately 5 kPa.
- TP14 appears to be normally consolidated (this could be likely the results of disturbance during the sampling process). A minimum peak undrained strength ratio of approximately 0.27 was estimated at 100 kPa confining pressure. This low undrained strength ratio is the result of the material not having achieved its undrained peak strength during multistage testing. Therefore, the first and second stages of the test are not representative of the material's strength and should not be used for estimating strength parameters for the material. The last stage at 500 kPa showed a strength ratio of approximately 0.35, which is typical of undrained shear strength of clay material under triaxial compression testing. This strength can represent the peak undrained shear strength in a triaxial compression test of the clayey material if normally consolidated.
- TP20 appears to be over-consolidated; a minimum undrained shear strength ratio of approximately 0.6 was estimated at approximately 250 kPa and 500 kPa confining pressure.



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- TP86 appears to approach the normally consolidated state at confining pressure above 250 kPa. A minimum peak undrained strength ratio of approximately 0.35 was estimated at 500 kPa confining pressure, similarly to TP14. This strength can represent the peak undrained shear strength in triaxial compression test of the clayey material if the material is, or reaches, its normally consolidated state.

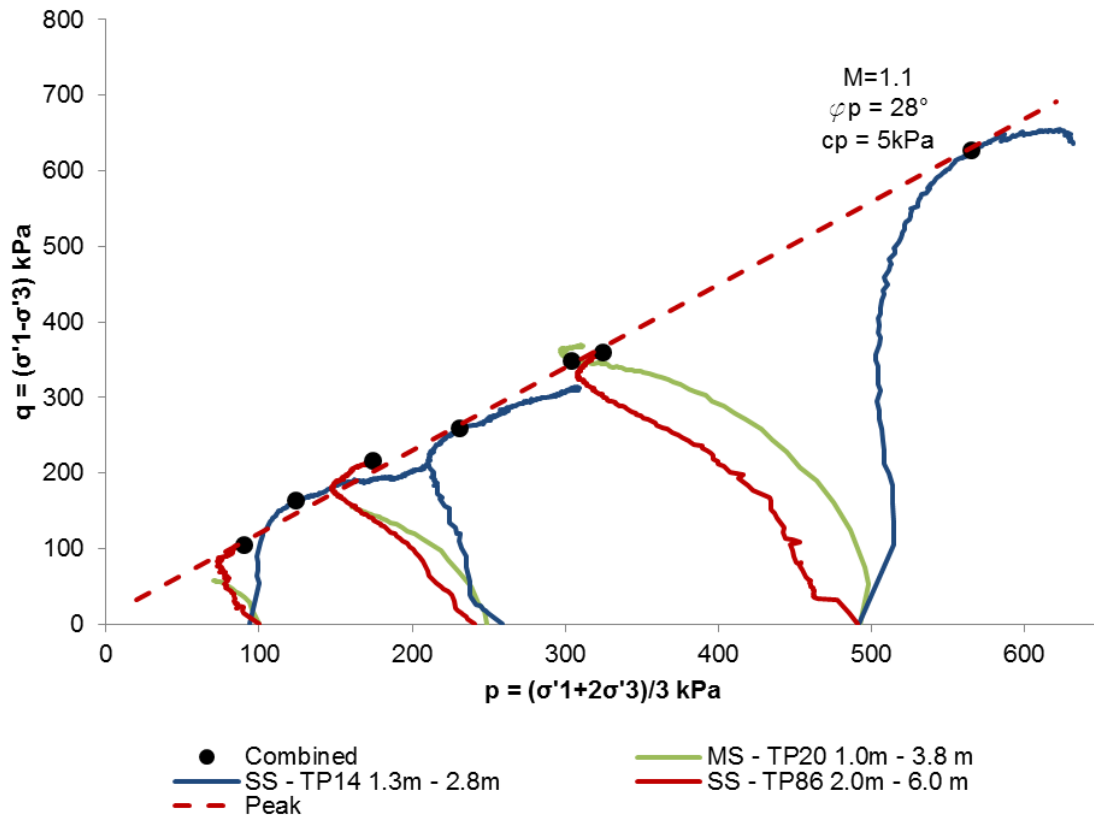


Figure F10: Cambridge p-q plot of the triaxial test results (MS – multistage; SS – single stage).



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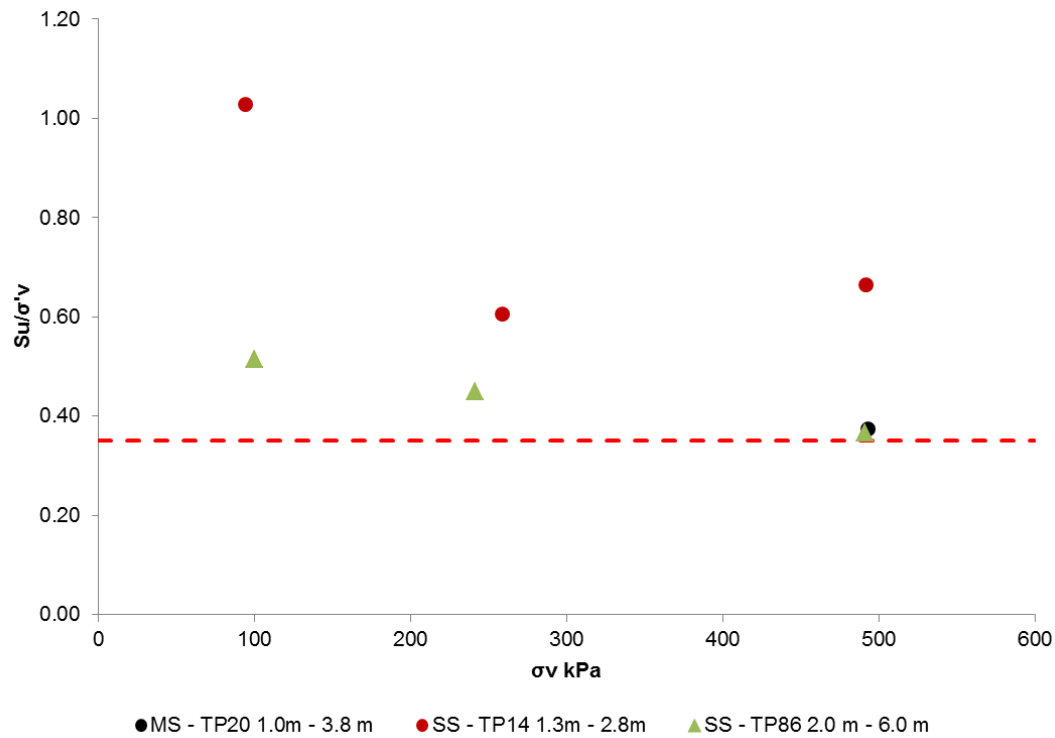


Figure F11: Undrained strength ratio plot of the triaxial test results.



SUMMARY GEOCHEMICAL PROPERTIES

Property	Test Pit Name	TP2	TP5		TP10			TP14	TP20	TP22	TP86		TP102		TP116
	Depth Interval (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0	1.1-2.0	2.0-6.0	0.8-1.4	1.4-2.8	0.8-3.6	1.3-2.8	1.0-3.8	0.9-1.9
pH	pH units	6.1	6.3	5.9	5.9	4.4	4.2	8.5	6.6	6.5	6.0	5.4	4.3	4.6	4.4
Conductivity	µs/cm	38	18	20	24	330	599	40	60	140	130	20	710	660	1100
Cation Exchangeable Capacity	mEq/100gr	2.9	3.0	2.5	1.7	2.3	2.2	2.0	3.4	4.0	3.6	2.2	4.5	2.3	3.9

SUMMARY GEOTECHNICAL PROPERTIES

Testing	Property	Test Pit Name	TP2	TP5		TP10			TP14	TP20	TP22
		Depth Interval (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0	1.3-2.8	1.0-3.8	0.9-1.9
Particle Density Fines	SG	-	2.66	2.71	2.63	2.68	2.66	2.66	2.64	2.65	2.64
Particle Density Coarse		-	-	2.38	-	2.21	-	-	-	-	-
Particle Size Distribution	Gravel (>2.36 mm)	%	3	50	1	40	1	0	3	14	4
	Sand (2.36 mm to 75 µm)	%	54	31	41	37	39	44	32	55	66
	Fines (<75 µm)	%	43	19	58	23	60	56	65	31	30
Atterberg Limits	Liquid Limit (LL)	%	51	28	45	30	51	45	58	38	36
	Plastic Limit (PL)	%	25	16	21	14	22	23	21	22	19
	Plasticity Index (PI)	%	26	12	24	16	29	22	37	16	17
	Linear Shrinkage (LS)	%	7	6.5	7	3	4.5	4	4	5.5	7
Field Moisture Content		%	19.5	12.9	15.3	10.2	15.8	17.3	14.7	15	16.9
Soil Classification	USCS	-	SC	GC	CI	GC	CH/MH	CI	MH	SC	SC
	Description		Clayey SAND with high plasticity fines	Clayey GRAVEL with low plasticity fines	Medium Plasticity Clay	Clayey GRAVEL with low plasticity fines	High plasticity CLAY/High plasticity SILT	Medium plasticity CLAY	High plasticity SILT	Clayey SAND with medium plasticity fines	Clayey SAND with medium plasticity fines
Dispersion Test	Emerson Class Number	-	6	3	6	6	6	6	6	6	6
Compaction Test	SMDD	t/m ³	1.65	-	-	-	-	1.76	1.74	-	-
	OMC	%	20.5	-	-	-	-	15.5	17.0	-	-
Permeability Test	k _(T=20) – 95%SMDD at OMC	m/s	1.37E-10	-	-	-	-	7.91E-10	1.08E-10	-	-



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Testing	Property	Test Pit Name	TP85	TP85	TP86	TP86	TP86	TP94	TP94	TP102	TP102
		Depth Interval (m)	1.0-2.9	2.9-4.9	0.3-0.9	1.1-2.0	2.0-6.0	0.2-1.8	1.8-4.2	0.2-0.8	0.8-1.4
Particle Size Distribution	Gravel (>2.36 mm)	%	43	5	64	49	9	0	0	51	52
	Sand (2.36 mm to 75 µm)	%	41	42	25	40	54	93	93	33	36
	Fines (<75 µm)	%	16	53	11	11	37	7	7	16	12
	Silt (75 µm to 2 µm)	%	11	1	-	8	28	-	3	-	6
	Clay (<2 µm)	%	5	52	-	3	9	-	4	-	6
Atterberg Limits	Liquid Limit (LL)	%	34	56	22	35	40	-	-	29	31
	Plastic Limit (PL)	%	23	26	17	22	23	-	-	21	22
	Plasticity Index (PI)	%	11	30	5	13	17	-	-	8	9
	Linear Shrinkage (LS)	%	5.5	10.5	2.5	6.5	8	-	-	4	4
Soil Classification	USCS	-	GC	CH	GW-GM/GC	GW/GC	SC	SP	SP	GC	GC/GM
	Description	-	Clay GRAVEL with low plasticity fines	High plasticity clay	Well graded GRAVEL/Silty Clayey GRAVEL with low plasticity fines	Well graded Gravel with low/medium plasticity fines	Clayey SAND with medium plasticity fines	Poorly graded SAND	Poorly graded SAND	Clayey GRAVEL with low plasticity fines	Clayey Silty GRAVEL with low plasticity fines
Dispersion Test	Pinhole (Distilled Water)	-	-	-	-	-	PD2	-	-	-	-
Compaction Test	SMDD	t/m ³	-	-	-	1.9	1.83	-	-	-	1.9
	OMC	%	-	-	-	12	13.3	-	-	-	12.1
Permeability Test	k _(T=20) – 95%SMDD at OMC	m/s	-	-	-	-	7.2E10-9	-	-	-	-

Testing	Property	Test Pit Name	TP102	TP104	TP104	TP104	TP116	TP116
		Depth Interval (m)	1.4-2.8	0.7-1.5	1.5-2.5	2.5-4.2	0.3-0.8	0.8-3.6
Particle Size Distribution	Gravel (>2.36 mm)	%	7	18	3	11	7	16
	Sand (2.36 mm to 75 µm)	%	43	52	63	40	40	37
	Fines (<75 µm)	%	50	30	34	49	53	47
	Silt (75 µm to 2 µm)	%	26	22	26	29	-	27
	Clay (<2 µm)	%	24	8	8	20	-	20
Atterberg Limits	Liquid Limit (LL)	%	40	-	-	-	41	50
	Plastic Limit (PL)	%	19	-	-	-	28	27
	Plasticity Index (PI)	%	21	-	-	-	13	23
	Linear Shrinkage (LS)	%	9	-	-	-	6.5	9
Soil Classification	USCS	-	CI	SC/SM	SC/SM	SC/SM	ML	SC
	Description		Sandy CLAY with medium plasticity CLAY	Clayey SAND/Silty SAND	Clayey SAND/Silty SAND	Clayey SAND/Silty SAND	Low plasticity SILT	Clayey SAND with medium to high plasticity fines
Dispersion Test	Pinhole (Distilled Water)	-	ND2	-	-	-	-	ND1
Compaction Test	SMDD	t/m ³	1.85	-	-	-	-	1.75
	OMC	%	13.5	-	-	-	-	16.4
Permeability Test	k _(T=20) – 95%SMDD at OMC	m/s	2.80E-08	-	-	-	-	5.00E-09



APPENDIX F
Laboratory Testing Interpretation

Testing	Property	Test Pit Name	BA03	BA10	BA10	BA12	BA12	BA23	BA24	BA20	BA20	BA35	BA35	BA38	BA41
		Depth (m)	1.8-5.0	1.0-2.0	2.0-4.8	1.0-2.0	2.0-4.8	1.4-4.0	1.0-5.0	0.5-2.5	3.0-5.0	1.2-4.0	4.0-5.0	1.8-5.0	1.5-4.2
Particle Size Distribution	Gravel (>2.36 mm)	%	7	44	5	29	1	5	22	32	6	1	4	5	27
	Sand (2.36 mm to 75 µm)	%	49	37	42	50	43	37	25	44	42	34	36	39	16
	Fines (<75 µm)	%	44	19	53	21	56	58	53	24	52	65	60	56	57
	Silt (75 µm to 2 µm)	%	21	12	27	13	34	21	30	11	20	34	47	30	25
	Clay (<2 µm)	%	23	7	26	8	22	37	23	13	32	31	13	26	32
Atterberg Limits	Liquid Limit (LL)	%	39	32	49	28	34	52	61	35	48	44	47	46	56
	Plastic Limit (PL)	%	22	21	26	16	23	28	34	23	24	30	34	31	29
	Plasticity Index (PI)	%	17	11	23	12	11	24	27	12	24	14	13	15	27
	Linear Shrinkage (LS)	%	6.5	6.0	8.5	6.5	4.5	10.5	10.0	5.5	8.5	6.4	4.0	7.5	12.0
Field moisture content		%	8.5	9.6	13.5	9.7	12.1	14.8	21.4	12.2	14.6	16.0	20.4	19.6	23.2
Soil Classification	USCS	-	SC	GC	CI	SC	CL	CH	CH	SC	CI	ML	ML	ML	CH/MH
	Description		Clayey SAND	Clayey GRAVEL	Medium plasticity CLAY	Clayey SAND	Low plasticity CLAY	High plasticity CLAY	High plasticity CLAY	Clayey SAND	Medium plasticity CLAY	Medium plasticity SILT	Medium plasticity SIT	Medium plasticity SILT	High plasticity CLAY/High plasticity SILT



APPENDIX G

Laboratory Testing – Certificates



APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geochemical Procedure

NMI: METHOD DESCRIPTION SUMMARY	
Analysis Description:	Exchangeable Cations and Cation Exchange Capacity
Matrix:	Soil
NMI Method Code:	NT 2.60
Reference Method(s):	Rayment and Higginson, Aust Lab Handbook of Soil and Water Chemical Methods, 1992, 15E1 and 15E2
LOR and Units:	Exchangeable cations = 0.01 - 0.02 mequiv / 100g, CEC = 0.08 mequiv / 100g
NATA Accredited:	Yes
Method summary (including any preparation, digestion, extraction, cleanup, determination etc and brief description of instrumentation / equipment used):	
Method Title	
Determination of Exchangeable Cations, Cation Exchange Capacity and Water Soluble Cations in Soils	
Preparation & Procedure:	
For exchangeable cation estimation, soils are extracted with an NH ₄ Cl / BaCl ₂ solution and the five major cations (Al, Ca, Mg, Na and K) are determined using Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). The summed concentration of the five cations gives an approximate value of cation exchange capacity (CEC).	
Comments, limitations or known interferences	
Soils with EC > 0.3 dS/m are pre-washed with 60 % ethanol before analysis.	
Equipment used	
ICP-AES (Varian ES 730)	
Amount of sample required, container type, preservation and holding time	
A minimum of 10 g homogeneous air dried (40 °C) soil is required for metal analysis. If soil has not been previously dried and ground a minimum of 100 g representative soil is preferable (for moisture content, sample homogenisation, digestion for analysis and QA/QC).	
QA / QC protocols used (eg number of duplicates, spikes, matrix spikes, blanks etc per batch)	
For every batch of 20 samples or less, at least one blank, one duplicate, one blank spike, one sample spike and one laboratory control sample (CRM or in-house reference).	
MU for specific matrix/matrices	
13 – 18 %	
Date this summary produced and by whom	
Andrew Evans 16/02/2009	

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APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geochemical QA/QC



Australian Government
National Measurement Institute

Australian Resources Research Centre (ARRC)
26 Dick Perry Avenue, Kensington WA 6151
Delivery entrance (not Reception)

PO Box 1246 Bentley DC WA 6983 (Invoices/Reports)

Phone No 08 9368 8440
Fax No 08 9368 8444

Contact :

SAMPLE SUBMISSION (CHAIN OF CUSTODY) AND REGISTRATION SHEET

CUSTOMER: <i>Golder Associates</i>	ORDER No.:
ABN:	QUOTE No.:
ADDRESS: <i>Level 3, 1 Havelock Street West Perth, WA 6005</i>	TAT REQUIRED: <i>3 Day TAT.</i>
CUSTOMER CONTACT: <i>Riccardo Fanni</i>	EMAIL FOR SIGNED COC: <i>RFanni@golder.com.au</i>
MOBILE PHONE: <i>041893 9309</i>	EMAIL FOR RESULTS: <i>As Above.</i>
PHONE: <i>08 9213 7489.</i>	EMAIL FOR INVOICE:
FAX:	DATE SAMPLED:
JOB NUMBER / LOCATION: <i>147645033 Allawuna Farm Landfill</i>	

NMI LRN	SAMPLE ID	SAMPLE TYPE Soil/Water/Other	ANALYSIS REQUIRED	CONTAINER	
				Glass	Plastic
W14/Q14882	TP2 1.2-4.0m	Soil	pH, Electrical Conductivity and Cation Exchange Capacity in accordance with NEPM methods.	✓	
W14/Q14883	TP5 0.3-0.8m				
W14/Q14884	TP5 0.8-3.0m				
W14/Q14885	TP10 0.2-0.9m				
W14/Q14886	TP10 0.9-1.4m				
W14/Q14887	TP10 1.4-4.0m				
W14/Q14888	TP14 1.3-2.8m				
W14/Q14889	TP20 1.0-3.8m				
W14/Q14890	TP22 0.9-1.9m	↓		↓	
RECEIVED BY <i>Kevin Robins</i>	DATE/TIME RECEIVED <i>03/09/14 13:25</i>	SAMPLE CONDITION ON RECEIPT Frozen <u>Cold</u> / Ambient		CONTAINERS RECEIVED <i>9 x 250ml glass jars</i>	

Please detail all known health & safety hazards associate with the samples. Please complete as much as possible of this form to avoid unnecessary delays.

Page.....of.....

From: Fanni, Riccardo [mailto:RFanni@golder.com.au]
Sent: Tuesday, September 02, 2014 4:28 PM
To: Mclay, Paula
Subject: CEC Testing required and procedure

Hi Paula,

Please find below the testing I would like to undertake and the procedures:

Test pit number	Depth (m)	Testing	Procedure
TP 2	1.2 – 4.0	pH; EC; CEC	CEC in accordance with NEPM methods.
TP 5	0.3 – 0.8		If EC < 300 μ S/cm than Rayment & Higginsc 15B1 with no pre-treatment
	0.8 – 3.0		
TP 10	0.2 – 0.9		If EC > 300 μ S/cm than Rayment & Higginsc 15B2 or 15B3 with pre-treatment
	0.9 – 1.4		
	1.4 – 4.0		
TP 14	1.3 – 2.8		pH (1:5) EA002
TP 20	1.0 – 3.8		EC (1:5) EA01
TP22	0.9 – 1.9		

Thank you very much for your assistance.

Regards,

Riccardo Fanni (BSc Eng Env, MSc Eng Env) | Civil Engineer | Golder Associates Pty Ltd
Level 3, 1 Havelock Street, West Perth, Western Australia 6005, Australia (PO Box 1914, West Perth WA 6872)
T: +61 8 9213 7600 | D: +61 8 9213 7489 | F: +61 8 9213 7611 | M: +61 41 893 9309
| E: RFanni@golder.com.au | www.golder.com

Winner of 22 BRW Client Choice Awards

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RECEIVED NMI WA By: Kevin Robins Date: 03/09/14 Time: 13:25 Frozen <input checked="" type="radio"/> Cold <input type="radio"/> Ambient

9 x 250mL glass jars

* Sample jar for TP22 0.9-1.9m was received smashed. Soil sample was transferred to a new clean jar. Minimal glass shards were transferred to new container.

Mclay, Paula

From: Fanni, Riccardo <RFanni@golder.com.au>
Sent: Wednesday, 3 September 2014 1:52 PM
To: Mclay, Paula
Subject: RE: CEC Testing required and procedure [SEC=UNCLASSIFIED]

Hi Paula,

The project number is: 147645033
The project name is: Allawuna Farm Landfill

Thank you very much for your help.

Regards,

Riccardo Fanni (BSc Eng Env, MSc Eng Env) | Civil Engineer | Golder Associates Pty Ltd
Level 3, 1 Havelock Street, West Perth, Western Australia 6005, Australia (PO Box 1914, West Perth WA 6872)
T: +61 8 9213 7600 | D: +61 8 9213 7489 | F: +61 8 9213 7611 | M: +61 41 893 9309 | E: RFanni@golder.com.au |
www.golder.com

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[limitations](#)

From: Mclay, Paula [<mailto:Paula.Mclay@measurement.gov.au>]
Sent: Wednesday, 3 September 2014 8:01 AM
To: Fanni, Riccardo
Subject: RE: CEC Testing required and procedure [SEC=UNCLASSIFIED]

Gidday Riccardo

I've had confirmation that our Sydney laboratory uses this method for the CEC analysis.

They can manage a 3 day TAT from when the samples arrive at their lab. If you want to drop your samples off (in person or by courier) at our Kensington lab by about 2pm today, we will freight them overnight and the lab will receive them tomorrow and should report by Tuesday (Sep 9th).

Looking forward to hearing from you.

Cheers

Paula McLay

Dr Paula McLay
Laboratory Services Unit Manager
National Measurement Institute
Department of Industry

National Measurement Institute



Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: GOLDER ASSOCIATES PTY LTD (WA)

NMI QA Report No: GOLD55/140904 T1

Sample Matrix: Soil

Analyte	Method	LOR	Blank	Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mEq/100g	mEq/100g	mEq/100g	mEq/100g			
Exchangeable Cations				W14/014887			W14/014887	
Aluminium	NT2.60	0.02	<0.02	0.81	0.89	NA	**	100
Calcium	NT2.60	0.01	<0.01	0.017	0.017	NA	96	91
Magnesium	NT2.60	0.01	<0.01	1.1	1.1	NA	111	88
Potassium	NT2.60	0.02	<0.02	<0.02	<0.02	NA	95	97
Sodium	NT2.60	0.02	<0.02	0.2	0.18	NA	108	94

Filename = K:\Inorganics\Quality System\QA Reports\TE\QAR2014\Soil\

Legend:

Acceptable recovery is 75-120%.

Acceptable RPDs on duplicates is 44% at concentrations >5 times LOR. Greater RPD may be expected at <5 times LOR.

LOR = Limit Of Reporting

ND = Not Determined

RPD = Relative Percent Difference

NA = Not Applicable

LCS = Laboratory Control Sample.

#: Spike level is less than 50% of the sample's concentration, hence the recovery data cannot be reported.

**: reference value not available

* sample was not spiked for this element

Comments:

Results greater than ten times LOR have been rounded to two significant figures.

This report shall not be reproduced except in full.

Signed:

Dr Michael Wu
Inorganics Section, NMI-North Ryde
9/09/2014

Date:



APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geochemical Reports



REPORT OF ANALYSIS

Page: 1 of 6

Report No. RN1035952

Client	: GOLDER ASSOCIATES PTY LTD (WA) LEVEL 2 / 1 HAVELOCK STREET WEST PERTH WA 6005	Job No.	: GOLD55/140904
		Quote No.	: QT-02002
		Order No.	:
		Date Sampled	:
		Date Received	: 4-SEP-2014
Attention	RICCARDO FANNI	Sampled By	: CLIENT
Project Name	:		
Your Client Services Manager	: RICHARD COGHLAN	Phone	: (02) 94490161

Lab Reg No.	Sample Ref	Sample Description
W14/014882	.	SOIL TP2 1.2 - 4.0m ALLAWUNA FARM LANDFILL
W14/014883	.	SOIL TP5 0.3 - 0.8m ALLAWUNA FARM LANDFILL
W14/014884	.	SOIL TP5 0.8 - 3.0m ALLAWUNA FARM LANDFILL
W14/014885	.	SOIL TP10 0.2 - 0.9m ALLAWUNA FARM LANDFILL

Lab Reg No.		W14/014882	W14/014883	W14/014884	W14/014885	
Sample Reference		.	.	.	.
	Units					Method
BAC12 exchangeable cations						
Aluminium	mEq/100g	0.16	0.094	0.26	0.3	NT2_60
Calcium	mEq/100g	0.36	1.1	0.52	0.28	NT2_60
Cation Exchangeable Capacity	mEq/100g	2.9	3	2.5	1.7	NT2_60
Magnesium	mEq/100g	1.9	1.6	1.5	0.89	NT2_60
Potassium	mEq/100g	<0.02	0.11	<0.02	0.034	NT2_60
Sodium	mEq/100g	0.44	0.13	0.24	0.19	NT2_60
Trace Elements						
Total Solids	%	84.2	88.0	85.8	89.6	NT2_49

W14/014882

- W14/014890

Cation Exchangeable Capacity results are expressed on an air dried (40C) basis

Ling Shuang Lu, Analyst
Inorganics - NSW
Accreditation No. 198

9-SEP-2014

Accredited for compliance with ISO/IEC 17025

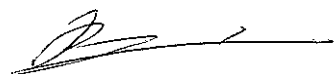
105 Delhi Road, North Ryde NSW 2113 Tel: +61 2 9449 0111 Fax: +61 2 9449 1653 www.measurement.gov.au

REPORT OF ANALYSIS

Page: 2 of 6

Report No. RN1035952

Lab Reg No.		W14/014882	W14/014883	W14/014884	W14/014885	
Sample Reference		.	.	.	.
	Units					Method
Miscellaneous						
Conductivity	uS/cm	38	18	20	24	NW_B9
pH	pH units	6.1	6.3	5.9	5.9	NW_S11



Wei Huang, Analyst
Inorganics - NSW
Accreditation No. 198

9-SEP-2014

REPORT OF ANALYSIS

Page: 3 of 6

Report No. RN1035952

Client : GOLDER ASSOCIATES PTY LTD (WA) LEVEL 2 / 1 HAVELOCK STREET WEST PERTH WA 6005	Job No. : GOLD55/140904 Quote No. : QT-02002 Order No. : Date Sampled : Date Received : 4-SEP-2014 Sampled By : CLIENT
Attention : RICCARDO FANNI Project Name : Your Client Services Manager : RICHARD COGHLAN	Phone : (02) 94490161

Lab Reg No.	Sample Ref	Sample Description
W14/014886	.	SOIL TP10 0.9- 1.4m ALLAWUNA FARM LANDFILL
W14/014887	.	SOIL TP10 1.4 - 4.0m ALLAWUNA FARM LANDFILL
W14/014888	.	SOIL TP14 1.3 - 2.8m ALLAWUNA FARM LANDFILL
W14/014889	.	SOIL TP20 1.0 - 3.8m ALLAWUNA FARM LANDFILL

Lab Reg No.		W14/014886	W14/014887	W14/014888	W14/014889	
Sample Reference	Units	.	.	.	.	Method
BAC12 exchangeable cations						
Aluminium	mEq/100g	0.81	0.85	0.58	0.31	NT2_60
Calcium	mEq/100g	0.037	0.017	0.031	0.17	NT2_60
Cation Exchangeable Capacity	mEq/100g	2.3	2.2	4.5	2.3	NT2_60
Magnesium	mEq/100g	1.2	1.1	3.3	1.3	NT2_60
Potassium	mEq/100g	<0.02	<0.02	<0.02	0.097	NT2_60
Sodium	mEq/100g	0.24	0.19	0.56	0.4	NT2_60
Trace Elements						
Total Solids	%	91.1	84.5	88.1	86.8	NT2_49

Ling Shuang Lu

Ling Shuang Lu, Analyst
Inorganics - NSW
Accreditation No. 198

9-SEP-2014

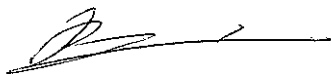
Lab Reg No.		W14/014886	W14/014887	W14/014888	W14/014889	
Sample Reference	Units	.	.	.	.	Method
Miscellaneous						
Conductivity	uS/cm	330	599	710	660	NW_B9
pH	pH units	4.4	4.2	4.3	4.6	NW_S11

REPORT OF ANALYSIS

Page: 4 of 6

Report No. RN1035952

Lab Reg No.		W14/014886	W14/014887	W14/014888	W14/014889	
Sample Reference		
	Units					Method



Wei Huang, Analyst
Inorganics - NSW
Accreditation No. 198

9-SEP-2014

REPORT OF ANALYSIS

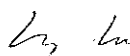
Page: 5 of 6

Report No. RN1035952

Client : GOLDER ASSOCIATES PTY LTD (WA) LEVEL 2 / 1 HAVELOCK STREET WEST PERTH WA 6005	Job No. : GOLD55/140904 Quote No. : QT-02002 Order No. : Date Sampled : Date Received : 4-SEP-2014 Sampled By : CLIENT
Attention : RICCARDO FANNI Project Name : Your Client Services Manager : RICHARD COGHLAN	Phone : (02) 94490161

Lab Reg No.	Sample Ref	Sample Description
W14/014890	.	SOIL TP22 0.9 - 1.9m ALLAWUNA FARM LANDFILL

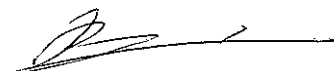
Lab Reg No.	Sample Reference	Units	W14/014890				Method
BAC12 exchangeable cations							
Aluminium	mEq/100g	0.48					NT2_60
Calcium	mEq/100g	0.036					NT2_60
Cation Exchangeable Capacity	mEq/100g	3.9					NT2_60
Magnesium	mEq/100g	1.3					NT2_60
Potassium	mEq/100g	0.046					NT2_60
Sodium	mEq/100g	2.1					NT2_60
Trace Elements							
Total Solids	%	82.0					NT2_49



Ling Shuang Lu, Analyst
Inorganics - NSW
Accreditation No. 198

9-SEP-2014

Lab Reg No.	Sample Reference	Units	W14/014890				Method
Miscellaneous							
Conductivity	uS/cm	1100					NW_B9
pH	pH units	4.4					NW_S11



Wei Huang, Analyst
Inorganics - NSW
Accreditation No. 198

9-SEP-2014

REPORT OF ANALYSIS

Page: 6 of 6
Report No. RN1035952

All results are expressed on a dry weight basis.



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Results relate only to the sample(s) tested.

This Report supersedes reports: *RN1035792* *RN1035939*



APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Specific Gravity



MISSING / NOT TESTABLE SHEET

Client:	Golder Associates		Job No.	Allawuna Proposed Landfill Site	Date:	06/09/2014
Sample No.	Client ID BH	Depth (m)	Explanation		By:	
P14080089	TP2	1.2-4.0	Insufficient coarse material for coarse SG		AWH	
P14080091	TP5	0.8-3.0	Insufficient coarse material for coarse SG		AWH	
P14080093	TP10	0.9-1.4	Insufficient coarse material for coarse SG		AWH	
P14080094	TP10	1.4-4.0	Insufficient coarse material for coarse SG		AWH	
P14080095	TP14	1.3-2.8	Insufficient coarse material for coarse SG		AWH	
P14080097	TP20	1.0-3.8	Insufficient coarse material for coarse SG		AWH	
P14080099	TP22	0.9-1.9	Insufficient coarse material for coarse SG		AWH	
General Comments:						

SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client Golder Associates Pty Ltd

Report No. P 14080089-SG

Project Allawuna Proposed Landfill Site

Test Date 02/09/2014-03/09/2014

Report Date 08/09/2014

Sample No.	14080089	14080091	14080093	14080094	14080095	14080097	14080099
Client ID	TP2	TP5	TP10	TP10	TP14	TP20	TP22
Depth (m)	1.2-4.0	0.8-3.0	0.9-1.4	1.4-4.0	1.3-2.8	1.0-3.8	0.9-1.9
Soil Particle Density (t/m ³)	2.66	2.63	2.66	2.66	2.64	2.65	2.64

NOTES/REMARKS:

Sample/s supplied by the client

Page 1 of 1 REP34601

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 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Authorised Signatory


 G. Creely


Tested at Trilab Perth Laboratory

Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

SOIL PARTICLE DENSITY TEST REPORT

Test Method: AS 1289 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 14080090-SG
Project	Allawuna Proposed Landfill Site	Test Date	2/09/2014-9/09/2014
		Report Date	10/09/2014

Sample No.	14080090	14080092					
Client ID	TP5	TP10	-	-	-	-	-
Depth (m)	0.3-0.8	0.2-0.9	-	-	-	-	-
Soil Particle Density (t/m³) (-2.36mm)	2.71	2.68	-	-	-	-	-
Soil Particle Density (t/m³) (+2.36mm)	2.38	2.21	-	-	-	-	-
Total Soil Particle Density (t/m³)	2.53	2.47	-	-	-	-	-

Sample No.							
Client ID	-	-	-	-	-	-	-
Depth (m)	-	-	-	-	-	-	-
Soil Particle Density (t/m³) (-2.36mm)	-	-	-	-	-	-	-
Soil Particle Density (t/m³) (+2.36mm)	-	-	-	-	-	-	-
Total Soil Particle Density (t/m³)	-	-	-	-	-	-	-

NOTES/REMARKS:

Sample/s supplied by the client

Page 1 of 1 REP04603

Accredited for compliance with ISO/IES 17025.
 The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Perth Laboratory.

Authorised Signatory


 G. Creely



Laboratory No. 9926

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Trilab Pty Ltd ABN 25 065 630 506



APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Particle Size Distribution

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Ltd	Report No.	P 14080089-G
Project	Allawuna Proposed Landfill Site	Test Date	1/09/2014-4/09/2014
		Report Date	5/09/2014

Sample No.	14080089	14080090	14080091	14080092	14080093	14080094	14080095
Client ID	TP2	TP5	TP5	TP10	TP10	TP10	TP14
Depth (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0	1.3-2.8
Moisture (%)	19.5	12.9	15.3	10.2	15.8	17.3	14.7
AS SIEVE SIZE (mm)	PERCENT PASSING						
150							
75							
53							
37.5				100			
26.5		100		99			
19		99		97			
9.5	100	92		82			
4.75	99	64	100	67	100		100
2.36	97	50	99	60	99	100	97
1.18	88	44	93	53	95	94	87
0.600	73	38	80	42	80	79	76
0.425	65	34	75	36	74	72	73
0.300	59	30	70	31	69	66	70
0.150	49	23	63	26	63	60	67
0.075	43	19	58	23	60	56	65

NOTES/REMARKS:

Sample/s supplied by the client

Page 1 of 1 REP31101

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Authorised Signatory



G. Creely



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Laboratory No. 9926

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Ltd	Report No.	P 14080097-G
Project	Allawuna Proposed Landfill Site	Test Date	1/09/2014-4/09/2014
		Report Date	5/09/2014

Sample No.	14080097	14080099					
Client ID	TP20	TP22					
Depth (m)	1.0-3.8	0.9-1.9					
Moisture (%)	15.0	16.9					
AS SIEVE SIZE (mm)	PERCENT PASSING						
150							
75							
53							
37.5							
26.5							
19		100					
9.5	100	97					
4.75	99	96					
2.36	86	96					
1.18	65	76					
0.600	52	61					
0.425	47	54					
0.300	43	47					
0.150	37	36					
0.075	31	30					

NOTES/REMARKS:

Sample/s supplied by the client

Page 1 of 1 REP31101

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APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Atterberg Limits

ATTERBERG LIMITS TEST REPORT

Test Method: AS 1289 2.1.1, 3.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Ltd	Report No.	P 14080089-AL
Project	Allawuna Proposed Landfill Site	Test Date	2/09/2014-4/09/2014
		Report Date	5/09/2014

Sample No.	14080089	14080090	14080091	14080092	14080093	14080094
Client ID	TP2	TP5	TP5	TP10	TP10	TP10
Depth (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0
Liquid Limit (%)	51	28	45	30	51	45
Plastic Limit (%)	25	16	21	14	22	23
Plasticity Index (%)	26	12	24	16	29	22
Linear Shrinkage (%)	7.0	6.5	7.0	3.0	4.5	4.0
Field Moisture Content (%)	19.5	12.9	15.3	10.2	15.8	17.3

Sample No.	14080095	14080097	14080099			
Client ID	TP14	TP20	TP22			
Depth (m)	1.3-2.8	1.0-3.8	0.9-1.9			
Liquid Limit (%)	58	38	36			
Plastic Limit (%)	21	22	19			
Plasticity Index (%)	37	16	17			
Linear Shrinkage (%)	4.0	5.5	7.0			
Field Moisture Content (%)	14.7	15.0	16.9			

NOTES/REMARKS:

The samples were tested oven dried, dry sieved and in a 125-250mm mould.

The samples were tested in a nature moisture content, wet sieved and in a 125-250mm mould.

Sample/s supplied by the client

* Crumbling occurred

+ Curling occurred

Page 1 of 1

REP30101

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APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Emerson Class Number Test

EMERSON CLASS NUMBER TEST REPORT

Test Method: AS 1289 3.8.1

Client	Golder Associates Pty Ltd	Report No.	P 14080089-EM
Project	Allawuna Proposed Landfill Site	Test Date	02/09/2014
		Report Date	04/09/2014

Sample No.	14080089	14080090	14080091	14080092	14080093	14080094	14080095
Client ID	TP2	TP5	TP5	TP10	TP10	TP10	TP14
Depth (m)	1.2-4.0	0.3-0.8	0.8-3.0	0.2-0.9	0.9-1.4	1.4-4.0	1.3-2.8
Description	CLAYEY SAND - red/brown	SANDY GRAVEL - brown	SANDY CLAY - light brown	SANDY GRAVEL - light brown	SANDY CLAY - light brown	SILTY CLAY - white	SANDY CLAY - grey/red
Emerson Class Number	6	3	6	6	6	6	6

Sample No.	14080097	14080099					
Client ID	TP20	TP22					
Depth (m)	1.0-3.8	0.9-1.9					
Description	CLAYEY SAND - grey	CLAYEY SAND - white/brown					
Emerson Class Number	6	6					

Sample No.							
Client ID							
Depth (m)							
Description							
Emerson Class Number							

NOTES/REMARKS:

Sample/s supplied by the client

Tested with distilled water at 20.3°C

Page 1 of 1 REP30401

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APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Compaction Testing



CLIENT: Golder Associates Pty Ltd

PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080089

DATE:

BH: TP2

DEPTH 1.2-4.0M

0 %



CLIENT: Golder Associates Pty Ltd

PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080094

DATE:

BH: TP10

DEPTH 1.4-4.0m

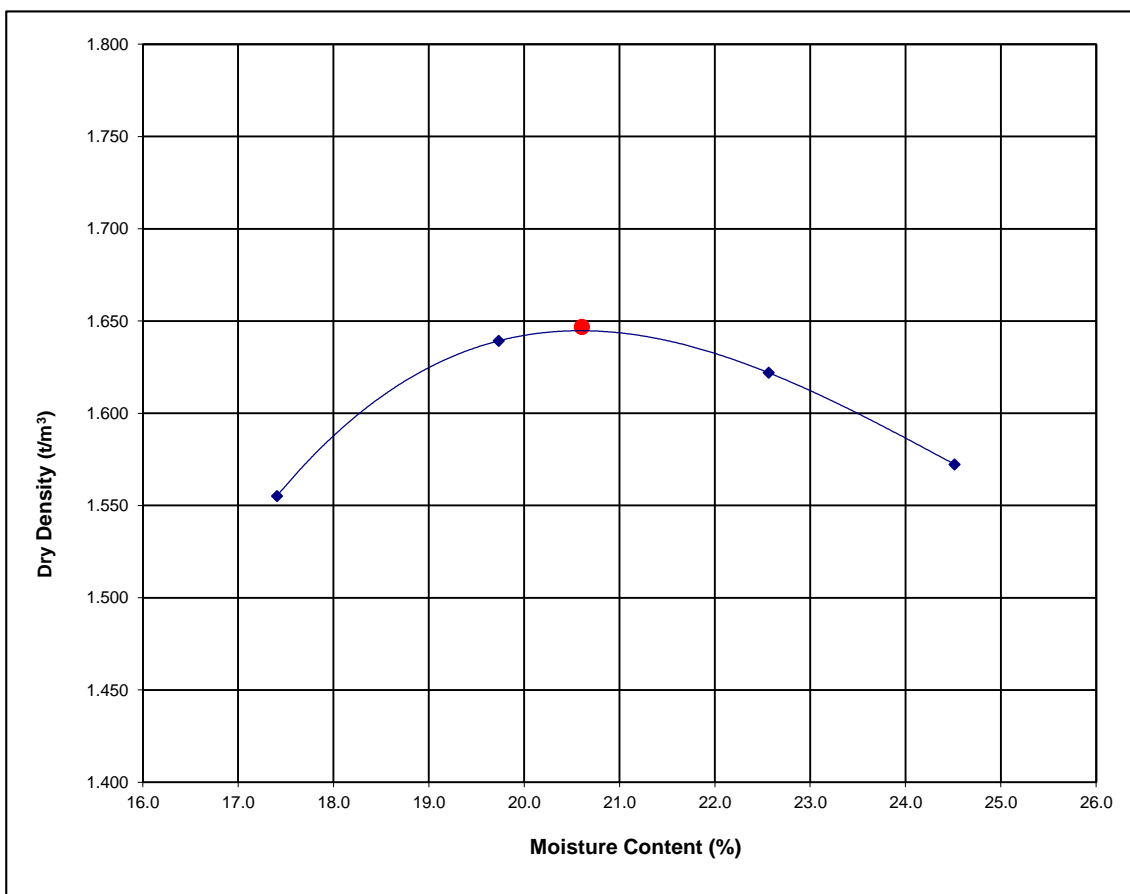


CLIENT: Golder Associates Pty Ltd	
PROJECT: Allawuna Proposed Landfill Site	
LAB SAMPLE No. P14080095	DATE:
BH: TP14	DEPTH 1.3-2.3m

MOISTURE/DENSITY RELATIONSHIP TEST REPORT

Test Method: AS1289 5.1.1

Client	Golder Associates Pty Ltd	Report No.	14080089-MDD
Project	Allawuna Proposed Landfill Site	Test Date	2/09/2014
		Report Date	3/09/2014
Client ID	TP2	Depth (m)	1.2-4.0
Description	CLAYEY SAND- red brown		



Maximum Dry Density (t/m³)	1.65	Optimum Moisture Content (%)	20.5
Moisture Content (%)	19.5	Percentage of Oversize/Sieve Size (mm)	0/19

NOTES/REMARKS: This is a computer generated plot so estimates may show some minor variations from the results summarised.

Sample/s supplied by the client

Page 1 of 1 REP31301

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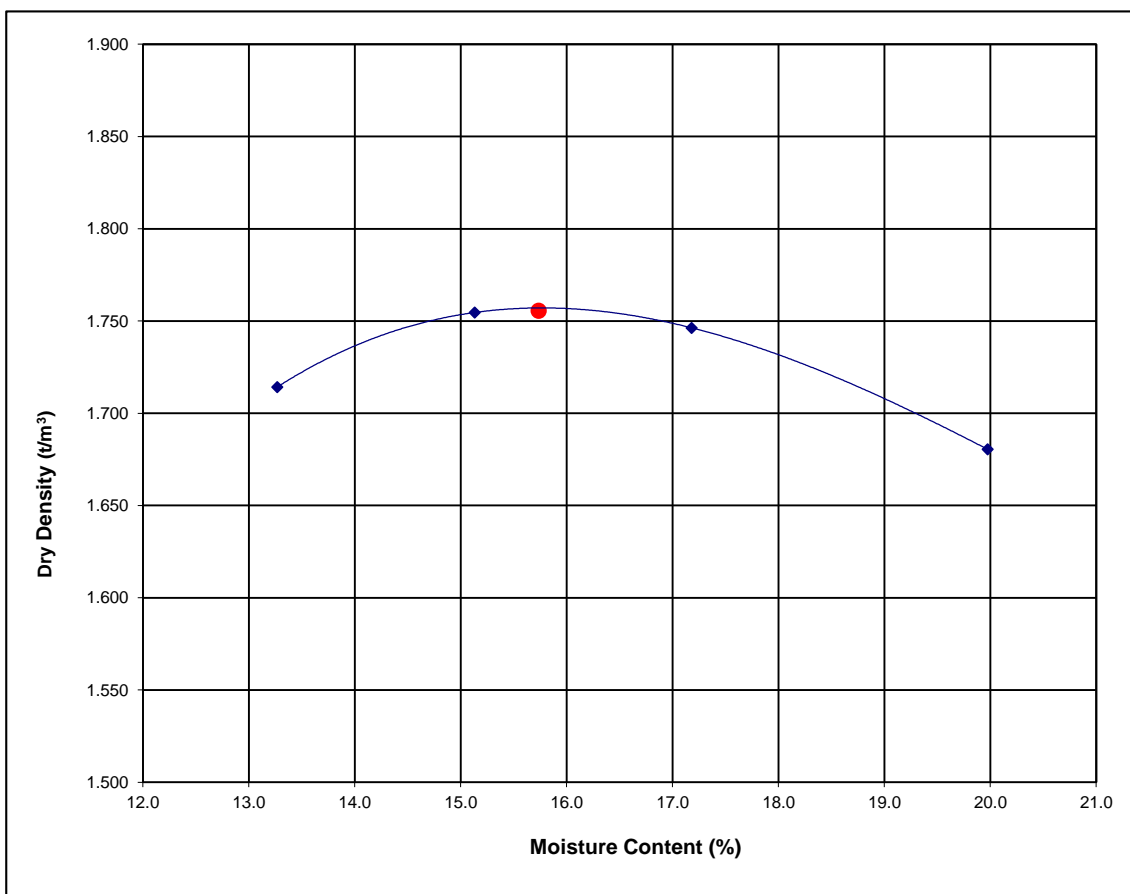

Laboratory No. 9926

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MOISTURE/DENSITY RELATIONSHIP TEST REPORT

Test Method: AS1289 5.1.1

Client	Golder Associates Pty Ltd	Report No.	14080094-MDD
Project	Allawuna Proposed Landfill Site	Test Date	2/09/2014
		Report Date	3/09/2014
Client ID	TP10	Depth (m)	1.4-4.0
Description	SANDY CLAY- white		



Maximum Dry Density (t/m³)	1.76	Optimum Moisture Content (%)	15.5
Moisture Content (%)	17.3	Percentage of Oversize/Sieve Size (mm)	0/19

NOTES/REMARKS: This is a computer generated plot so estimates may show some minor variations from the results summarised.

Sample/s supplied by the client

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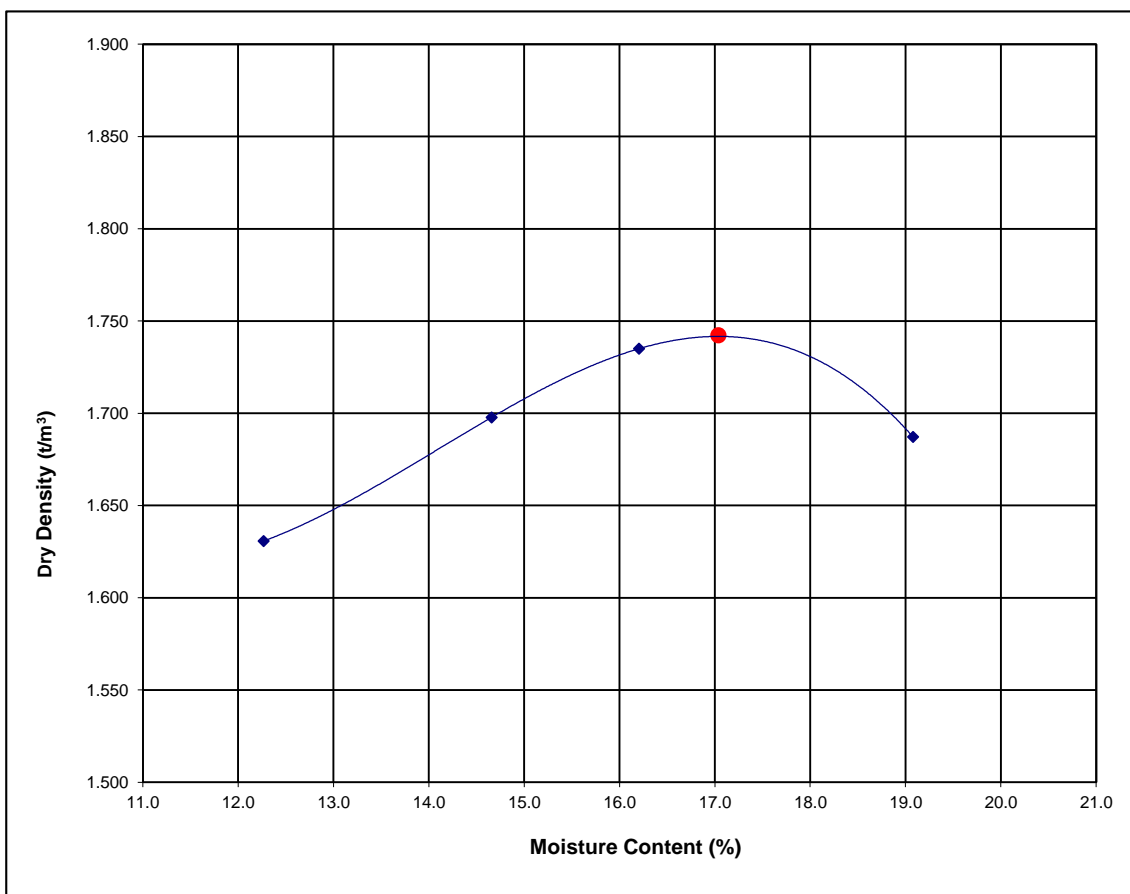
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MOISTURE/DENSITY RELATIONSHIP TEST REPORT

Test Method: AS1289 5.1.1

Client	Golder Associates Pty Ltd	Report No.	14080095-MDD
Project	Allawuna Proposed Landfill Site	Test Date	1/09/2014
		Report Date	3/09/2014
Client ID	TP14	Depth (m)	1.3-2.8
Description	SANDY CLAY-grey red		



Maximum Dry Density (t/m³)	1.74	Optimum Moisture Content (%)	17.0
Moisture Content (%)	14.7	Percentage of Oversize/Sieve Size (mm)	0/19

NOTES/REMARKS: This is a computer generated plot so estimates may show some minor variations from the results summarised.

Sample/s supplied by the client

Page 1 of 1 REP31301

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APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Permeability Testing

PERMEABILITY BY CONSTANT HEAD TEST REPORT

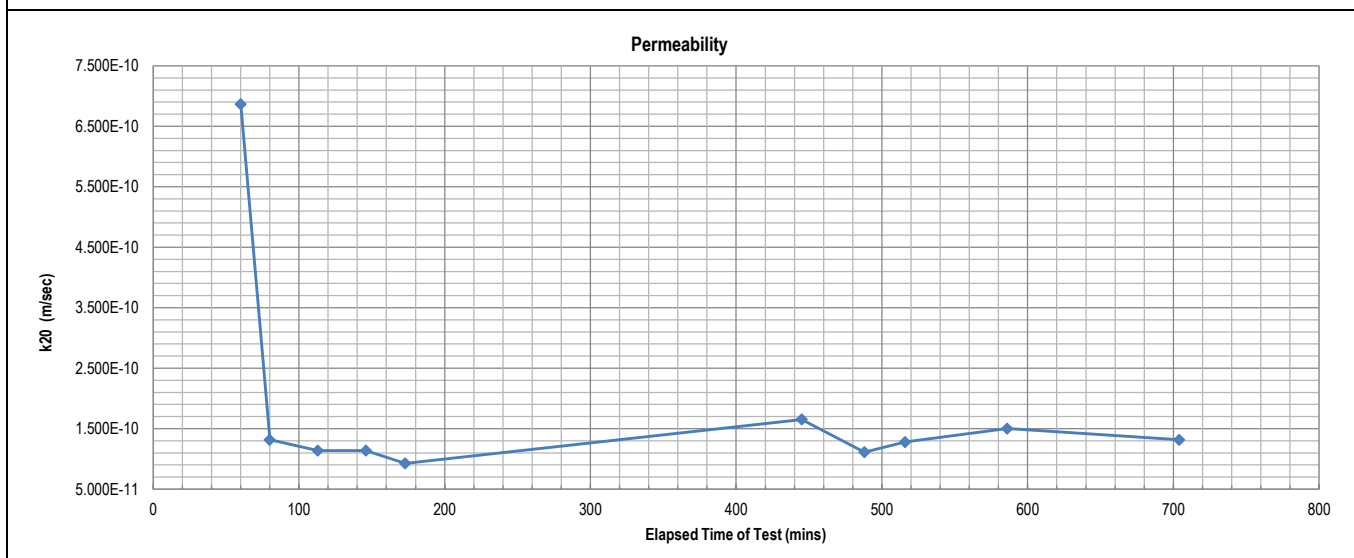
Test Method AS 1289 6.7.3, 5.1.1, KH2 (Based on K H Head (1988) Manual of Laboratory Testing, 10.7)

Client	Golder Associates Pty Ltd	Report No.	P 14080089-CHP
Project	Allawuna Proposed Landfill Site	Test Date	3/09/2014-9/09/2014
Client ID	TP2	Report Date	9/09/2014
Description	CLAYEY SAND-red brown	Depth (m)	1.2-4.0
		Sample Type	Disturbed

RESULTS OF TESTING

Compaction Method	AS1289.5.1.1 - Standard Compaction		
Maximum Dry Density (t/m ³)	1.65	Confining Pressure	75
Optimum Moisture Content (%)	20.5	Back Pressure	50
Placement Moisture Content (%)	20.7	Effective Stress Applied (kPa)	25
Moisture Ratio (%)	101.2	Water Type	Tap
Placement Wet Density (t/m ³)	1.56	Percentage Material Retained/Sieve Size (mm)	0 / 19
Density Ratio (%)	94.8	Sample Height and Diameter (mm)	127.5 / 63.5

PERMEABILITY $k_{(20)} = 1.37E-10$ (m/sec)



Remarks: The above specimen was remoulded to a target of 95% of Standard Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP36501

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Authorised Signatory


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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PERMEABILITY BY CONSTANT HEAD TEST REPORT

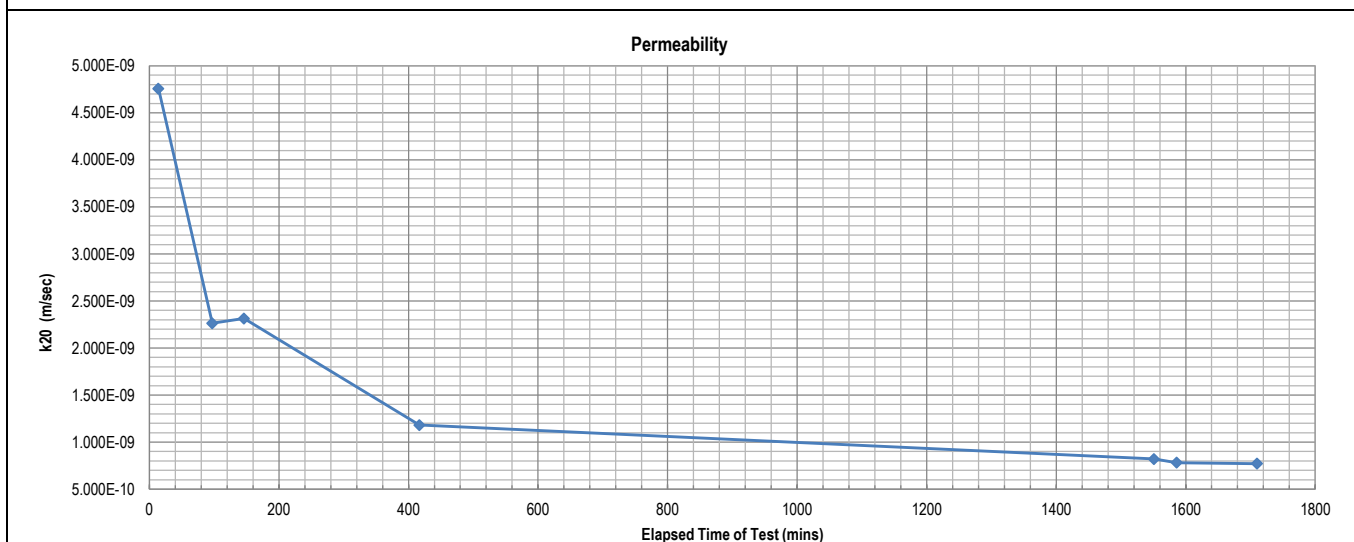
Test Method AS 1289 6.7.3, 5.1.1, KH2 (Based on K H Head (1988) Manual of Laboratory Testing, 10.7)

Client	Golder Associates Pty Ltd	Report No.	P 14080094-CHP
Project	Allawuna Proposed Landfill Site	Test Date	3/09/2014-8/09/2014
		Report Date	9/09/2014
Client ID	TP10	Depth (m)	1.4-4.0
Description	SANDY CLAY - white	Sample Type	Disturbed

RESULTS OF TESTING

Compaction Method	AS1289.5.1.1 - Standard Compaction		
Maximum Dry Density (t/m ³)	1.76	Confining Pressure	75
Optimum Moisture Content (%)	15.5	Back Pressure	50
Placement Moisture Content (%)	16.1	Effective Stress Applied (kPa)	25
Moisture Ratio (%)	103.8	Water Type	Tap
Placement Wet Density (t/m ³)	1.66	Percentage Material Retained/Sieve Size (mm)	0 / 19
Density Ratio (%)	94.5	Sample Height and Diameter (mm)	127.3 / 63.5

PERMEABILITY $k_{(20)} = 7.91E-10$ (m/sec)



Remarks: The above specimen was remoulded to a target of 95% of Standard Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP36501

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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PERMEABILITY BY CONSTANT HEAD TEST REPORT

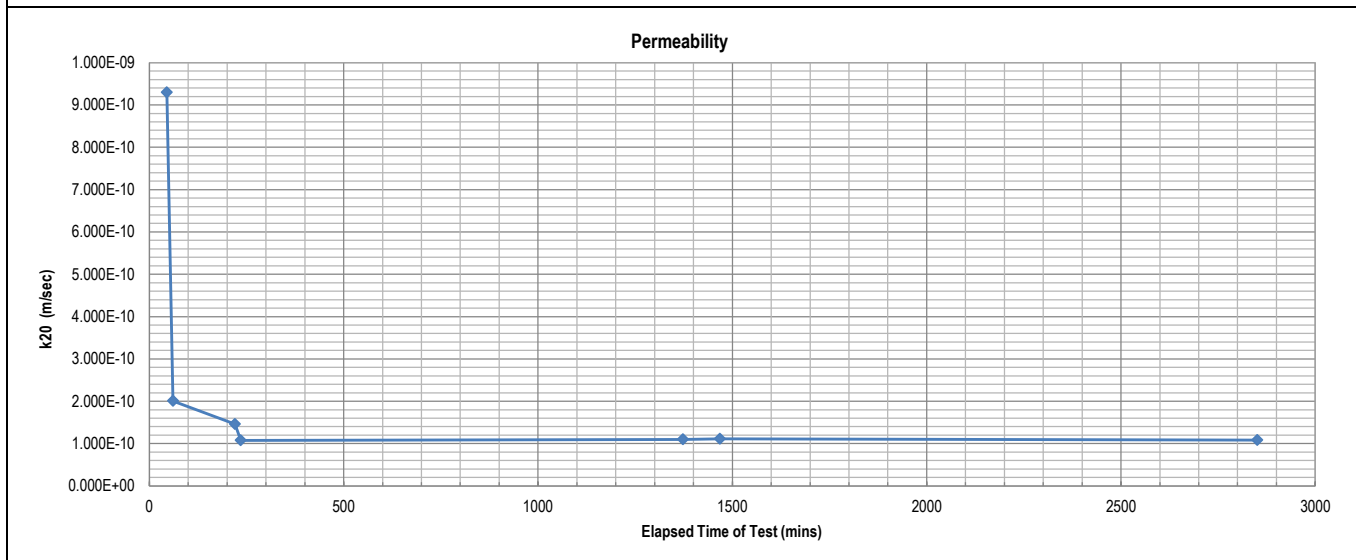
Test Method AS 1289 6.7.3, 5.1.1, KH2 (Based on K H Head (1988) Manual of Laboratory Testing, 10.7)

Client	Golder Associates Pty Ltd	Report No.	P 14080095A-CHP
Project	Allawuna Proposed Landfill Site	This report replaces report dated	9/09/2014
Client ID	TP14	Test Date	14/09/2014-17/09/2014
Description	SANDY CLAY - grey/red	Report Date	19/09/2014
		Depth (m)	1.3-2.8
		Sample Type	Disturbed

RESULTS OF TESTING

Compaction Method	AS1289.5.1.1 - Standard Compaction		
Maximum Dry Density (t/m ³)	1.74	Confining Pressure	75
Optimum Moisture Content (%)	17.0	Back Pressure	50
Placement Moisture Content (%)	16.5	Effective Stress Applied (kPa)	25
Moisture Ratio (%)	97.3	Water Type	Distilled
Placement Wet Density (t/m ³)	1.66	Percentage Material Retained/Sieve Size (mm)	0 / 19
Density Ratio (%)	95.4	Sample Height and Diameter (mm)	127.6 / 63.5

PERMEABILITY $k_{(20)} = 1.08E-10$ (m/sec)



Remarks: The above specimen was remoulded to a target of 95% of Standard Dry Density and at Optimum Moisture Content.

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP36501

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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING



APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Triaxial Testing

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

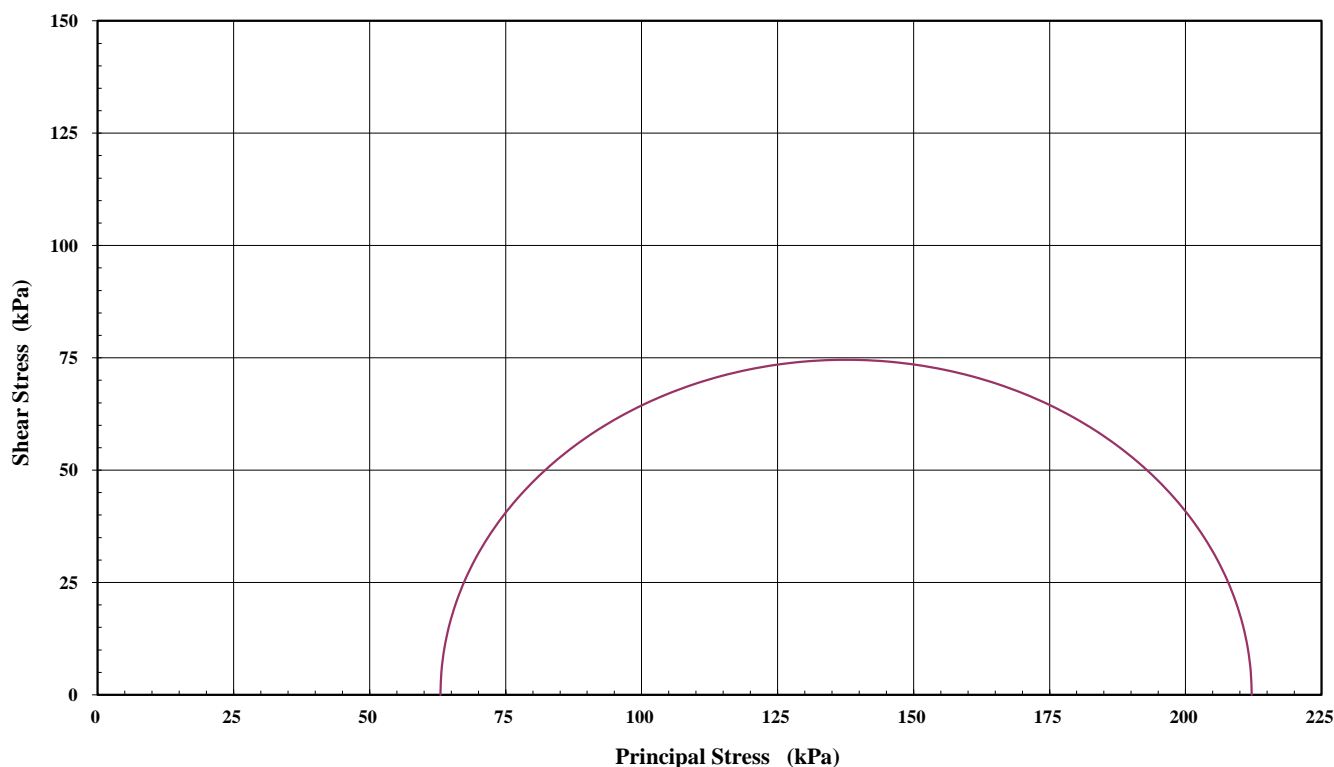
Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 100 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

SAMPLE & TEST DETAILS

Initial Height: 99.8 mm	Initial Moisture Content: 14.7 %	Rate of Strain: 0.004 %/min
Initial Diameter: 46.8 mm	Final Moisture Content: 17.3 %	B Response: 97 %
L/D Ratio: 2.1 : 1	Wet Density: 2.10 t/m ³	
	Dry Density: 1.83 t/m ³	

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

Failure Criteria: Peak Principal Stress Ratio

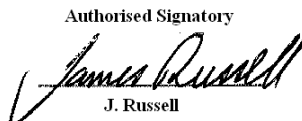
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 1

REP03001

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Authorised Signatory

J. Russell



Laboratory Number
9926

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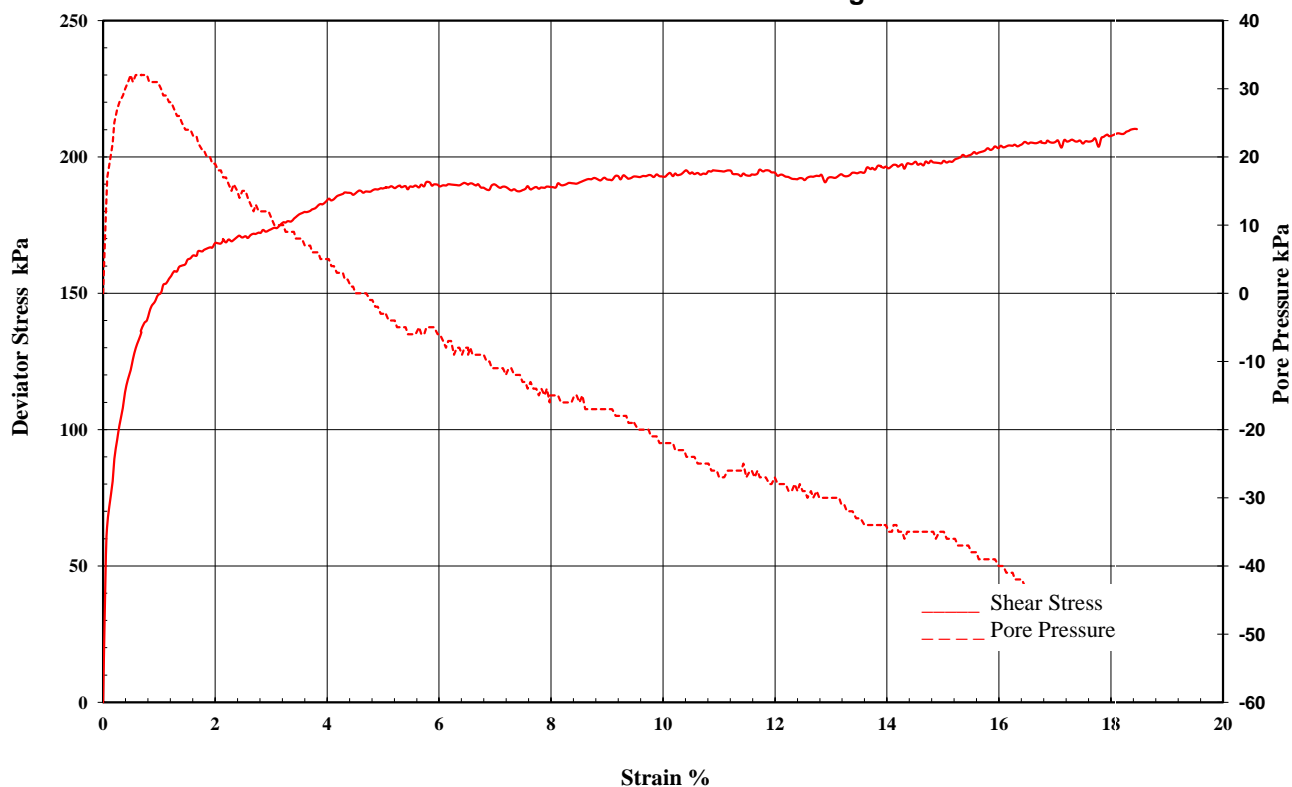
Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 100 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
				σ'_1	σ'_3	σ'_1 / σ'_3		
401 kPa	307 kPa	307 kPa	338 kPa	212 kPa	63 kPa	3.368	149 kPa	0.98 %

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client

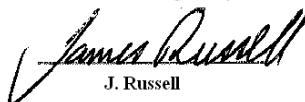
Note: Graph not to scale

Page 2

REP03001

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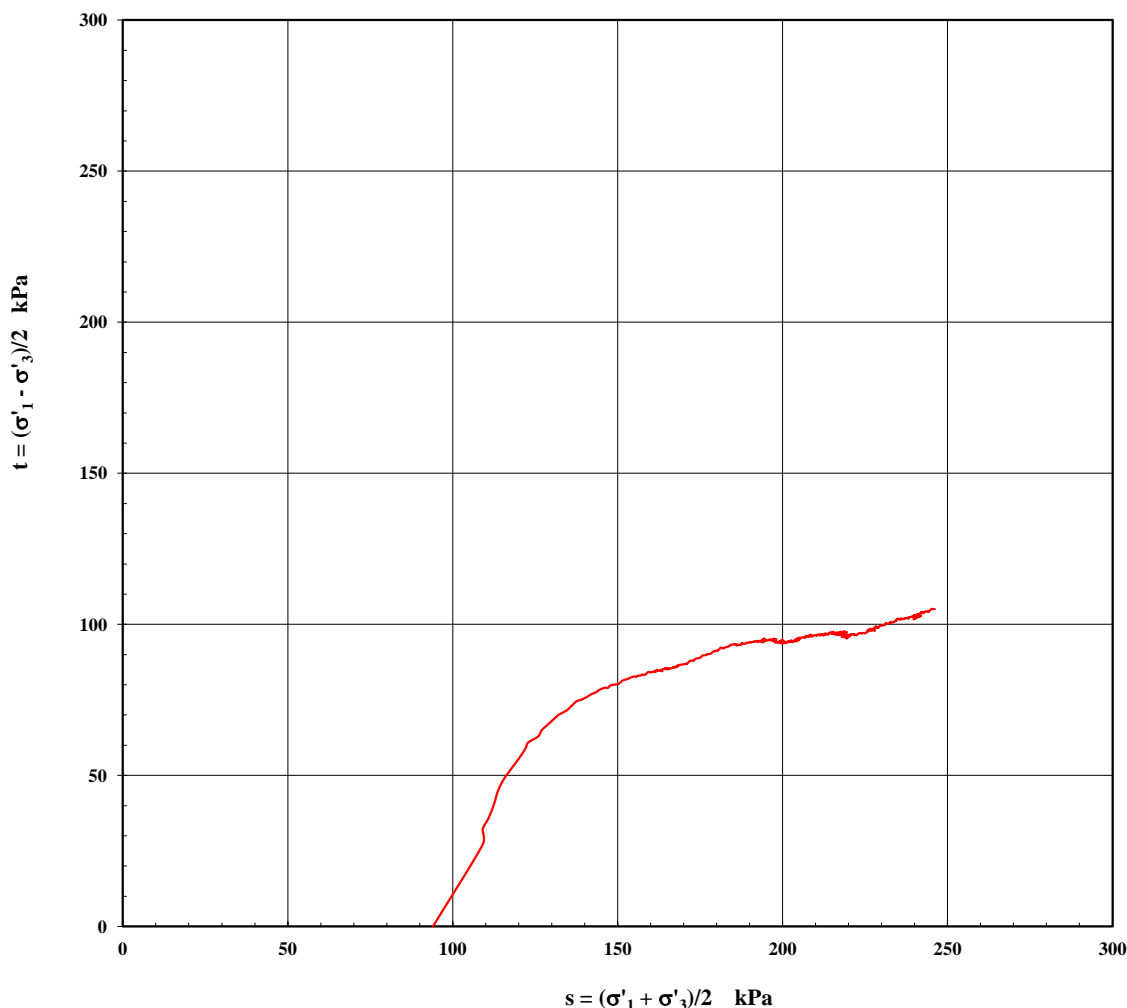
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 100 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

MIT Method - Effective Stress Path



Note: Graph not to scale.

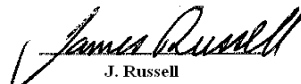
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 3

REP03001

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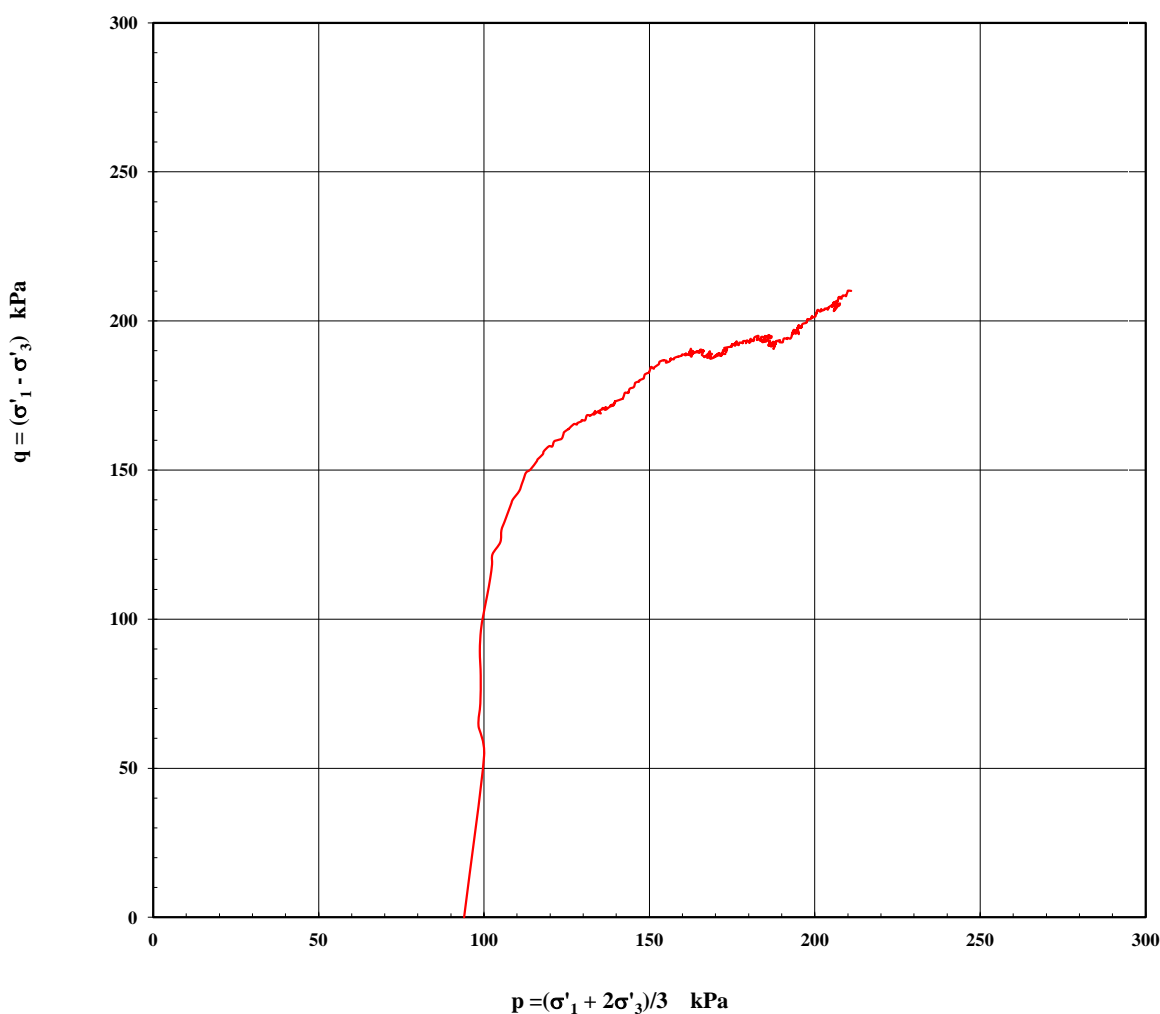
Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 100 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

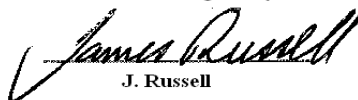
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 4

REP03001

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Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 100 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	14090089	DATE: 09-09-14
BOREHOLE:	TP14 Bulk Sample	DEPTH: 1.30-2.80



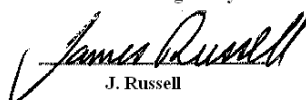
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 5

REP03001

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Tested at Trilab Brisbane Laboratory.

Authorised Signatory

J. Russell



Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd

Report No.: 14090089 - CU 100 kPa

Project: Allawuna Proposed Landfill Site

Test Date: 4/09/2014

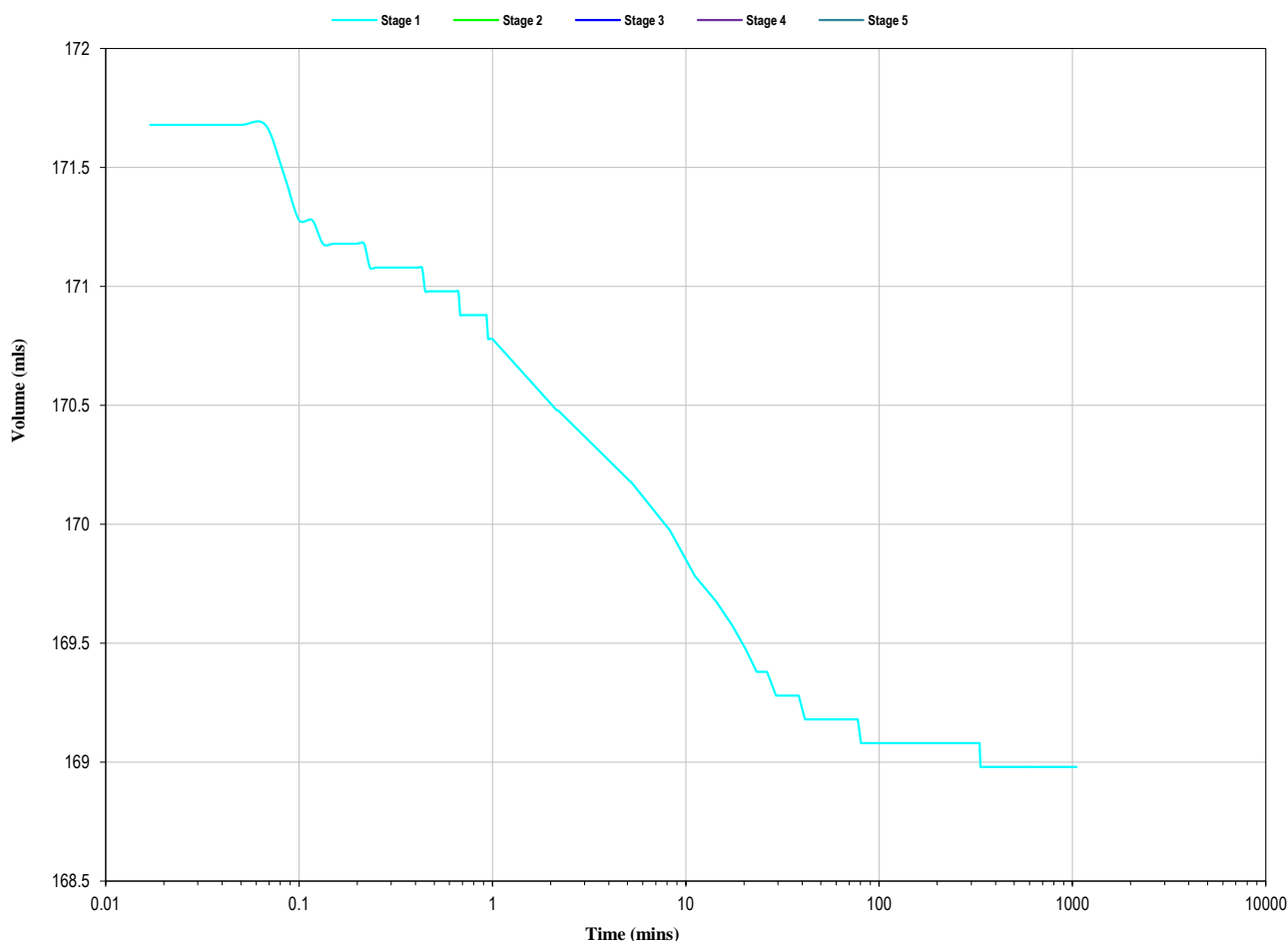
Report Date: 10/09/2014

Client Id.: TP14 Bulk Sample

Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

Volume v's Time (Log Scale)



Stage 1

Cv (m²/year) : 1.30
Mv (m²/MN) : 0.152
k (m/s) : 6.14E-11

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client

Note: Graph not to scale

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James Russell
J. Russell



Laboratory Number
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

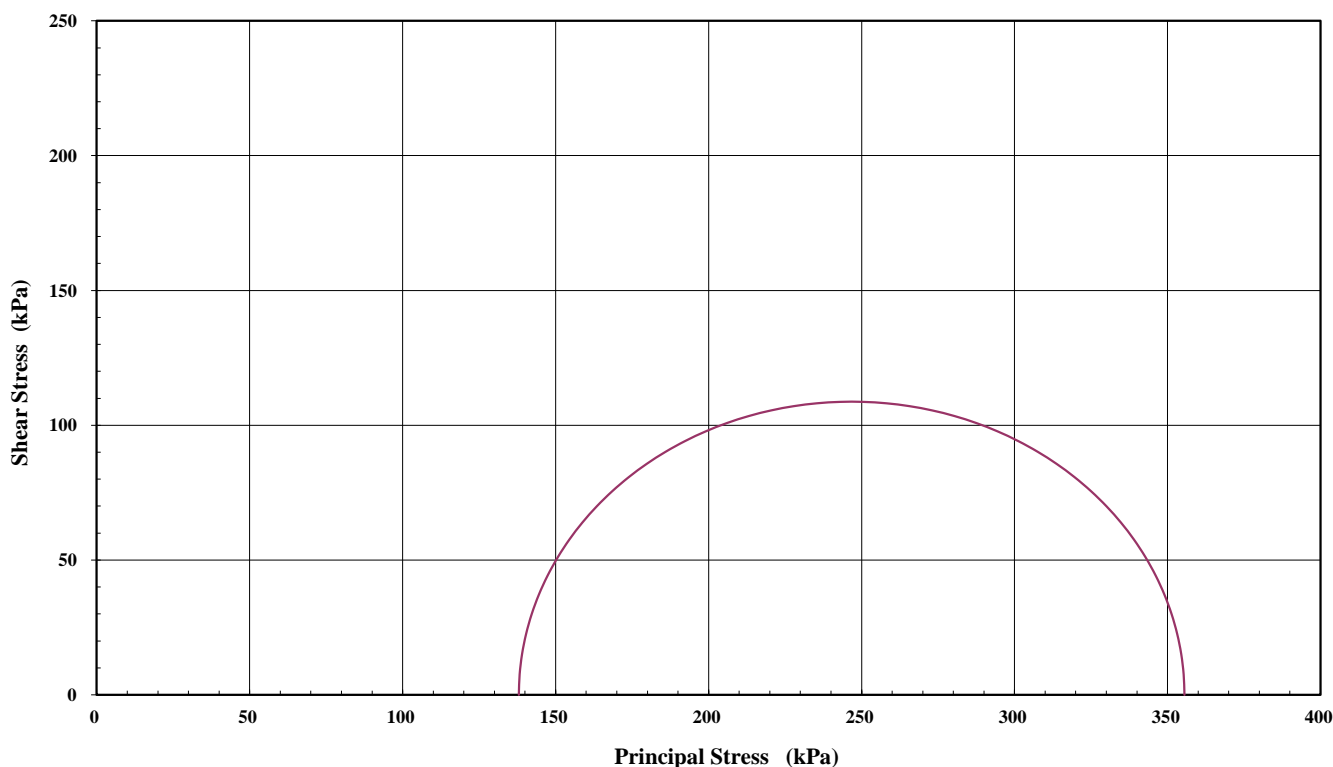
Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 250 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

SAMPLE & TEST DETAILS

Initial Height: 99.9 mm	Initial Moisture Content: 14.7 %	Rate of Strain: 0.004 %/min
Initial Diameter: 47.2 mm	Final Moisture Content: 17.3 %	B Response: 98 %
L/D Ratio: 2.1 : 1	Wet Density: 2.01 t/m ³	
	Dry Density: 1.75 t/m ³	

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

Failure Criteria: Peak Principal Stress Ratio

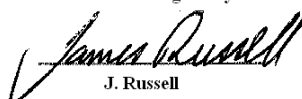
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd

Report No.: 14090089 - CU 250 kPa

Project: Allawuna Proposed Landfill Site

Test Date: 4/09/2014

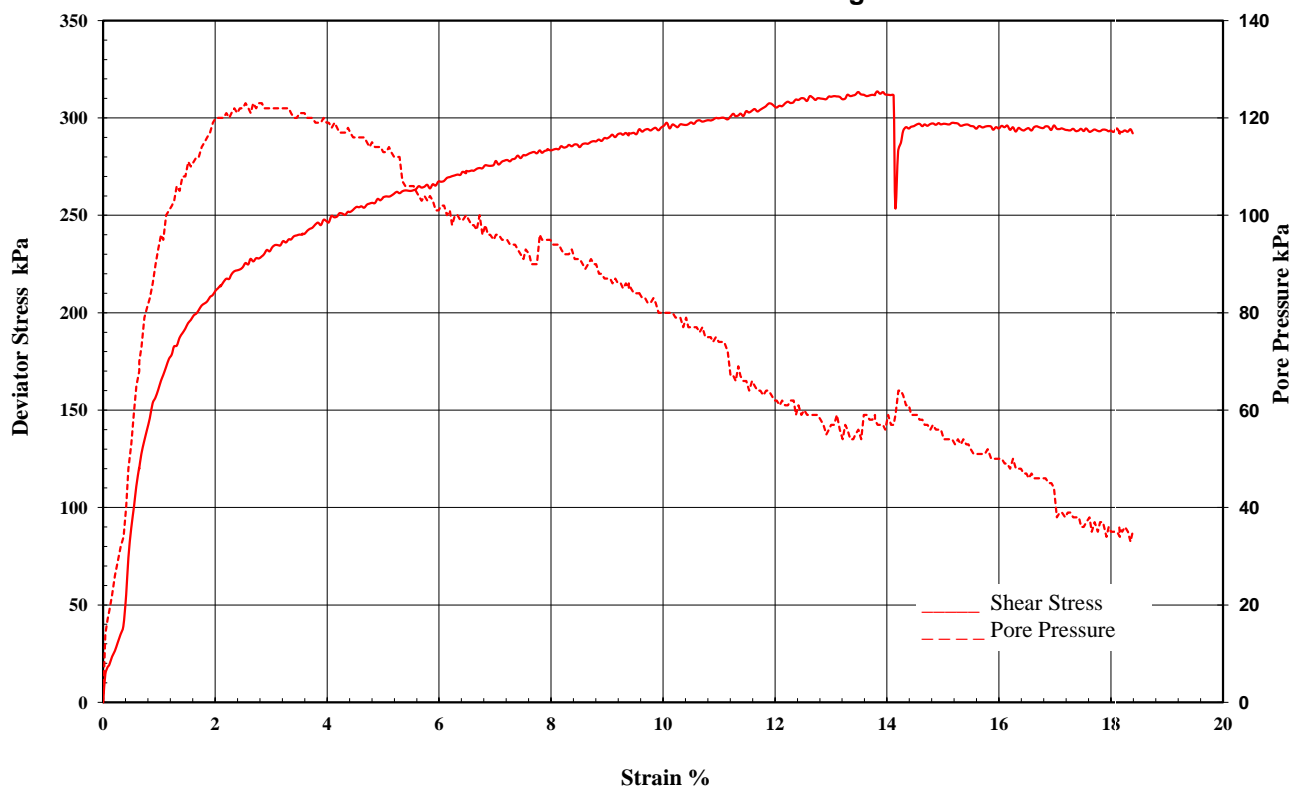
Report Date: 10/09/2014

Client Id.: TP14 Bulk Sample

Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
				σ'_1	σ'_3	σ'_1 / σ'_3		
549 kPa	290 kPa	290 kPa	411 kPa	355 kPa	138 kPa	2.576	217 kPa	2.20 %

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client


Note: Graph not to scale

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TRIAXIAL TEST REPORT

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Client: Golder Associates Pty Ltd

Report No.: 14090089 - CU 250 kPa

Project: Allawuna Proposed Landfill Site

Test Date: 4/09/2014

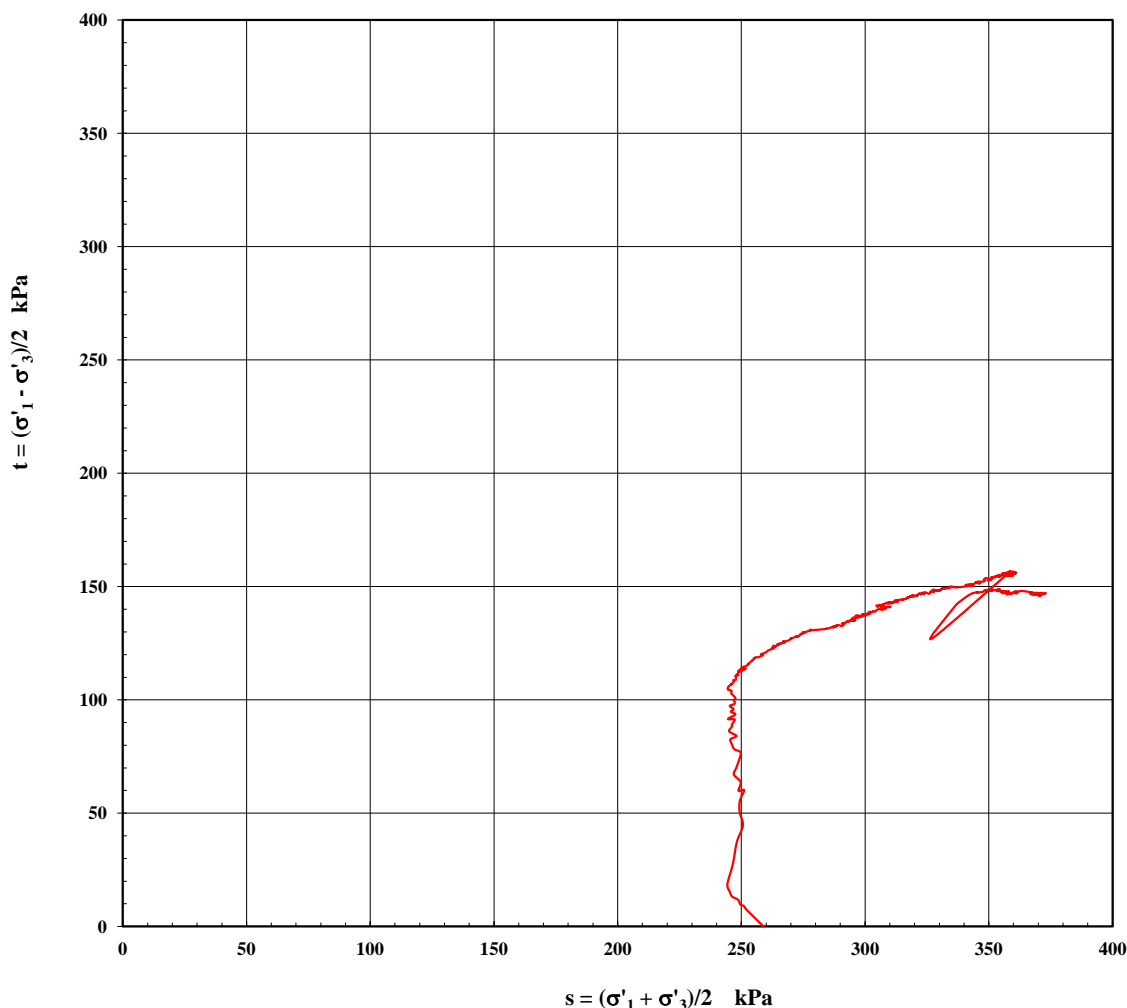
Report Date: 10/09/2014

Client Id.: TP14 Bulk Sample

Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

MIT Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client

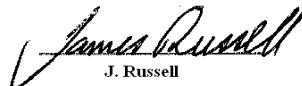
Note: Graph not to scale

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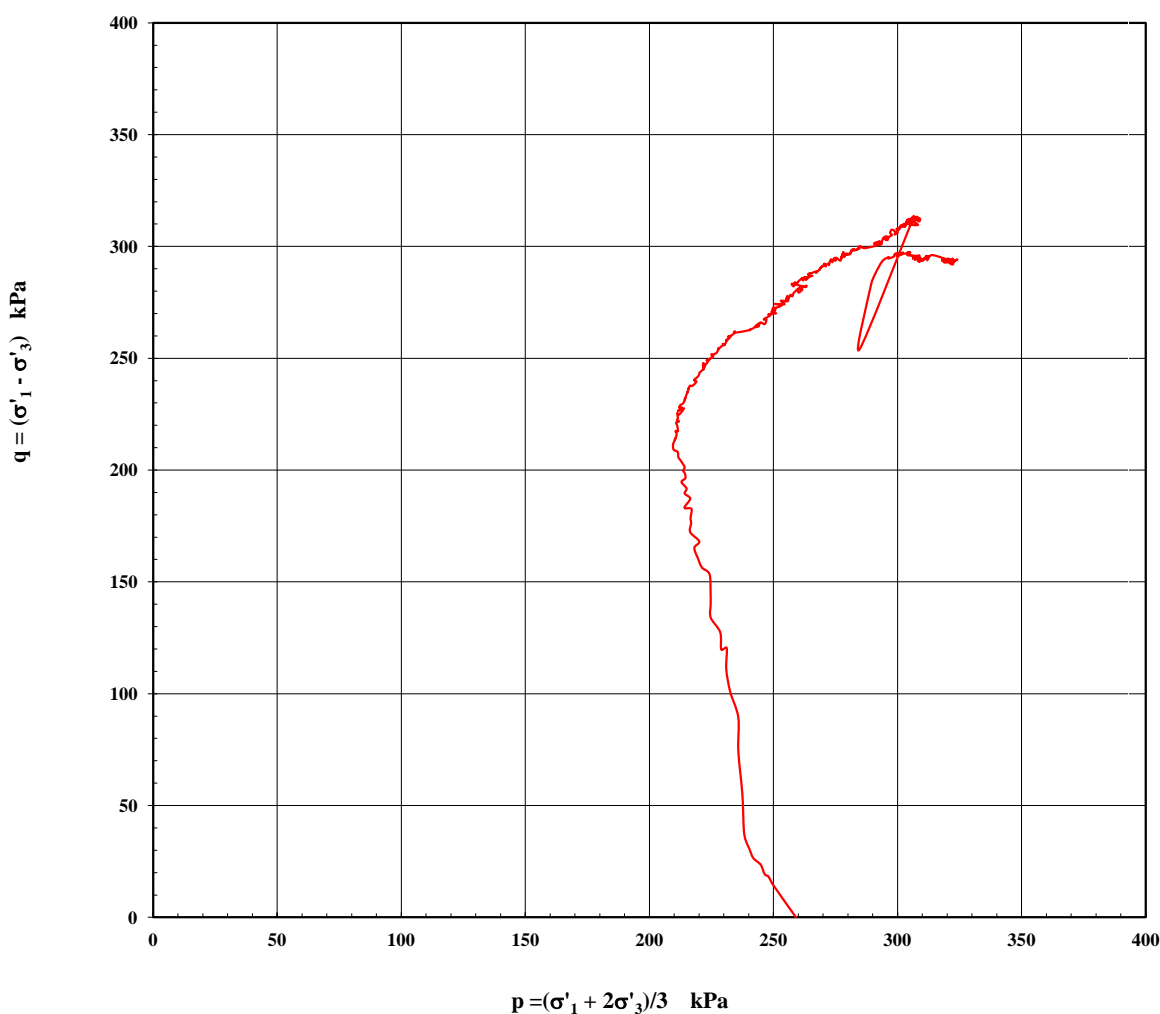
Laboratory Number
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 250 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

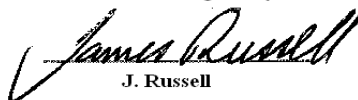
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 250 kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	14090089	DATE: 09.09.14
BOREHOLE:	TP14 Bulk Sample	DEPTH: 1.30-2.80



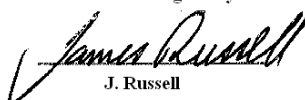
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd

Report No.: 14090089 - CU 250 kPa

Project: Allawuna Proposed Landfill Site

Test Date: 4/09/2014

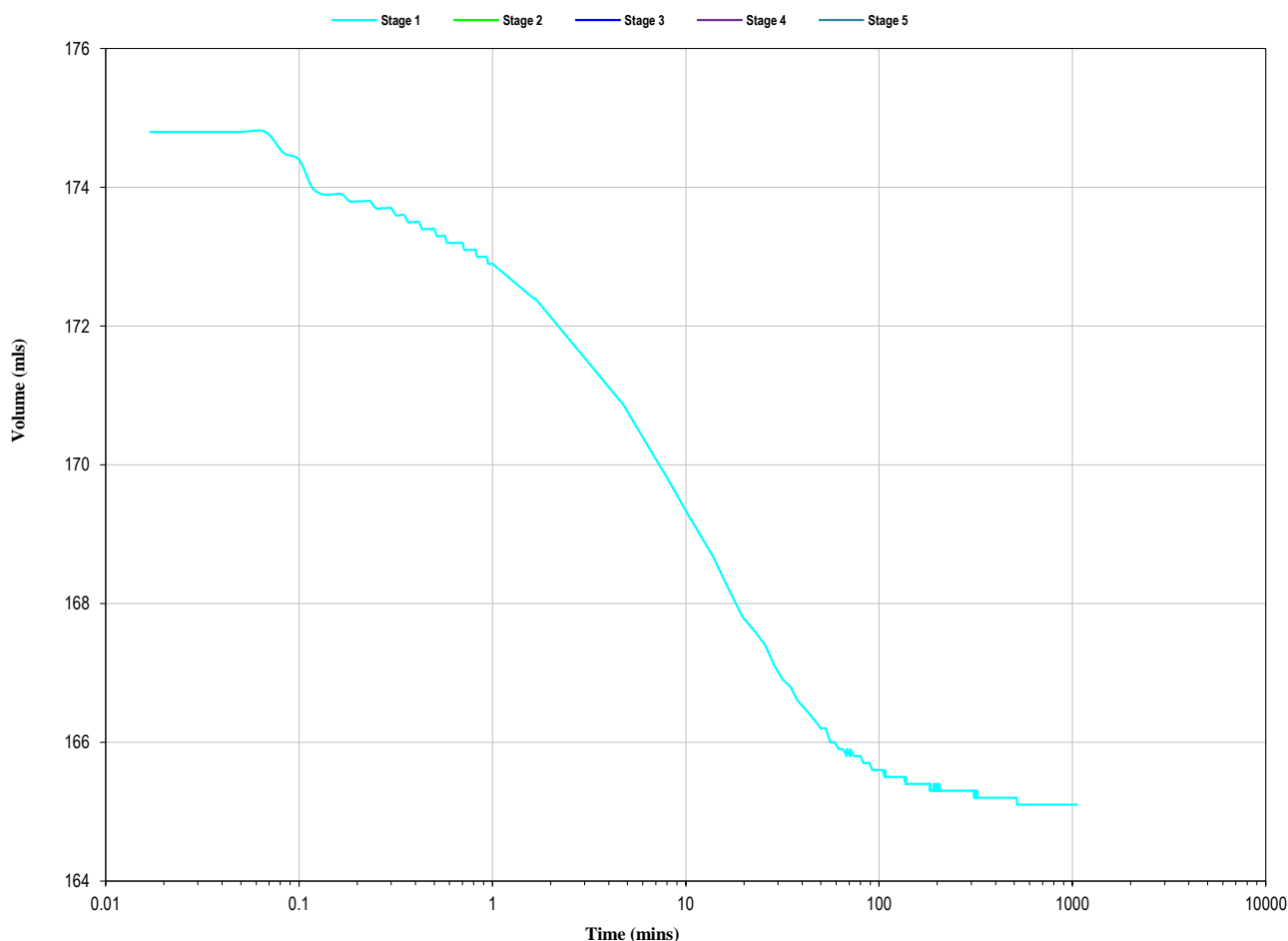
Report Date: 10/09/2014

Client Id.: TP14 Bulk Sample

Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

Volume v's Time (Log Scale)



Stage 1

Cv (m²/year) : 0.98
Mv (m²/MN) : 0.197
k (m/s) : 5.95E-11

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client

Note: Graph not to scale

Page 6

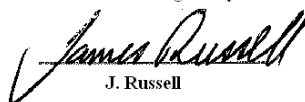
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Laboratory Number
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

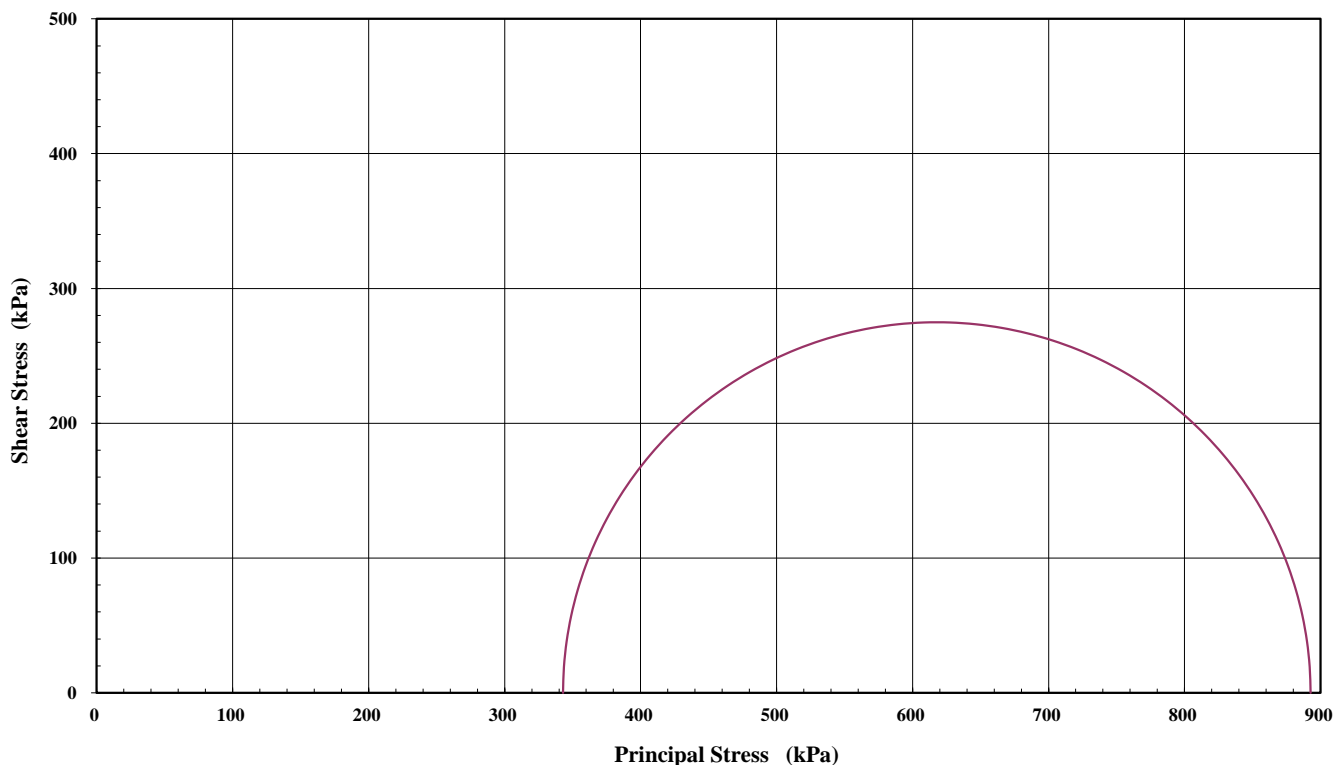
Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 500kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80

Description: SANDY CLAY- mottled pale grey and red brown

SAMPLE & TEST DETAILS

Initial Height: 100.0 mm	Initial Moisture Content: 14.7 %	Rate of Strain: 0.004 %/min
Initial Diameter: 46.0 mm	Final Moisture Content: 15.0 %	B Response: 98 %
L/D Ratio: 2.2 : 1	Wet Density: 2.17 t/m ³	
	Dry Density: 1.89 t/m ³	

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

Failure Criteria: Peak Principal Stress Ratio

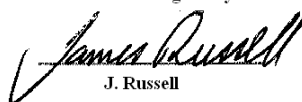
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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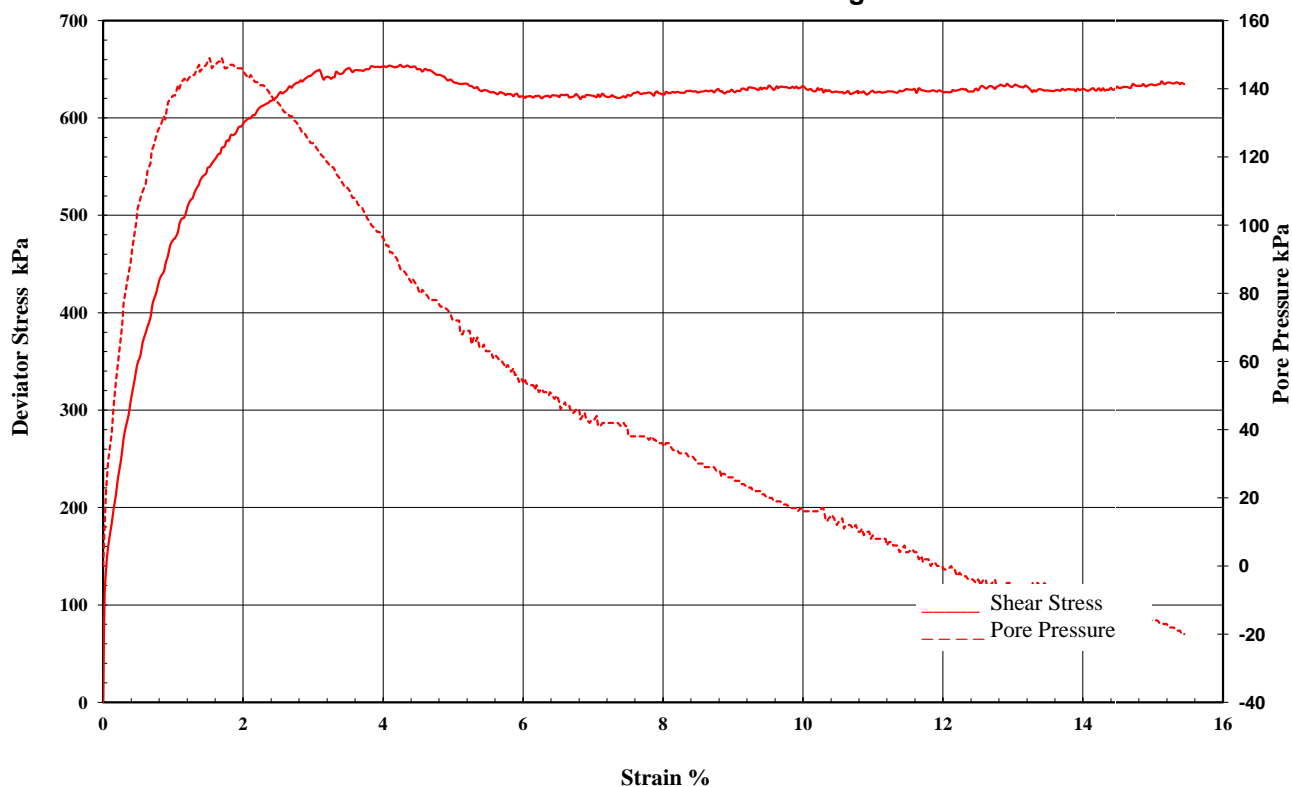
Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 500kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
				σ'_1	σ'_3	σ'_1 / σ'_3		
799 kPa	307 kPa	307 kPa	456 kPa	893 kPa	343 kPa	2.603	550 kPa	1.52 %

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client


Note: Graph not to scale

Page 2

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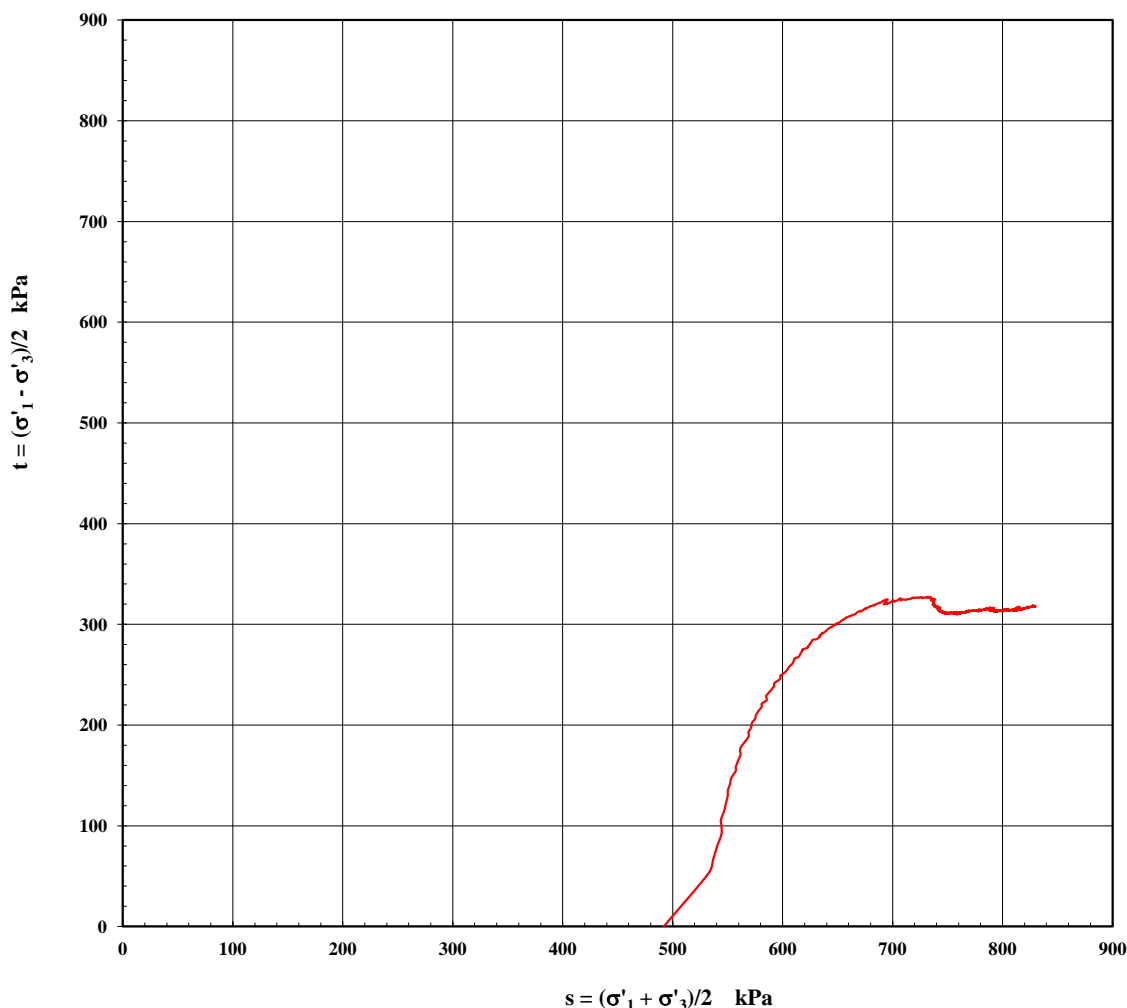
Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 500kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

MIT Method - Effective Stress Path



Note: Graph not to scale.

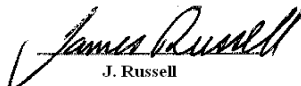
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 3

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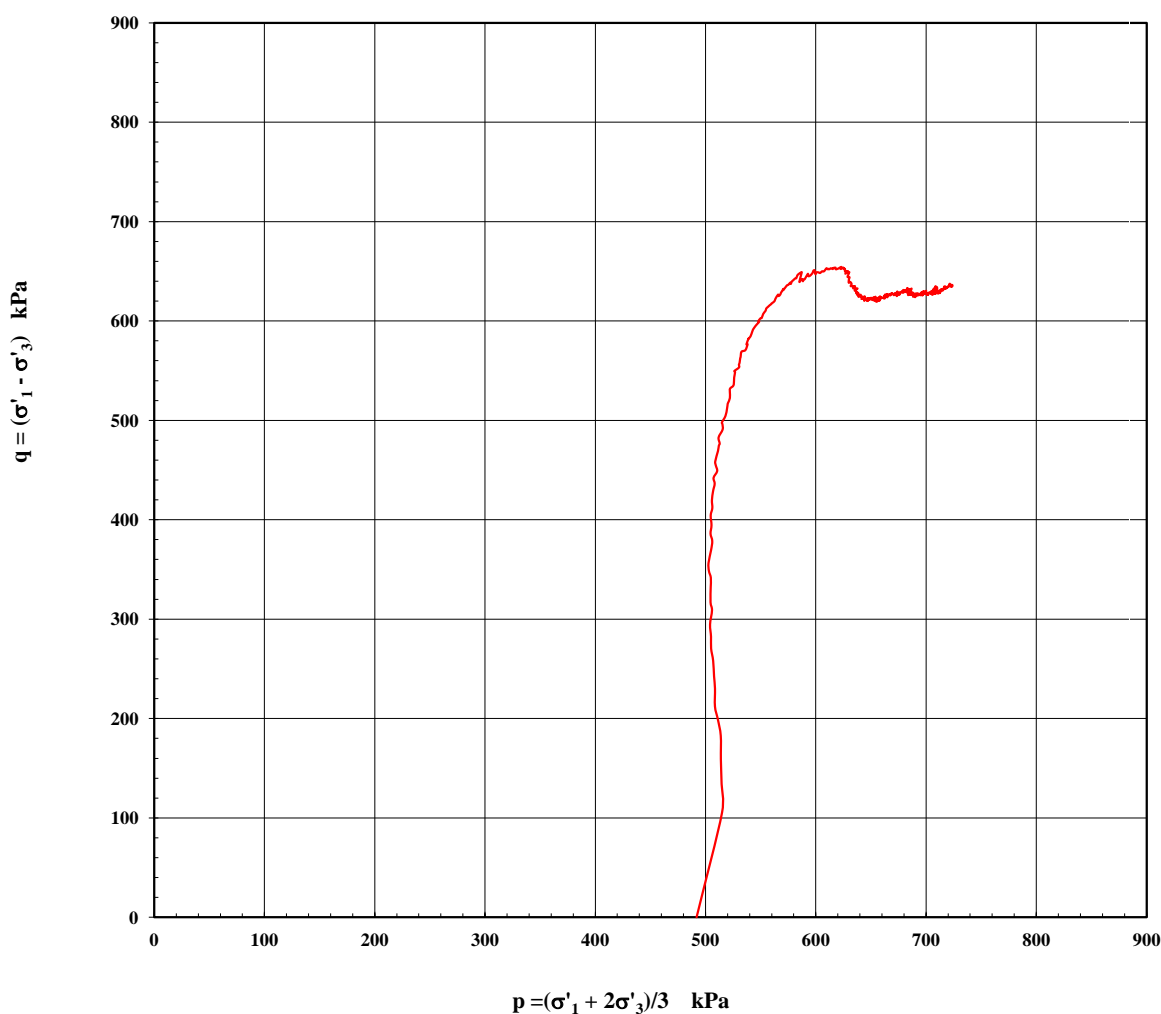
Laboratory Number
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 500kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 500kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	14090089	DATE: 09/09/14
BOREHOLE:	TP14 Bulk Sample	DEPTH: 1.30-2.80



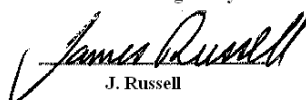
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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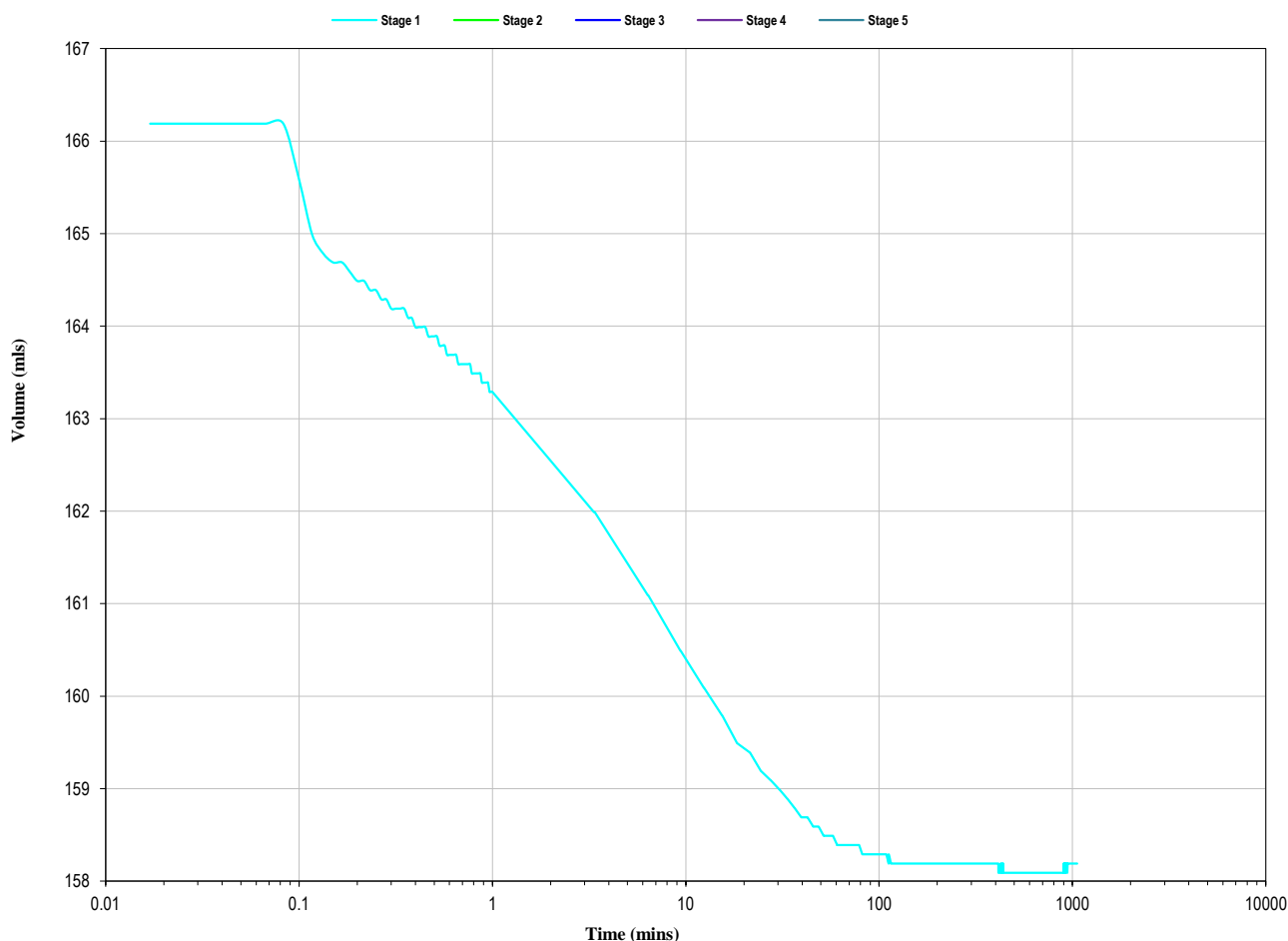
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14090089 - CU 500kPa
Project: Allawuna Proposed Landfill Site	Test Date: 4/09/2014 Report Date: 10/09/2014
Client Id.: TP14 Bulk Sample	Depth (m): 1.30-2.80
Description: SANDY CLAY- mottled pale grey and red brown	

Volume v's Time (Log Scale)



Stage 1

Cv (m²/year) : 1.50
Mv (m²/MN) : 0.090
k (m/s) : 4.21E-11

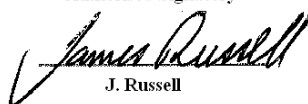
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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Laboratory Number
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8

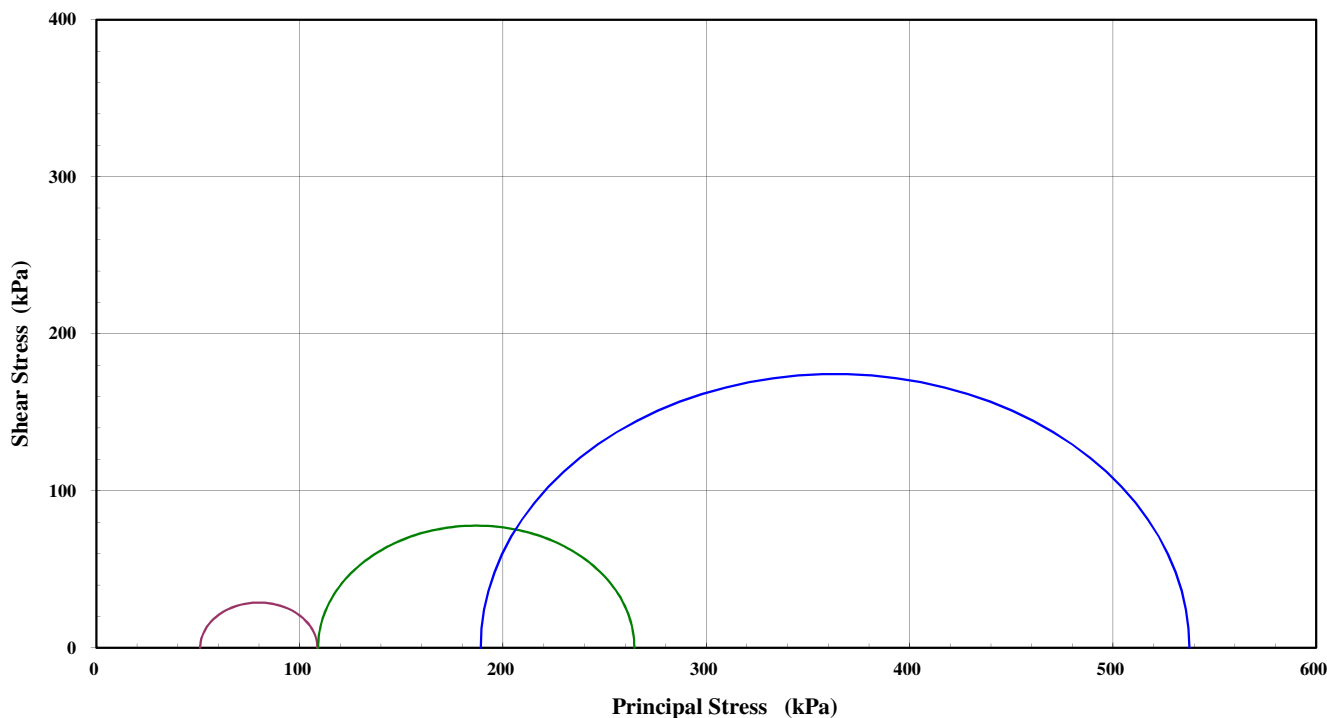
Description: CLAYEY SAND- mottled grey and yellow brown

SAMPLE & TEST DETAILS

Initial Height: 126.8 mm	Initial Moisture Content: 12.9 %	Rate of Strain: 0.007 %/min
Initial Diameter: 58.0 mm	Final Moisture Content: 14.8 %	B Response: 99 %
L/D Ratio: 2.2 : 1	Wet Density: 2.00 t/m ³	
	Dry Density: 1.77 t/m ³	

Failure Criteria: Peak Principal Stress Ratio

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

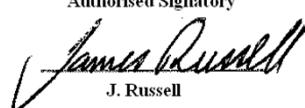
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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Authorised Signatory

J. Russell



Laboratory No: 9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd

Report No.: P 14080098 - CU

Project: Allawuna Proposed Landfill Site

Test Date: 1/09/2014

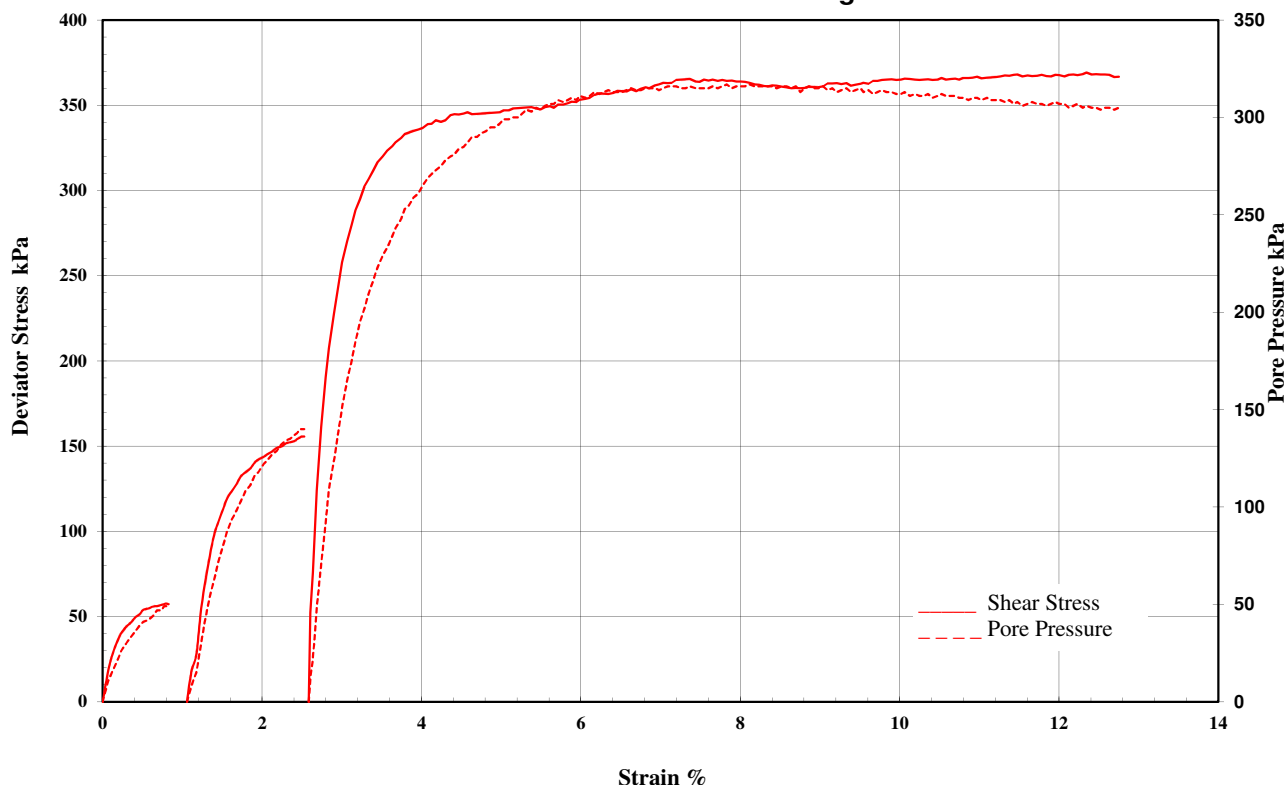
Report Date: 8/09/2014

Client Id.: TP20 Bulk Sample

Depth (m): 1.0-3.8

Description CLAYEY SAND- mottled grey and yellow brown

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
				σ'_1	σ'_3	σ'_1 / σ'_3		
599 kPa	499 kPa	499 kPa	548 kPa	109 kPa	51 kPa	2.130	58 kPa	0.79 %
747 kPa	498 kPa	498 kPa	638 kPa	265 kPa	109 kPa	2.428	156 kPa	2.50 %
798 kPa	305 kPa	305 kPa	609 kPa	538 kPa	189 kPa	2.845	349 kPa	5.32 %

Sample Type: Single Individual Undisturbed Specimen

Remarks: Tested as Received

Sample/s supplied by the client

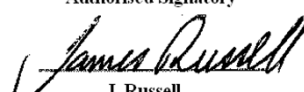
Note: Graph not to scale

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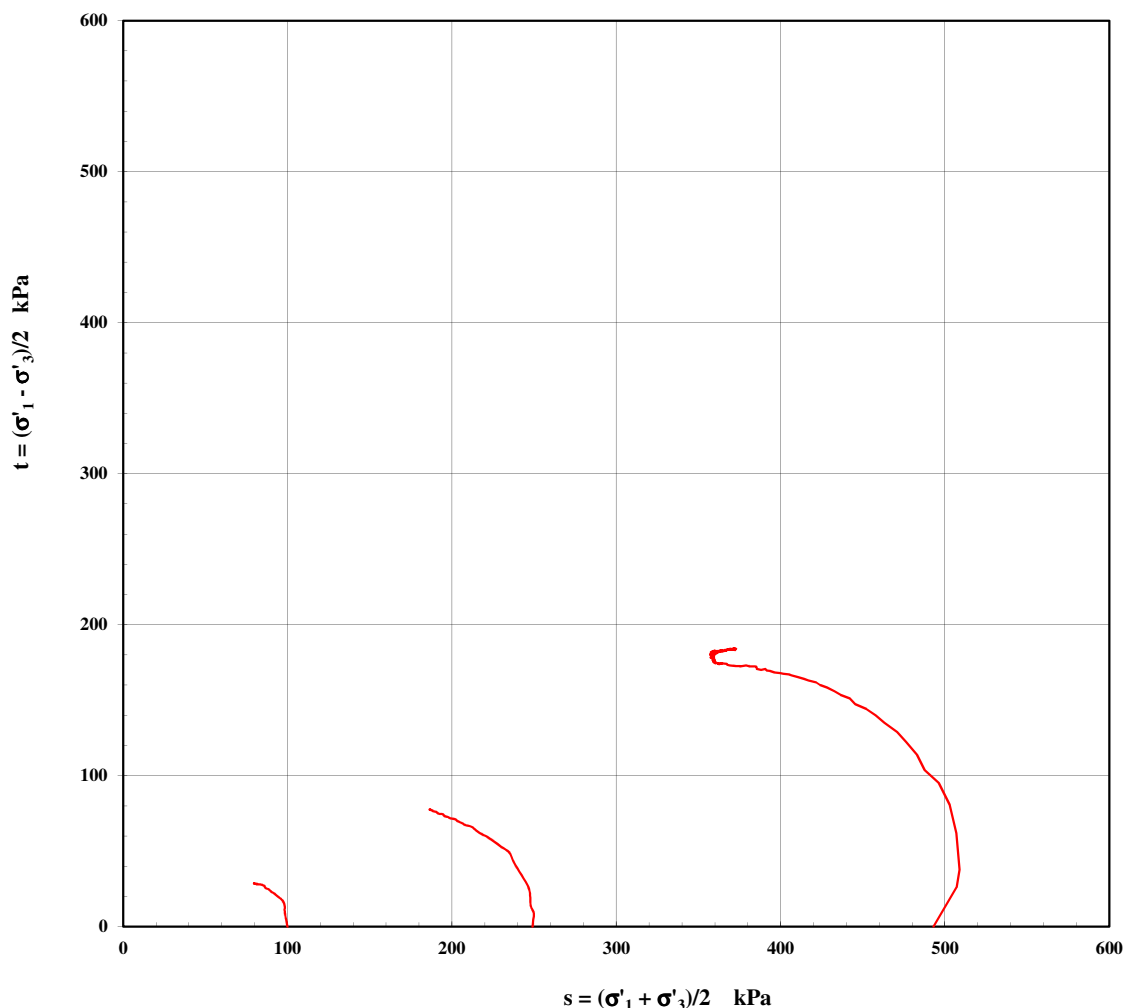
Laboratory No: 9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8
Description CLAYEY SAND- mottled grey and yellow brown	

MIT Method - Effective Stress Path



Note: Graph not to scale.

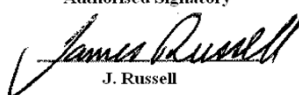
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

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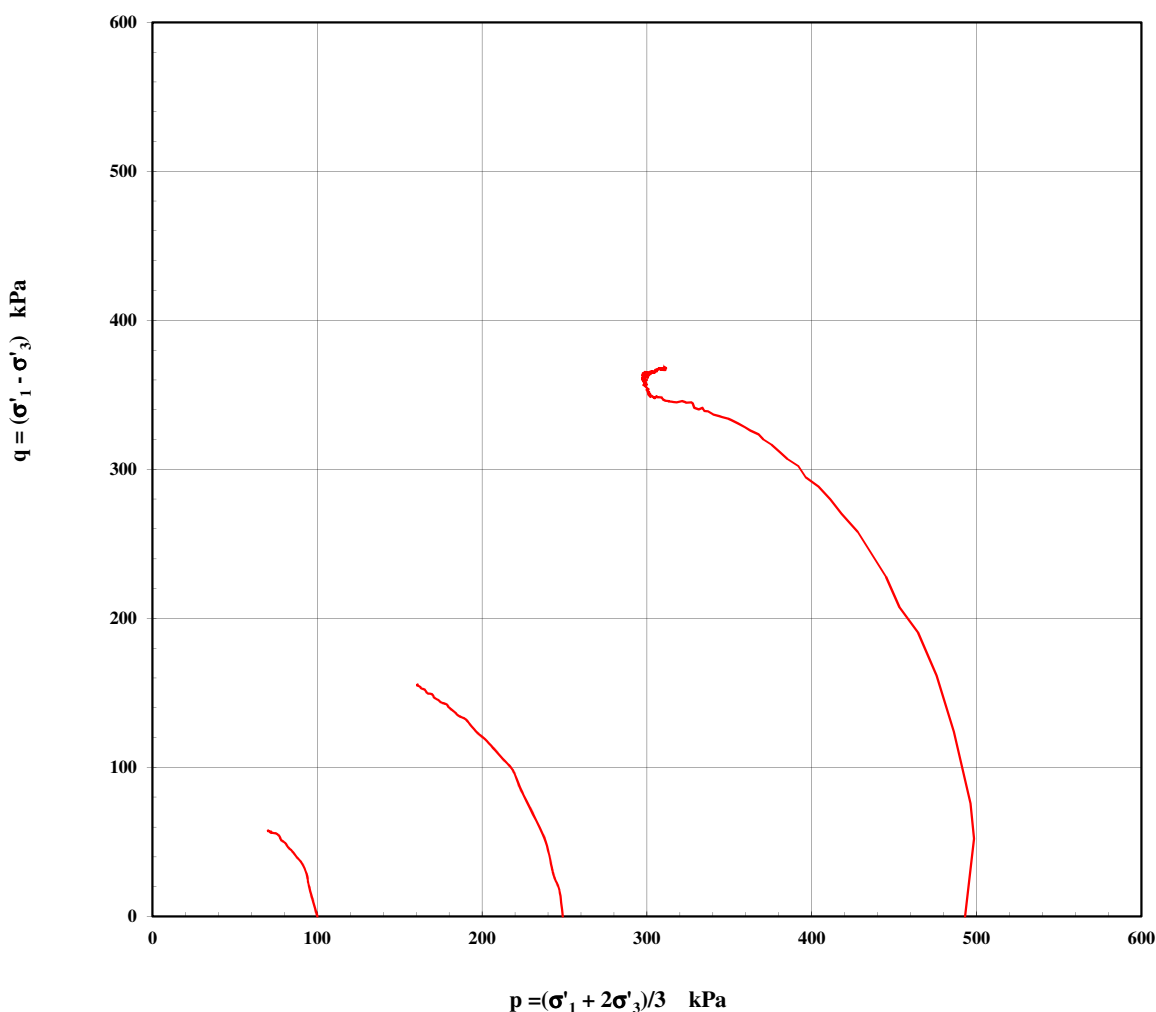
Laboratory No: 9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8
Description CLAYEY SAND- mottled grey and yellow brown	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

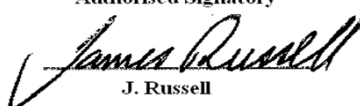
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 4

REP03001

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Perth Laboratory

Authorised Signatory

J. Russell



Laboratory No: 9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8
Description CLAYEY SAND- mottled grey and yellow brown	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	P 14080098	DATE: 5/8/14
BOREHOLE:	TP20 Bulk Sample	DEPTH: 1.0-3.8



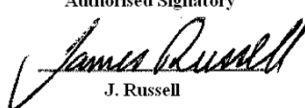
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 5

REP03001

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Tested at Trilab Perth Laboratory

Authorised Signatory

J. Russell



Laboratory No: 9926

TRIAXIAL TEST REPORT

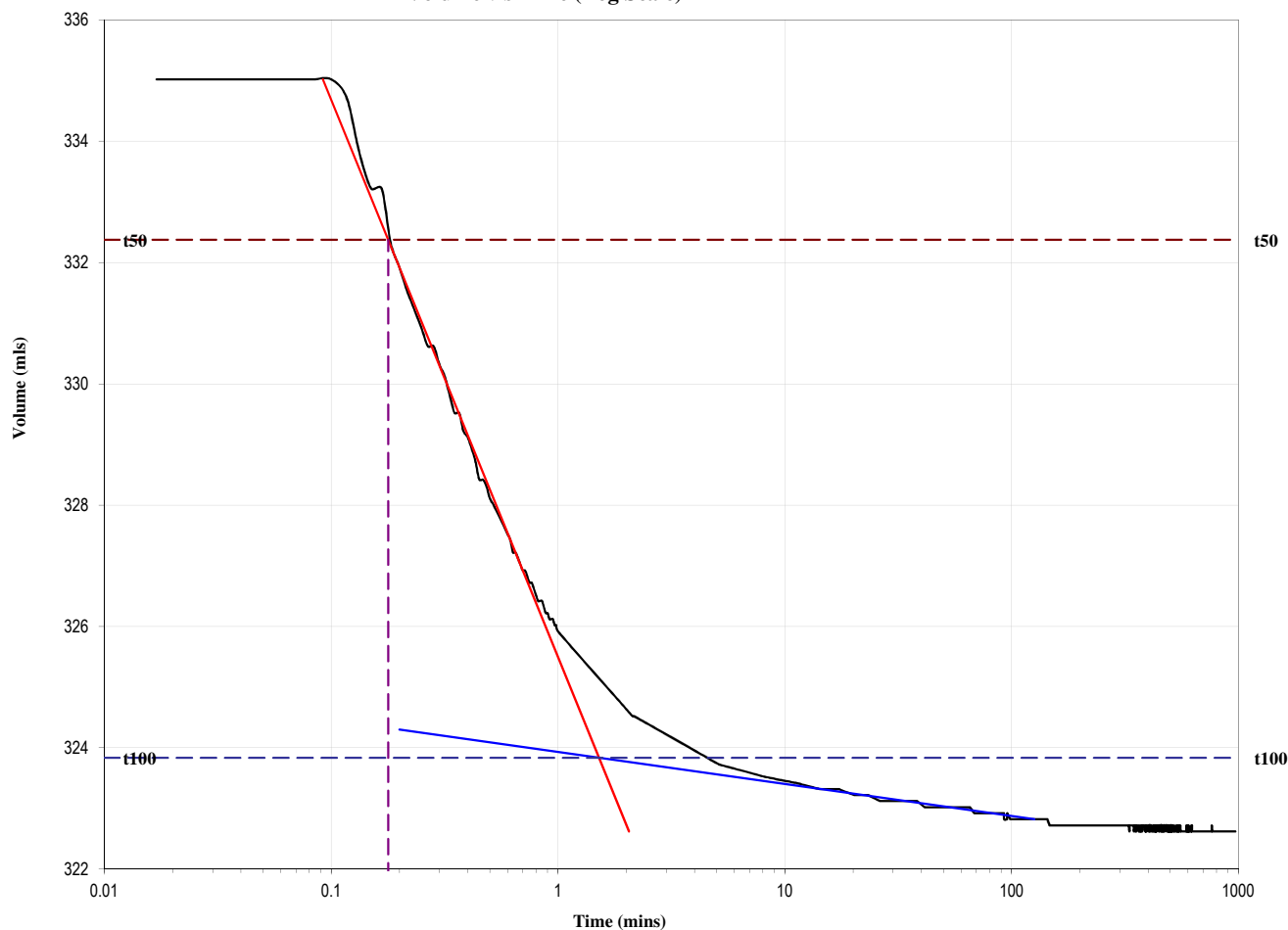
Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8

Description CLAYEY SAND- mottled grey and yellow brown

Stage 1: 100 kPa

Volume v's Time (Log Scale)



Cv: 45.53 m²/year
Mv: 0.334 m²/MN
k: 4.71E-09 m/s

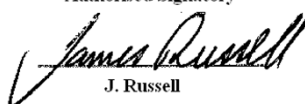
Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 6

REP03001

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Perth Laboratory

Authorised Signatory

J. Russell



Laboratory No: 9926

TRIAXIAL TEST REPORT

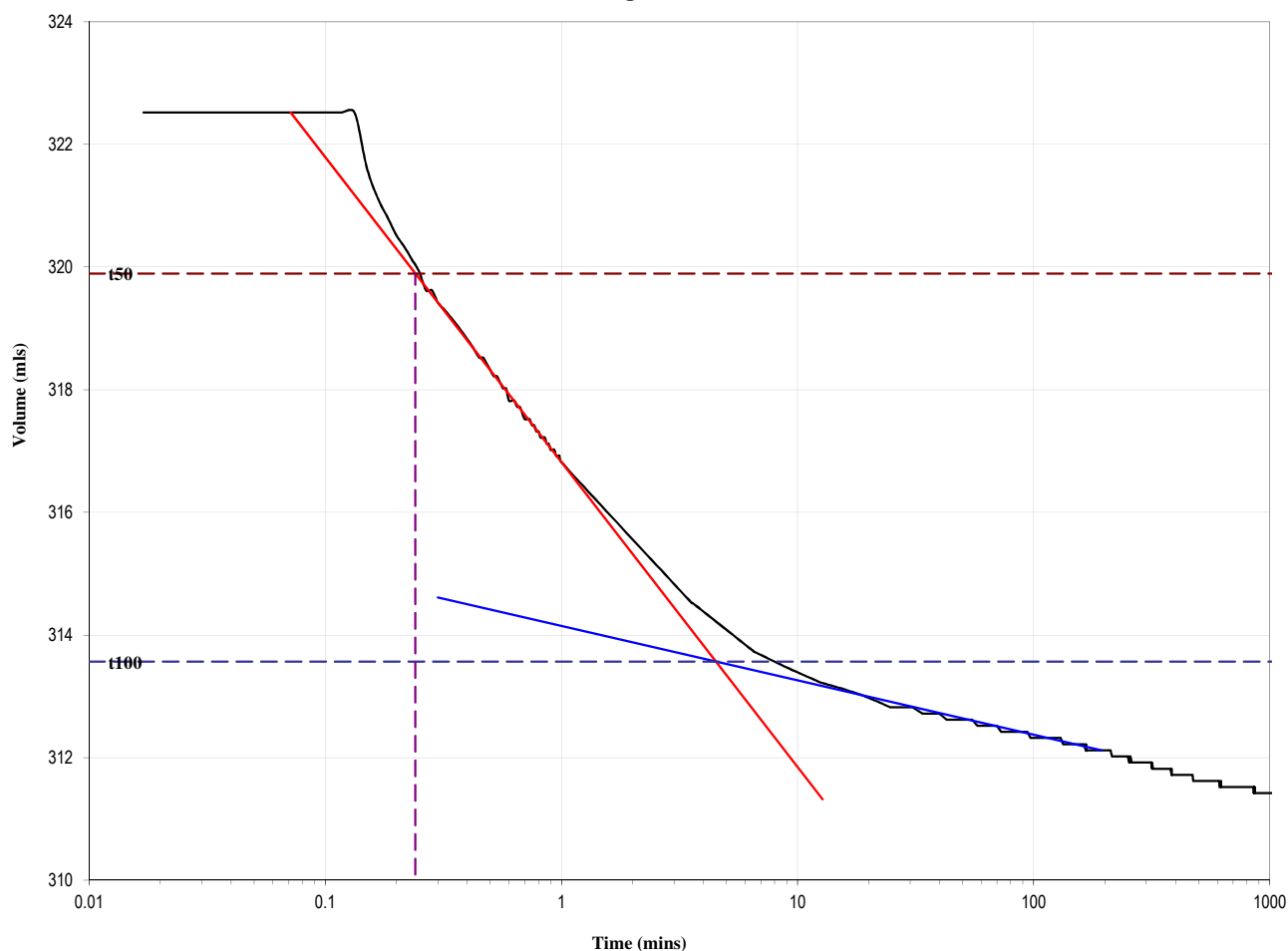
Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8

Description CLAYEY SAND- mottled grey and yellow brown

Stage 2: 249 kPa

Volume v's Time (Log Scale)



Time (mins)

Cv 28.00 m²/year
Mv: 0.257 m²/MN
k: 2.23E-09 m/s

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 7

REP03001

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Perth Laboratory

Authorised Signatory

James Russell
J. Russell



Laboratory No: 9926

TRIAXIAL TEST REPORT

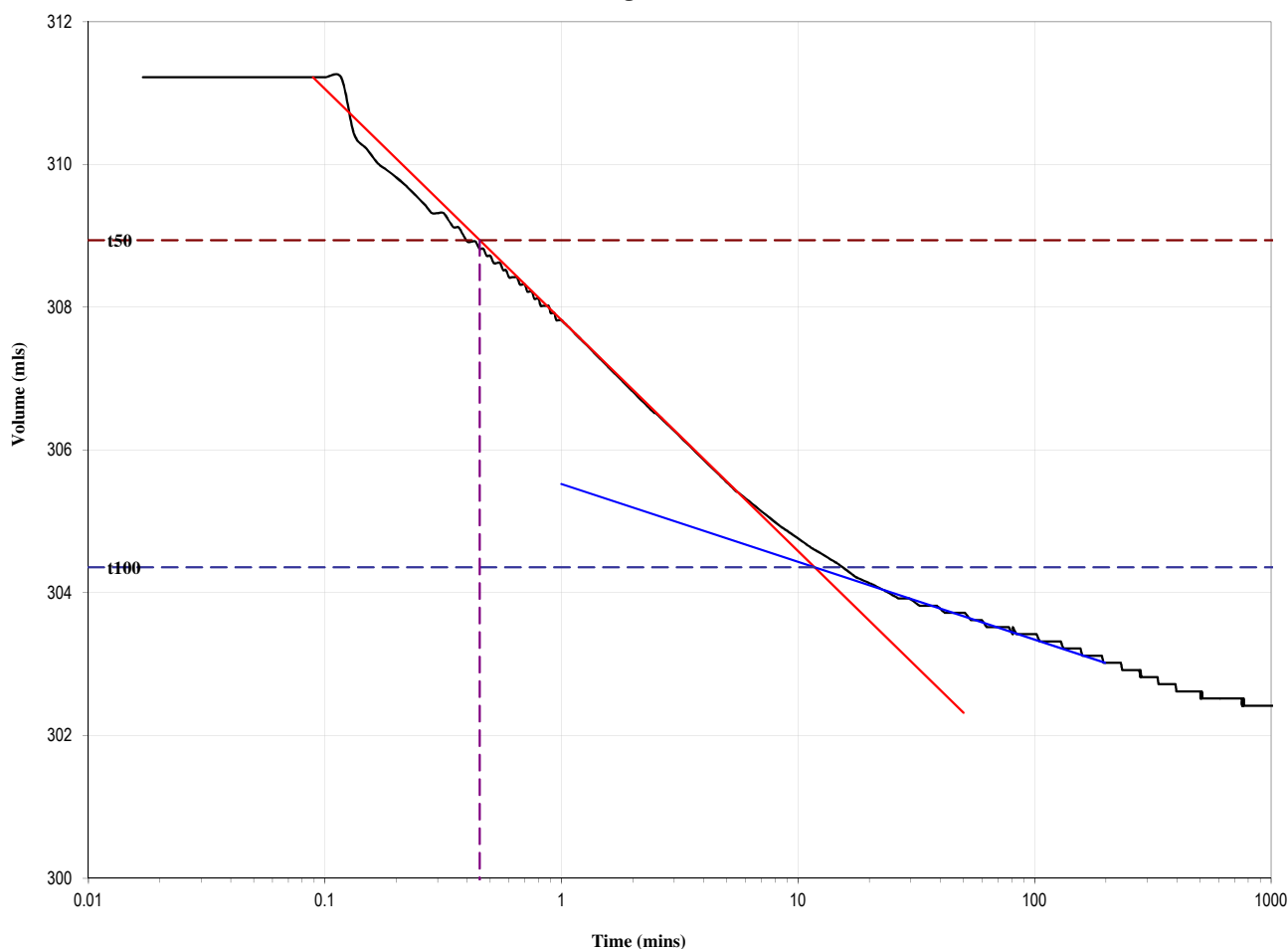
Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: P 14080098 - CU
Project: Allawuna Proposed Landfill Site	Test Date: 1/09/2014 Report Date: 8/09/2014
Client Id.: TP20 Bulk Sample	Depth (m): 1.0-3.8

Description CLAYEY SAND- mottled grey and yellow brown

Stage 3: 493 kPa

Volume v's Time (Log Scale)



Time (mins)

Cv 10.75 m²/year
Mv: 0.186 m²/MN
k: 6.19E-10 m/s

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 8

REP03001

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Perth Laboratory

Authorised Signatory

James Russell
J. Russell



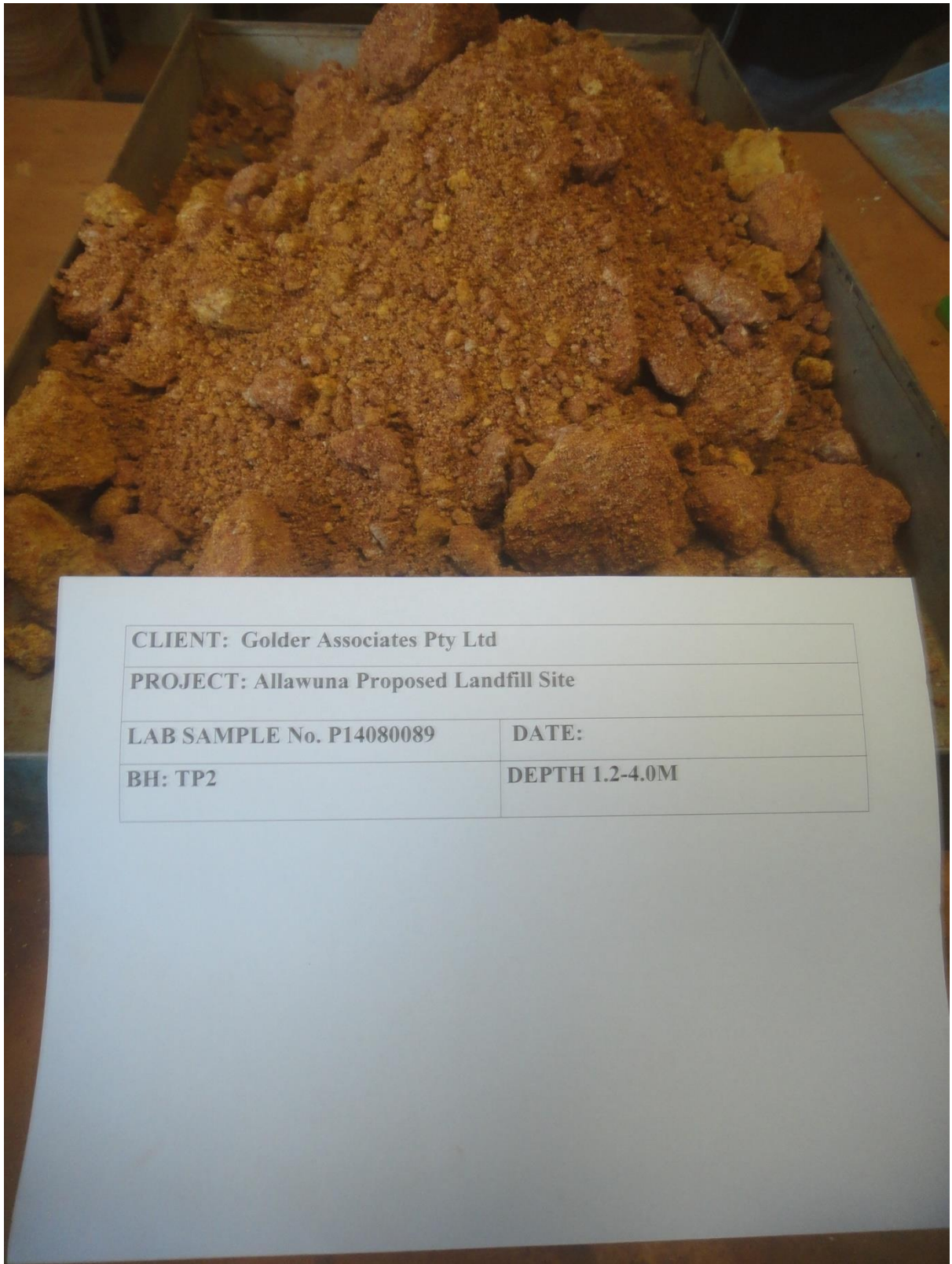
Laboratory No: 9926



APPENDIX G1

Laboratory Testing Certificates: Test Pit Investigation 25-27 August 2014

Geotechnical Reports: Sample Photos



CLIENT: Golder Associates Pty Ltd

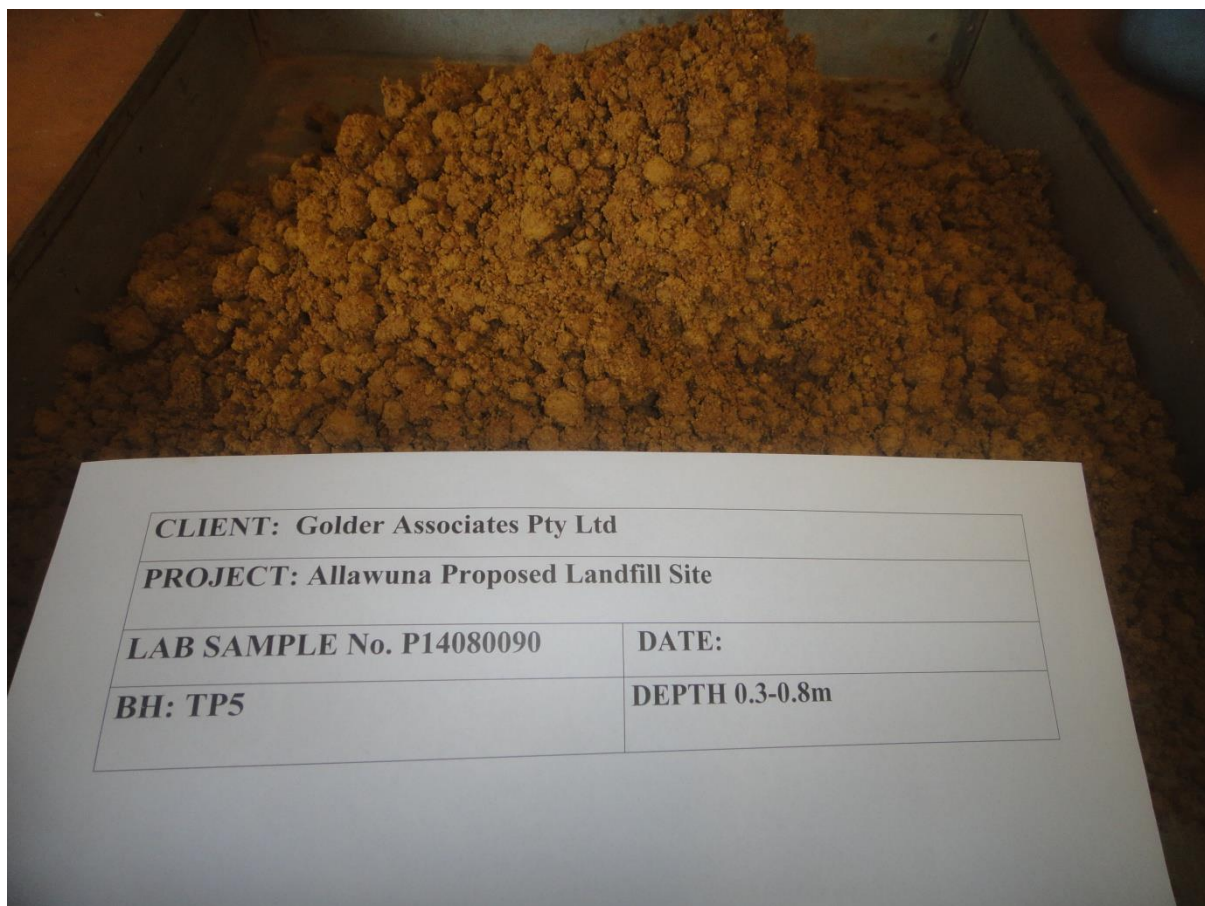
PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080089

DATE:

BH: TP2

DEPTH 1.2-4.0M



CLIENT: Golder Associates Pty Ltd

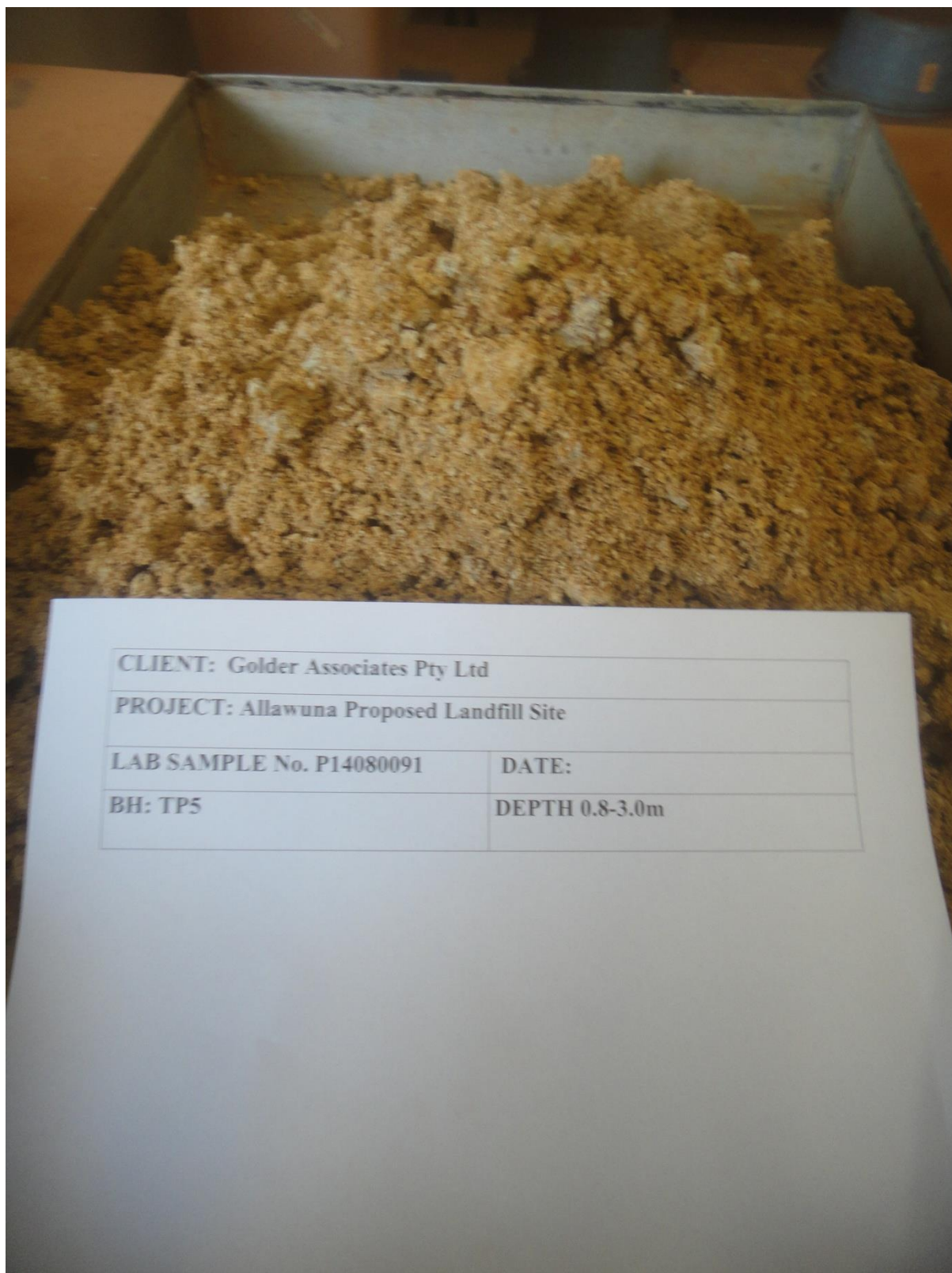
PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080090

DATE:

BH: TP5

DEPTH 0.3-0.8m



CLIENT: Golder Associates Pty Ltd

PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080091

DATE:

BH: TP5

DEPTH 0.8-3.0m



CLIENT: Golder Associates Pty Ltd

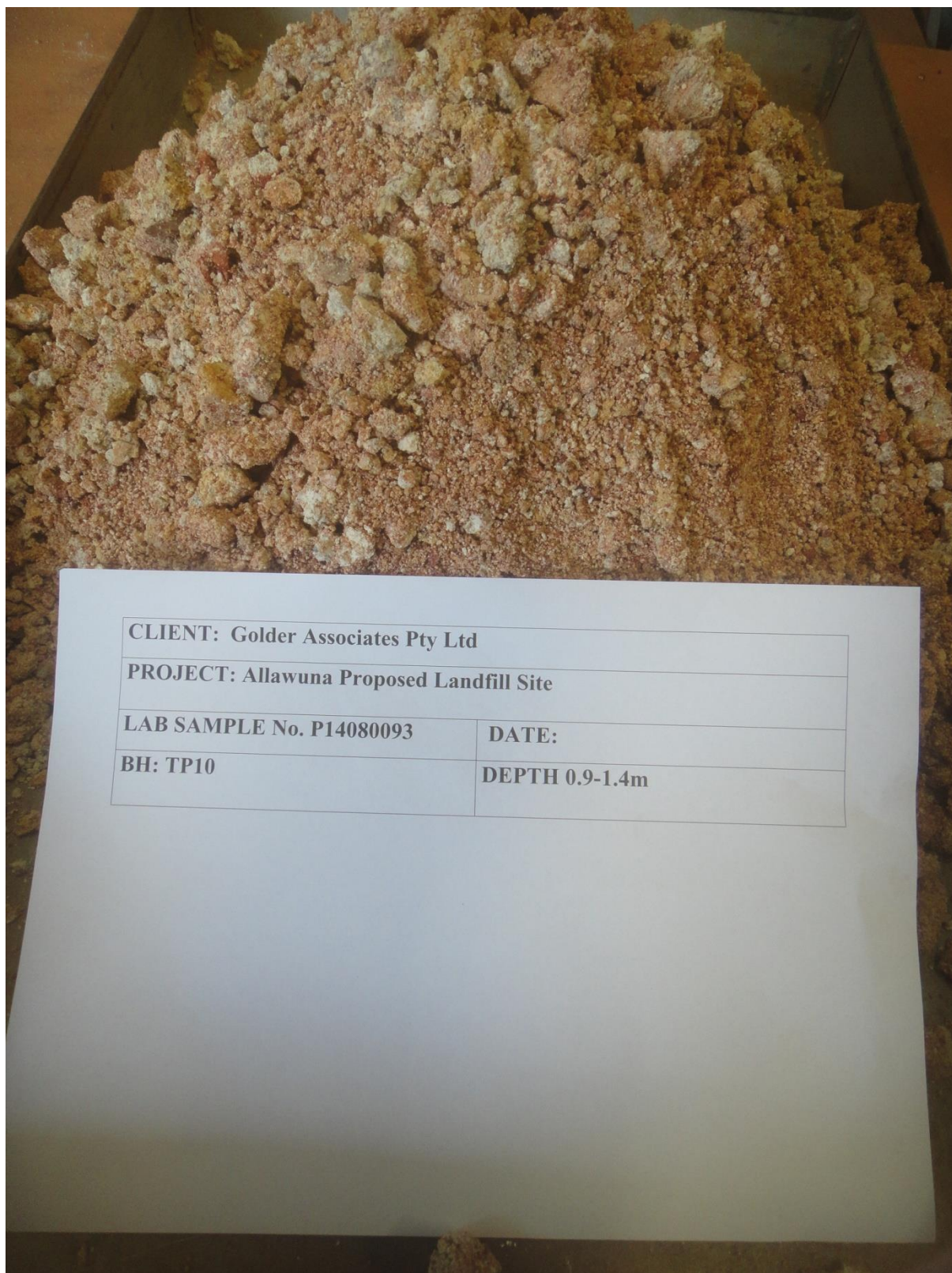
PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080092

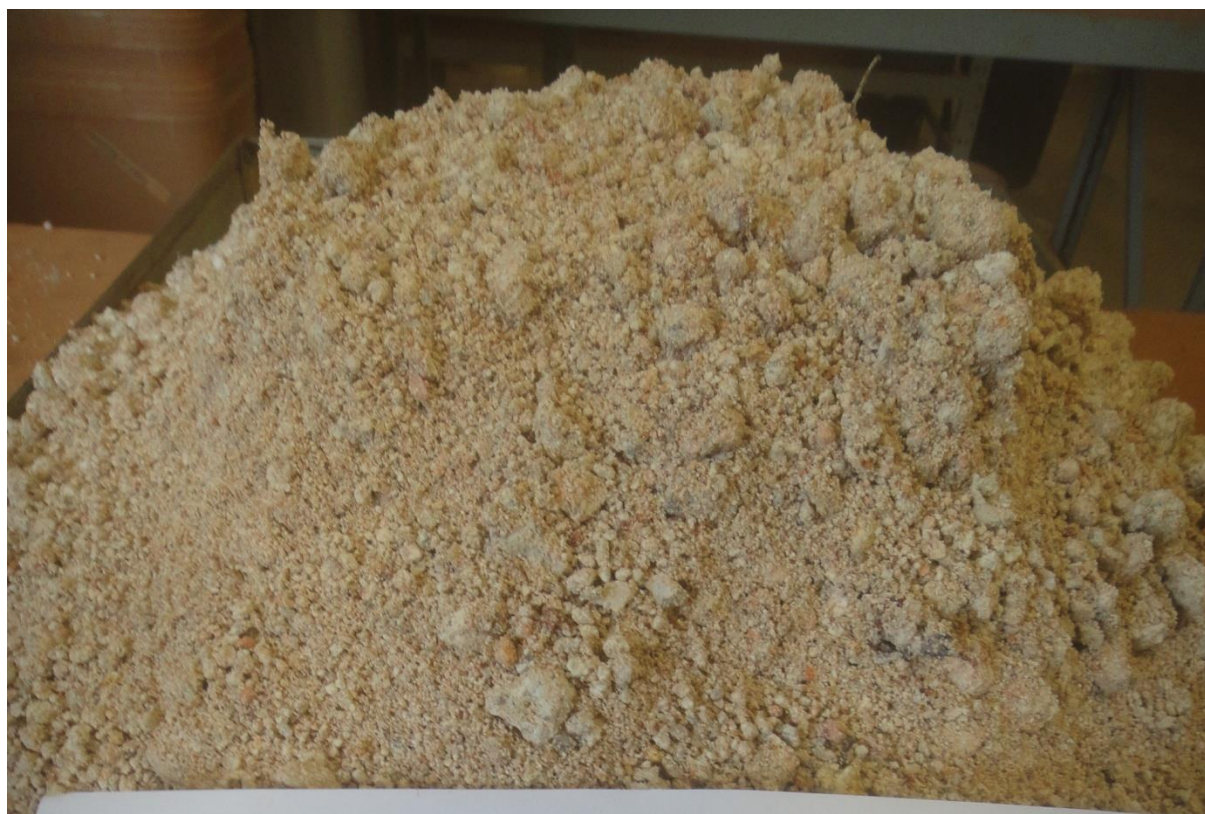
DATE:

BH: TP10

DEPTH 0.2-0.9m



CLIENT: Golder Associates Pty Ltd	
PROJECT: Allawuna Proposed Landfill Site	
LAB SAMPLE No. P14080093	DATE:
BH: TP10	DEPTH 0.9-1.4m



CLIENT: Golder Associates Pty Ltd

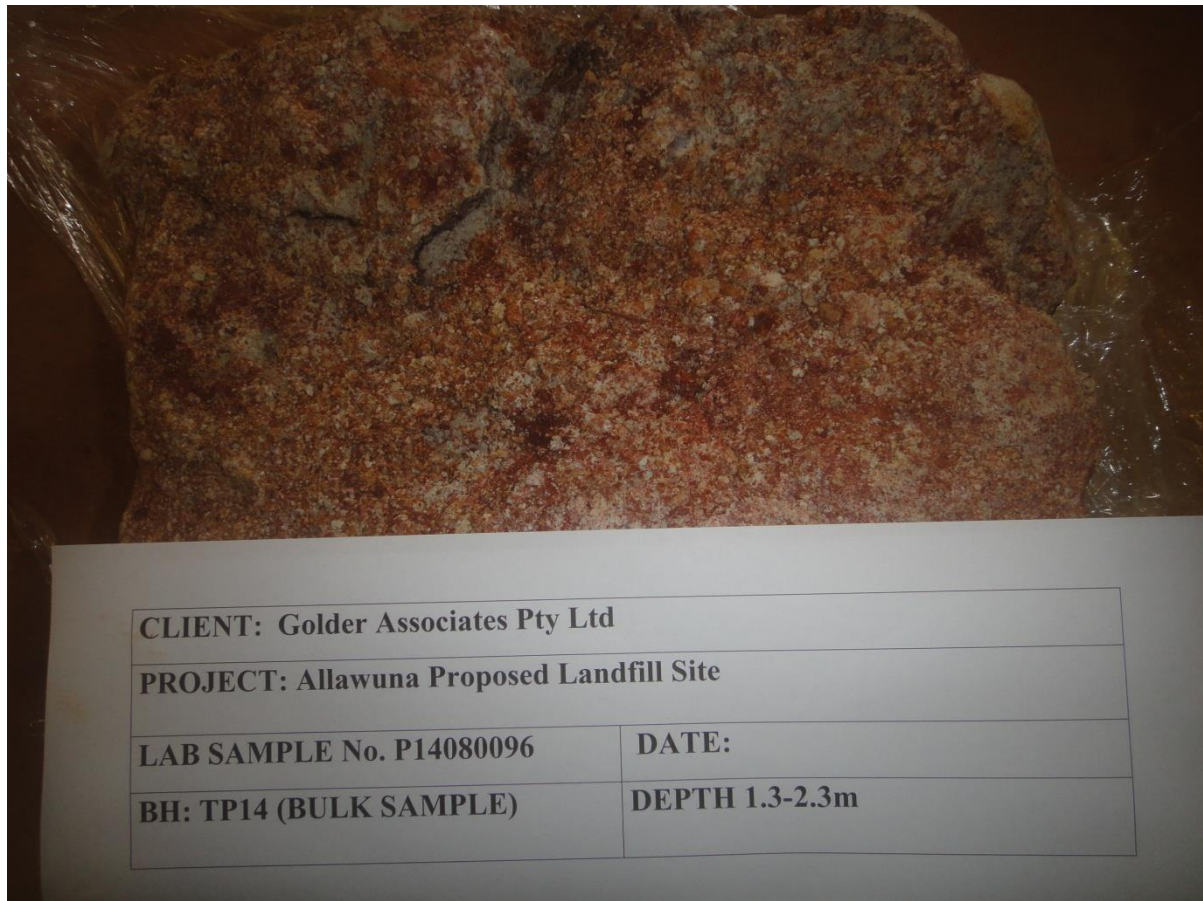
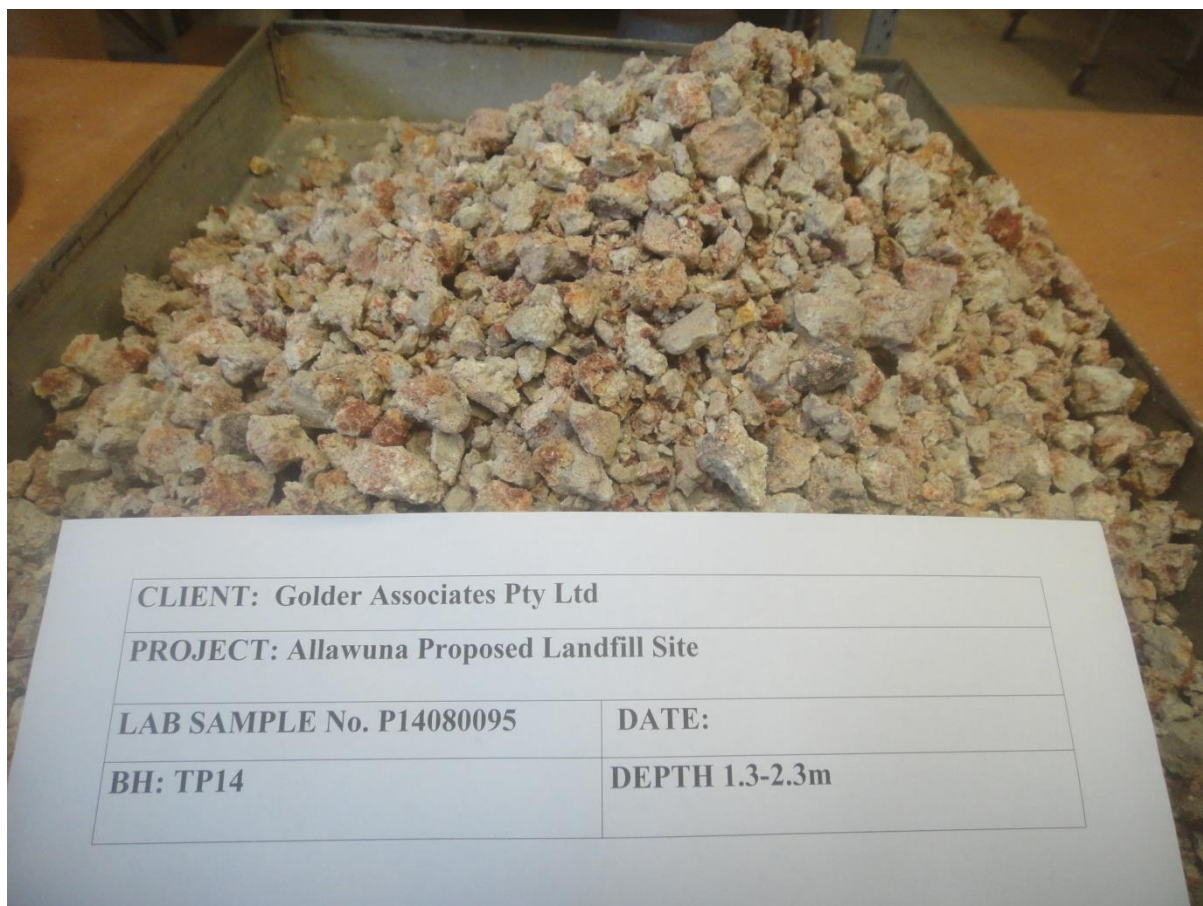
PROJECT: Allawuna Proposed Landfill Site

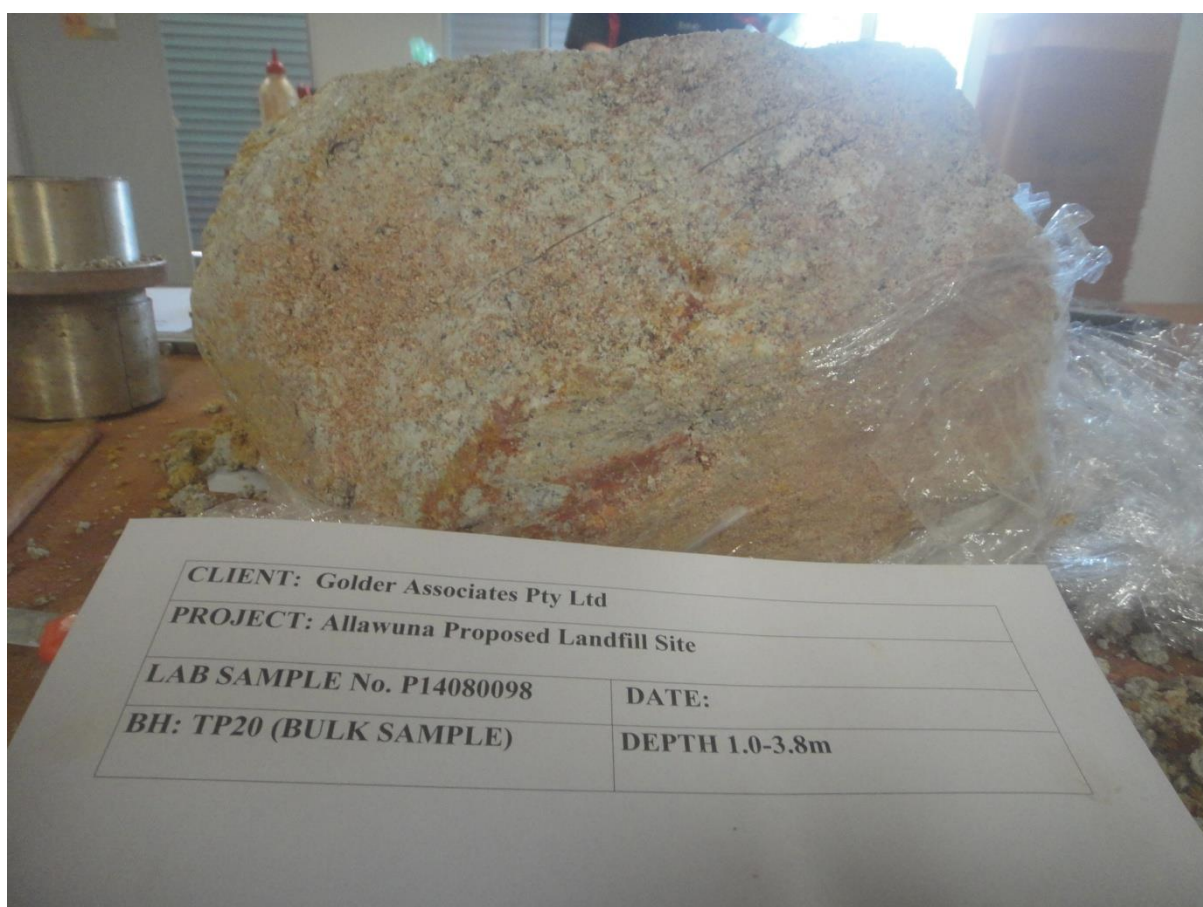
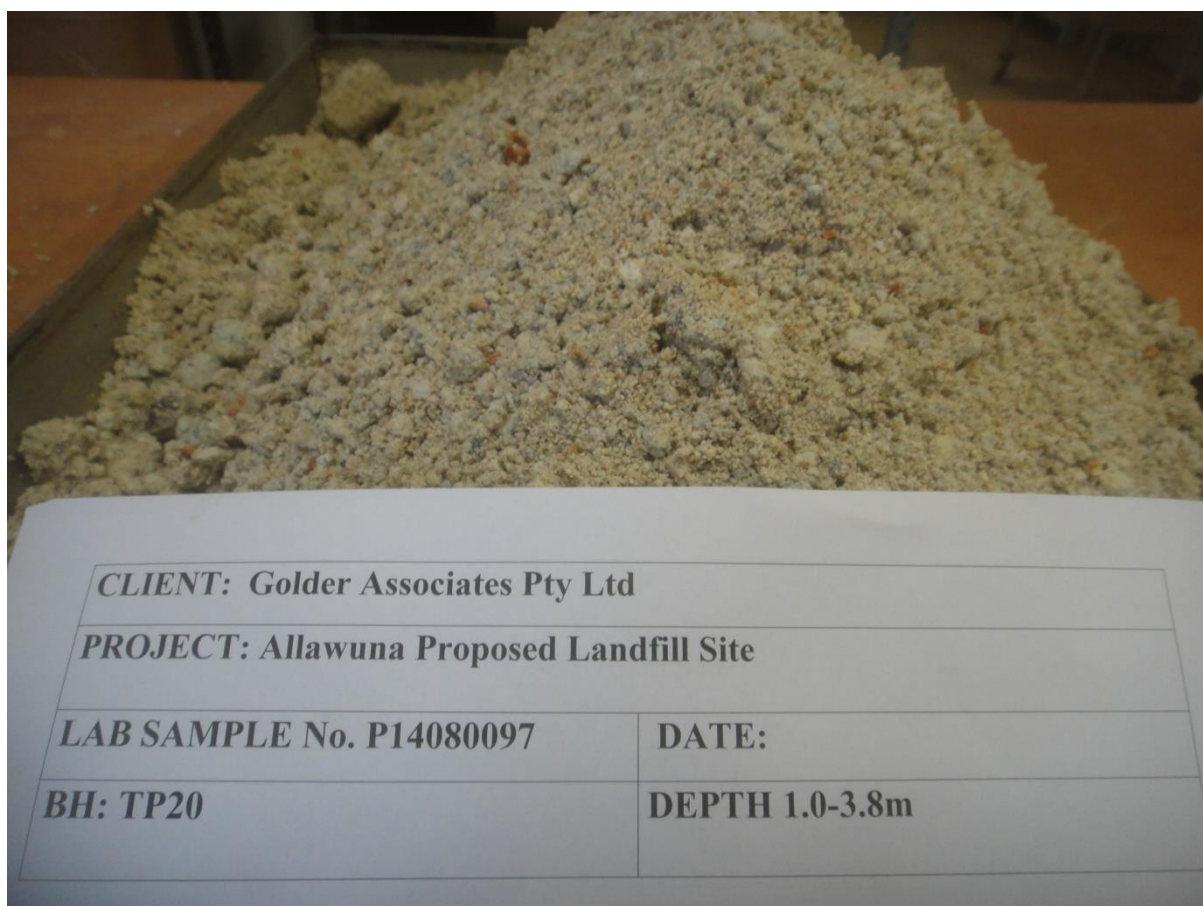
LAB SAMPLE No. P14080094

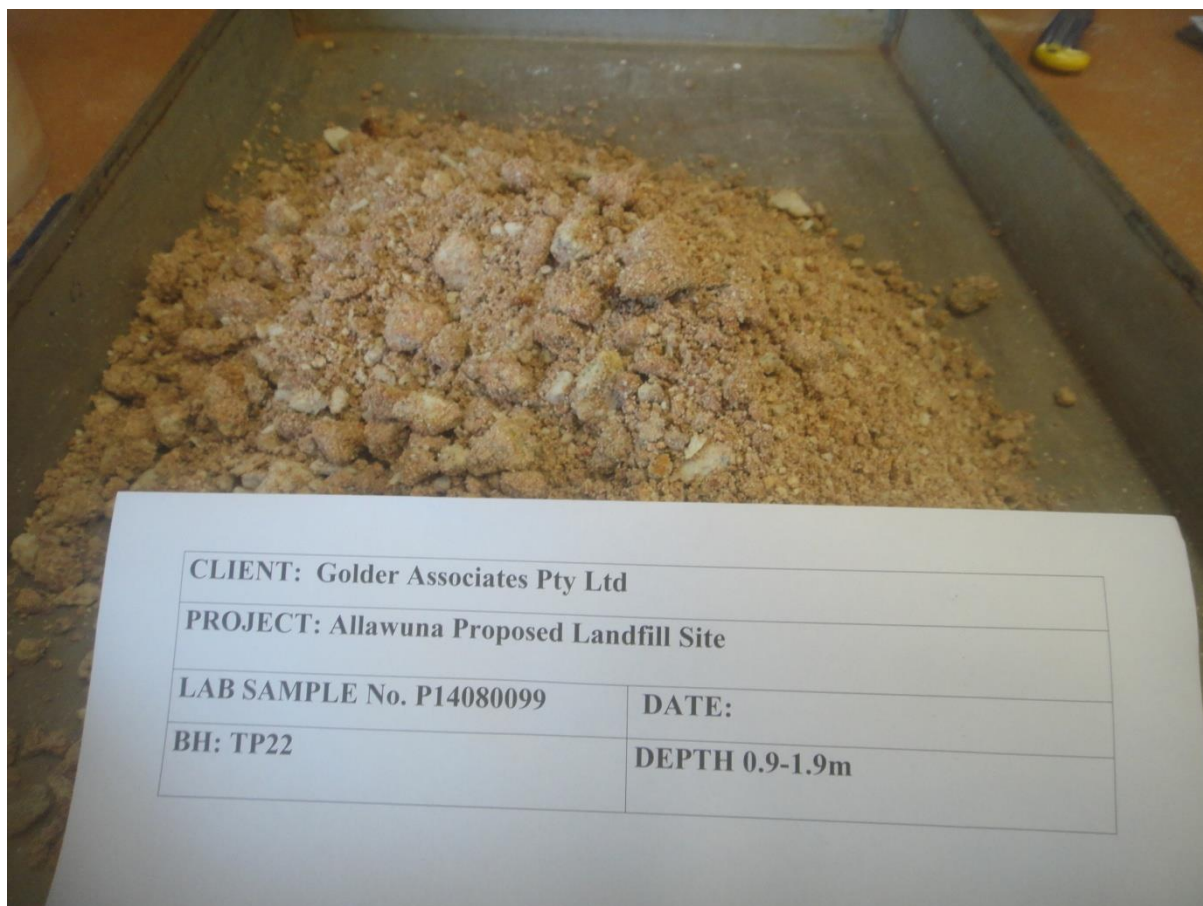
DATE:

BH: TP10

DEPTH 1.4-4.0m







CLIENT: Golder Associates Pty Ltd

PROJECT: Allawuna Proposed Landfill Site

LAB SAMPLE No. P14080099

DATE:

BH: TP22

DEPTH 0.9-1.9m



APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geochemical Procedure

NMI: METHOD DESCRIPTION SUMMARY	
Analysis Description:	Exchangeable Cations and Cation Exchange Capacity
Matrix:	Soil
NMI Method Code:	NT 2.60
Reference Method(s):	Rayment and Higginson, Aust Lab Handbook of Soil and Water Chemical Methods, 1992, 15E1 and 15E2
LOR and Units:	Exchangeable cations = 0.01 - 0.02 mequiv / 100g, CEC = 0.08 mequiv / 100g
NATA Accredited:	Yes
Method summary (including any preparation, digestion, extraction, cleanup, determination etc and brief description of instrumentation / equipment used):	
Method Title	
Determination of Exchangeable Cations, Cation Exchange Capacity and Water Soluble Cations in Soils	
Preparation & Procedure:	
For exchangeable cation estimation, soils are extracted with an NH ₄ Cl / BaCl ₂ solution and the five major cations (Al, Ca, Mg, Na and K) are determined using Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). The summed concentration of the five cations gives an approximate value of cation exchange capacity (CEC).	
Comments, limitations or known interferences	
Soils with EC > 0.3 dS/m are pre-washed with 60 % ethanol before analysis.	
Equipment used	
ICP-AES (Varian ES 730)	
Amount of sample required, container type, preservation and holding time	
A minimum of 10 g homogeneous air dried (40 °C) soil is required for metal analysis. If soil has not been previously dried and ground a minimum of 100 g representative soil is preferable (for moisture content, sample homogenisation, digestion for analysis and QA/QC).	
QA / QC protocols used (eg number of duplicates, spikes, matrix spikes, blanks etc per batch)	
For every batch of 20 samples or less, at least one blank, one duplicate, one blank spike, one sample spike and one laboratory control sample (CRM or in-house reference).	
MU for specific matrix/matrices	
13 – 18 %	
Date this summary produced and by whom	
Andrew Evans 16/02/2009	

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APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geochemical QA/QC



Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Golder Associates PTY LTD (WA)

Page 1 of 1

Level 2
1 Havelock Street
West Perth WA 6005

Attention: Hamish Campbell

NMI Job No: GOLD55_W/141215
Sample Matrix: Soil
Sample LRN Range: W14/021651 - 021655

Analyte	LOR	Blank	Units	Date of Analysis	Holding * time met	Recovery %	Acceptability Limits
pH - Leachable	-	-	-	17/12/2014	✓	-	-

* Holding time from "Guidelines for the Collection and Preservation of Samples" NMI WA May 2009 and is calculated from the day the sample was received at NMI.

Signed: David Lynch
Senior Environmental Chemist
NMI WA, Inorganic Section

Date: 22/12/2014

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Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Golder Associates Pty Ltd (WA)
Level 2
1 Havelock Street
WEST PERTH WA 6005

Page 1 of 1

Attention: Hamish Campbell

NMI Job No: GOLD55_W/141215_1
Sample Matrix: Water
Sample LRN Range: W14/021656

Analyte	LOR	Blank	Units	Date of	Holding *	Recovery	Acceptability
				Analysis	time met	%	Limits
Calcium - Filterable	1	<1	mg/L	18/12/2014	✓	105%	85 - 110
Chloride	10	<10	mg/L	17/12/2014	✓	102%	90 - 110
Magnesium - Filterable	1	<1	mg/L	18/12/2014	✓	98%	85 - 110
Nitrate as NO3-N (Calc)	0.010	<0.010	mg/L	18/12/2014	✓	-	-
Potassium - Filterable	1	<1	mg/L	18/12/2014	✓	94%	85 - 110
Sodium - Filterable	10	<10	mg/L	18/12/2014	✓	105%	85 - 110
Sulfate	5	<5	mg/L	17/12/2014	✓	99%	85 - 115

* Holding time from "Guidelines for the Collection and Preservation of Samples" NMI WA May 2009 and is calculated from the day the sample was received at NMI.

Signed: David Lynch
Senior Environmental Chemist
NMI WA, Inorganic Section

Date: 22/12/2014

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL



Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: GOLDER ASSOCIATES PTY LTD (WA)

NMI QA Report No: GOLD55_W/141215 T1

Sample Matrix: Soil

Analyte	Method	LOR	Blank	Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mEq/100g	mEq/100g	mEq/100g	mEq/100g			
Exchangeable Cations								
Aluminium	NT2.60	0.02	< 0.02	NA	NA	NA	**	NA
Calcium	NT2.60	0.01	< 0.01	NA	NA	NA	83	NA
Magnesium	NT2.60	0.01	< 0.01	NA	NA	NA	103	NA
Potassium	NT2.60	0.02	< 0.02	NA	NA	NA	95	NA
Sodium	NT2.60	0.02	< 0.02	NA	NA	NA	97	NA

Legend:

Acceptable recovery is 75-120%.

Acceptable RPDs on duplicates is 44% at concentrations > 5 times LOR. Greater RPD may be expected at < 5 times LOR.

LOR = Limit Of Reporting

ND = Not Determined

RPD = Relative Percent Difference

NA = Not Applicable

LCS = Laboratory Control Sample.

#: Spike level is less than 50% of the sample's concentration, hence the recovery data cannot be reported.

** : reference value not available

* sample was not spiked for this element

Comments:

Results greater than ten times LOR have been rounded to two significant figures.

This report shall not be reproduced except in full.

Signed:

Dr Michael Wu
Inorganics Section, NMI-North Ryde
6/01/2015

Date:



Australian Government
National Measurement Institute

Environmental Samples Submission Form (Chain of Custody)

1300 722 845
customerservice@measurement.gov.au
www.measurement.gov.au/services

Deliver to NMI delivery entrance
(not reception):

- ☐ 105 Delhi Road, North Ryde, NSW 2113
☐ 26 Dick Perry Avenue, Kensington, WA 6151
☐ 1/153 Bertie Street, Port Melbourne, VIC 3207

Requested by

Company name	GOLDER ASSOCIATES
Customer contact	HANBELL
Fax	
Phone	9444 1783
Email	HANBELL@GOLDER.COM.AU
Address	81 GUTHRIE ST OSBORNE PARK
ABN / ACN	

Project details

NMI quote name	
NMI contact	DR FAULA MCILAT
Purchase order number	147645083 P5200T5203
Email for sample receipt notification	HANBELL@GOLDER.COM.AU
Email for results	AS ABOVE
Email for invoices	AS ABOVE
Email for report	AS ABOVE

(if required on report or
invoice this must be
provided with samples)

Report format

☐ NMI report ☐ CSV

Relinquished by

Print name HANBELL

Signature [Signature]

Date 15.12.14

Time (h:mm PM)

Received at NMI by (NMI use only)

Print name Kevin Robins

Signature [Signature]

Date 15.12.14

Time (h:mm PM) 10:40

What is the condition of the sample on receipt? ☐ frozen ☐ chilled ☒ ambient

Are any of the samples biologically hazardous? ☐ yes ☒ no

GOLD55 - W/141215

6125 - 46503

NMI sample number	Sample reference (limit of 10 characters)	Sample description	Matrix (type the matrix if it is not in the dropdown list)	Collection date	Collection time (h:mm PM)	No. of glass containers, e.g. 2 x 250 mL (if applicable)	No. of plastic containers, e.g. 1 x 500 mL (if applicable)	No. of vials (if applicable)	Turnaround time (request faster turnaround before submission – surcharge applies)	Analysis required, e.g. metals (Cr, Co, Zn, Pb), TPH, BTEX, PAH, OCP, OPP, TBT	Comments, e.g. handling, storage and disposal instructions, sample preservation
W14/021651	14441783		Soil				1 BAG			PH & CEC	
W14/021652	14441784		Soil				1 BAG			PH & CEC	

I have read and agreed to NMI's terms and conditions

☐

Print form

Submit by email

NMI use only SMW ref QT-2018

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PAEONE



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National Measurement Institute

Environmental Samples Submission Form (Chain of Custody)

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Requested by

Company name	
Customer contact	
Fax	
Phone	
Email	
Address	
ABN / ACN	

Project details

NMI quote name	
NMI contact	
Purchase order number	
Email for sample receipt notification	
Email for results	
Email for invoices	
Email for report	

(if required on report or
invoice this must be
provided with samples)

Report format

☐ NMI report ☐ CSV

Relinquished by

Print name

Signature

Date

Time (h:mm PM)

Received at NMI by (NMI use only)

Print name Kevin Robins

Signature [Signature]

Date 15.12.14

Time (h:mm PM) 10:40

What is the condition of the sample on receipt? ☐ frozen ☐ chilled ☒ ambient

Are any of the samples biologically hazardous? ☐ yes ☒ no

NMI sample number	Sample reference (limit of 10 characters)	Sample description	Matrix (type the matrix if it is not in the dropdown list)	Collection date	Collection time (h:mm PM)	No. of glass containers, e.g. 2 x 250 mL (if applicable)	No. of plastic containers, e.g. 1 x 500 mL (if applicable)	No. of vials (if applicable)	Turnaround time (request faster turnaround before submission – surcharge applies)	Analysis required, e.g. metals (Cr, Co, Zn, Pb), TPH, BTEX, PAH, OCP, OPP, TBT	Comments, e.g. handling, storage and disposal instructions, sample preservation
W14/021653	14441788		Soil				1 BAG			PH & CEC	
W14/021654	14441789		Soil				1 BAG			PH & CEC	

I have read and agreed to NMI's terms and conditions

☐

Print form

Submit by email

NMI use only SMW ref

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PAGE TWO



Australian Government
National Measurement Institute

Environmental Samples Submission Form (Chain of Custody)

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customerservice@measurement.gov.au
www.measurement.gov.au/services

Deliver to NMI delivery entrance
(not reception):

- ☐ 105 Delhi Road, North Ryde, NSW 2113
☐ 26 Dick Perry Avenue, Kensington, WA 6151
☐ 1/153 Bertie Street, Port Melbourne, VIC 3207

Requested by

Company name	
Customer contact	
Fax	
Phone	
Email	
Address	
ABN / ACN	

Project details

NMI quote name	
NMI contact	
Purchase order number	
Email for sample receipt notification	
Email for results	
Email for invoices	
Email for report	

(if required on report or
invoice this must be
provided with samples)

Report format

☐ NMI report ☐ CSV

Relinquished by

Print name

Signature

Date

Time (h:mm PM)

Received at NMI by (NMI use only)

Print name Kevin Robins

Signature [Signature]

Date 15.12.14

Time (h:mm PM) 10:40

What is the condition of the sample on receipt? ☐ frozen ☐ chilled ☒ ambient

Are any of the samples biologically hazardous? ☐ yes ☒ no

GOLD55 - W/141215-1

6105-46504

NMI sample number	Sample reference (limit of 10 characters)	Sample description	Matrix (type the matrix if it is not in the dropdown list)	Collection date	Collection time (h:mm PM)	No. of glass containers, e.g. 2 x 250 mL (if applicable)	No. of plastic containers, e.g. 1 x 500 mL (if applicable)	No. of vials (if applicable)	Turnaround time (request faster turnaround before submission - surcharge applies)	Analysis required, e.g. metals (Cr, Co, Zn, Pb), TPH, BTEX, PAH, OCP, OPP, TBT	Comments, e.g. handling, storage and disposal instructions, sample preservation
W14/021655	14441795		soil				1 BAG			PA & CEC	
W14/021656	14441796		Water				1 JAR			MAJOR CATIONS	

I have read and agreed to NMI's terms and conditions

☐

Print form

Submit by email

NMI use only SMW ref

SCANNED

PAGE THREE

NATIONAL INTRA-NMI CHAIN OF CUSTODY (electronic version)

COC Filename : COC 14634W

From : NMI WA

Phone Number : 08 9368 8440

Fax Number : 08 9368 8444

Sent By : Kevin Robins

Date Sent : 15/12/14

Client : Golder Associates

Date Due : 07/01/15

Client Contact : Koon Bay Ho

Purchase Order Number : 147645033 P5200T5203

Urgent : No

Moistures : WA to do - Get result from SMW if required

To : NMI NSW

Co-Ordinating Lab : NMI WA

Sample Registered in SMW : Yes

Tests Required to be Entered in SMW : Yes

SMW Quote : QT-0

SMW Report Format :

SMW Client ID : GOLD55

CSU Quote Attached : No

Report Direct to Client : No

Interim Report to : NMI WA

Invoice Direct to Client : No

Send QA Report to NMI WA : Yes

NMI LRN	Client ID	Sample Type (Matrix)	Tests Required	Comments
				<p>Samples appear to be a coarse gravel, but when added to water dissolve to fine silt-like particles.</p> <p>If more sample is required, please advise as we still have at least 1kg of each sample in storage.</p>
W14/021651	14441783	Soil	Cation Exchange Capacity	WA will do Moisture.
W14/021652	14441784	Soil	Cation Exchange Capacity	
W14/021653	14441788	Soil	Cation Exchange Capacity	
W14/021654	14441789	Soil	Cation Exchange Capacity	
W14/021655	14441795	Soil	Cation Exchange Capacity	

Received By :

Date :

Time :

Sample Condition on Receipt :



APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geochemical Reports



REPORT OF ANALYSIS

Page: 1 of 2

Report No. RN1050700

Client	: GOLDER ASSOCIATES PTY LTD (WA) LEVEL 2 / 1 HAVELOCK STREET WEST PERTH WA 6005	Job No.	: GOLD55_W/141215_1
		Quote No.	: QT-02002
		Order No.	: 147645033P5200T5203
		Date Sampled	:
		Date Received	: 15-DEC-2014
Attention	HAMISH CAMPBELL	Sampled By	: CLIENT
Project Name	:		
Your Client Services Manager	: KOON-BAY HO	Phone	: (08) 9368 8400

Lab Reg No.	Sample Ref	Sample Description
W14/021656	14441796	WATER

Lab Reg No.		W14/021656				
Sample Reference		14441796				
	Units					Method
Inorganics						
Calcium - Filterable	mg/L	120				WL272
Chloride	mg/L	6200				WL119
Magnesium - Filterable	mg/L	570				WL272
Nitrate as NO3-N (Calc)	mg/L	< 0.010				WL239CALC
Potassium - Filterable	mg/L	57				WL272
Sodium - Filterable	mg/L	3000				WL272
Sulfate	mg/L	460				WL119

David Lynch, Section Manager
Inorganics - WA
Accreditation No. 2474

6-JAN-2015

Unless notified to the contrary, the above samples will be disposed of one month from the reporting date.



Accredited for compliance with ISO/IEC 17025.
This report shall not be reproduced except in full.
Results relate only to the sample(s) tested.

Accredited for compliance with ISO/IEC 17025

26 Dick Perry Avenue, Kensington WA 6151 Tel: + 61 8 9368 8400 Fax: + 61 8 9368 8499 www.measurement.gov.au

National Measurement Institute

REPORT OF ANALYSIS

Page: 2 of 2
Report No. RN1050700

This Report supersedes reports: RN1049922



REPORT OF ANALYSIS

Page: 1 of 4

Report No. RN1053786

Client	: GOLDER ASSOCIATES PTY LTD (WA) LEVEL 2 / 1 HAVELOCK STREET WEST PERTH WA 6005	Job No.	: GOLD55_W/141215
		Quote No.	: QT-02002
		Order No.	: 147645033P5200T5203
		Date Sampled	:
		Date Received	: 15-DEC-2014
Attention	: HAMISH CAMPBELL	Sampled By	: CLIENT
Project Name	:		
Your Client Services Manager	: KOON-BAY HO	Phone	: (08) 9368 8400

Lab Reg No.	Sample Ref	Sample Description
W14/021651	14441783	SOIL
W14/021652	14441784	SOIL
W14/021653	14441788	SOIL
W14/021654	14441789	SOIL

Lab Reg No.		W14/021651	W14/021652	W14/021653	W14/021654	
Sample Reference		14441783	14441784	14441788	14441789	Method
	Units					
BAC12 exchangeable cations						
Aluminium	mEq/100g	0.021	0.072	0.036	0.039	NT2_60
Calcium	mEq/100g	0.35	0.065	0.46	0.27	NT2_60
Cation Exchangeable Capacity	mEq/100g	2	3.4	4	3.6	NT2_60
Magnesium	mEq/100g	1.5	2.1	2.4	2.5	NT2_60
Potassium	mEq/100g	< 0.02	< 0.02	0.026	0.021	NT2_60
Sodium	mEq/100g	0.11	1.2	1.1	0.84	NT2_60

W14/021651

- W14/021655

Exchangeable cations, CEC are reported on an air dried (40C) basis.

Ling Shuang Lu, Analyst

Inorganics - NSW

Accreditation No. 198

3-FEB-2015

Lab Reg No.		W14/021651	W14/021652	W14/021653	W14/021654	
Sample Reference		14441783	14441784	14441788	14441789	Method
	Units					
Inorganics						
Conductivity at 25C-Leachable	uS/cm	40	60	140	130	WL121
pH - Leachable		8.5	6.6	6.5	6.0	WL120

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26 Dick Perry Avenue, Kensington WA 6151 Tel: + 61 8 9368 8400 Fax: + 61 8 9368 8499 www.measurement.gov.au

REPORT OF ANALYSIS

Page: 2 of 4
Report No. RN1053786

W14/021651
to W14/021655. Conductivity and pH measured on a 1:5 soil:water extract.



David Lynch, Section Manager
Inorganics - WA
Accreditation No. 2474

3-FEB-2015

REPORT OF ANALYSIS

Page: 3 of 4

Report No. RN1053786

Client	: GOLDER ASSOCIATES PTY LTD (WA)	Job No.	: GOLD55_W/141215
	LEVEL 2 / 1 HAVELOCK STREET	Quote No.	: QT-02002
	WEST PERTH WA 6005	Order No.	: 147645033P5200T5203
		Date Sampled	:
Attention	: HAMISH CAMPBELL	Date Received	: 15-DEC-2014
Project Name	:	Sampled By	: CLIENT
Your Client Services Manager	: KOON-BAY HO	Phone	: (08) 9368 8400

Lab Reg No.	Sample Ref	Sample Description
W14/021655	14441795	SOIL

Lab Reg No.	Sample Reference	Units	W14/021655	14441795				Method
BAC12 exchangeable cations								
Aluminium	mEq/100g	0.3						NT2_60
Calcium	mEq/100g	0.14						NT2_60
Cation Exchangeable Capacity	mEq/100g	2.2						NT2_60
Magnesium	mEq/100g	1.6						NT2_60
Potassium	mEq/100g	0.023						NT2_60
Sodium	mEq/100g	0.12						NT2_60

Ling Shuang Lu

Ling Shuang Lu, Analyst
Inorganics - NSW
Accreditation No. 198

3-FEB-2015

Lab Reg No.	Sample Reference	Units	W14/021655	14441795				Method
Inorganics								
Conductivity at 25C-Leachable	uS/cm	20						WL121
pH - Leachable		5.4						WL120

David Lynch

David Lynch, Section Manager
Inorganics - WA
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REPORT OF ANALYSIS

Page: 4 of 4

Report No. RN1053786

This is an amended report to include the electrical conductivity. Please discard the original and replace with this.



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Results relate only to the sample(s) tested.

This Report supersedes reports: RN1049921 RN1050688 RN1053731
RN1050695



APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geotechnical Reports: Particle Size Distribution and Atterberg Limits

Particle Size Distribution & Plasticity Index Test Report



Perth Laboratory

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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

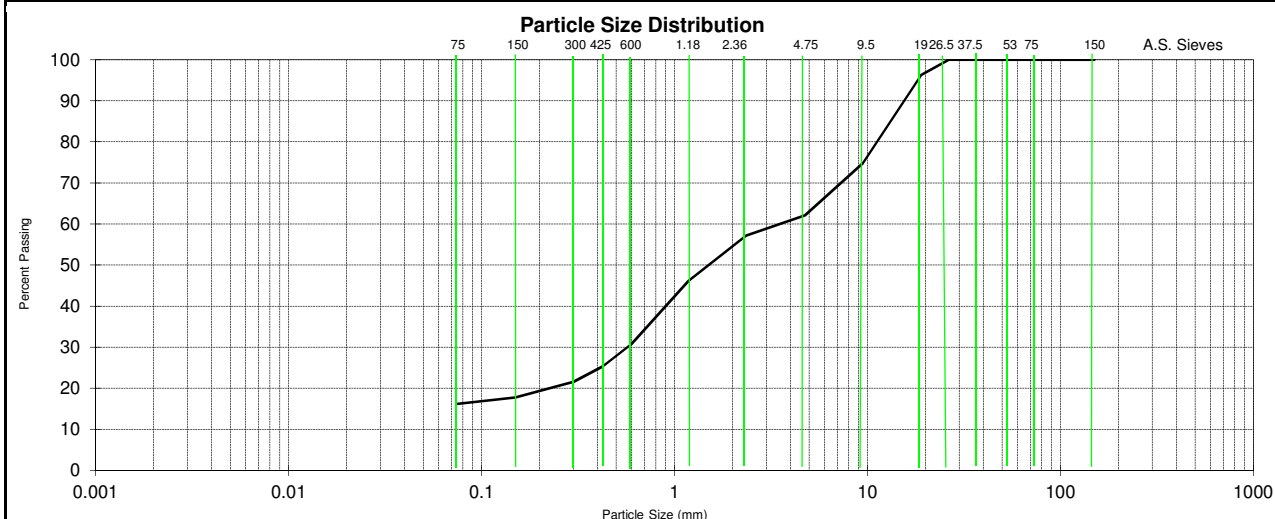
Lab Reference Number: 14441780

Sample Identification: TP85
1.0-2.9

Laboratory Specimen Description: Clayey GRAVEL (with sand)

AS 1726 - Soil Classification: GC

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	34	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	23	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	11	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	5.5	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	96		Sample History:			
9.5 mm	75		Preparation Method:			
4.75 mm	62		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	57		Linear shrinkage mould length (mm):			
1.18 mm	46		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	31		Notes:			
0.425 mm	25					
0.300 mm	22					
0.150 mm	18					
0.075 mm	16					



Tested as received

PLF1-003 RL0 27/11/12

Certificate Reference: 147645033_14441780_TR-140208_Class_Rev0



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Sean Lenihan

Sean Lenihan - Senior Laboratory Technician

Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

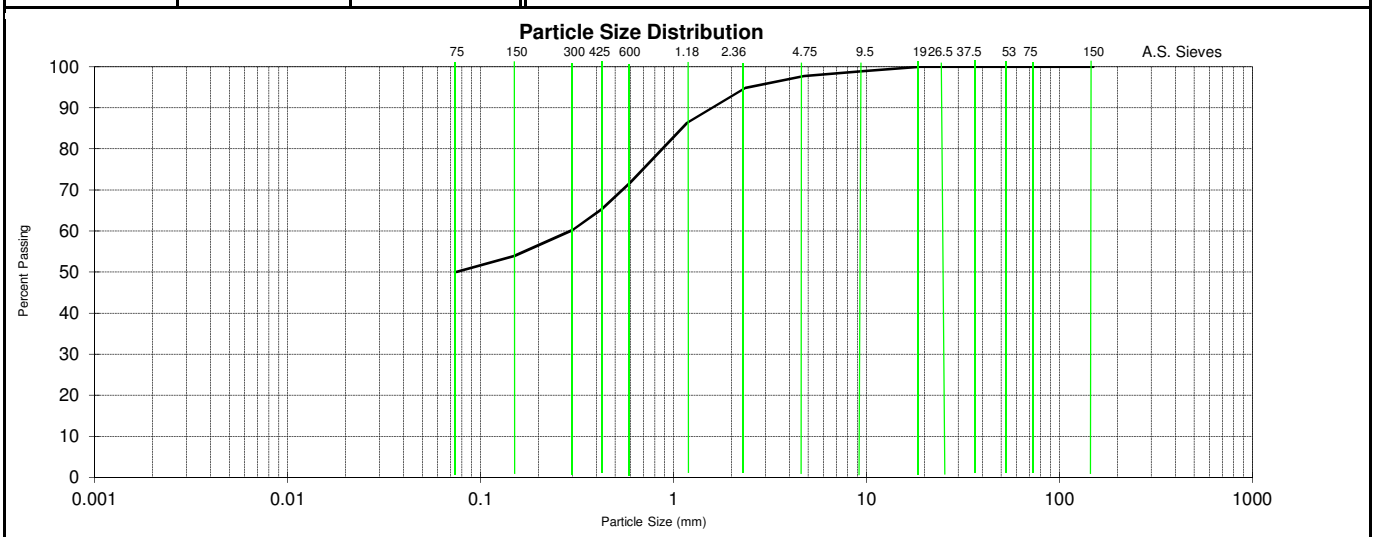
Lab Reference Number: 14441781

Sample Identification: TP85
2.9-4.9

Laboratory Specimen Description: Sandy CLAY (trace of gravel)

AS 1726 - Soil Classification: CH

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	56	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	26	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	30	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	10.5	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	99		Preparation Method:			
4.75 mm	98		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	95		Linear shrinkage mould length (mm):			
1.18 mm	86		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	72		Notes:			
0.425 mm	65					
0.300 mm	60					
0.150 mm	54					
0.075 mm	50					



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Sean Lenihan - Senior Laboratory Technician

Particle Size Distribution & Plasticity Index Test Report

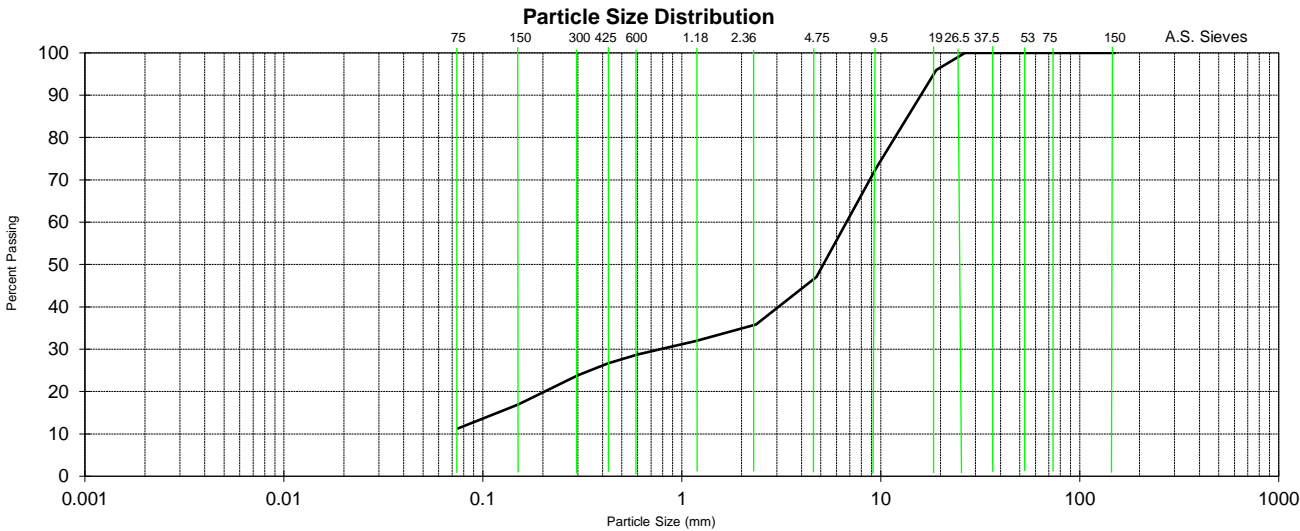


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Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	9/03/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		
Lab Reference Number:	14441782	Sample Identification:	TP86 0.3-0.9

Laboratory Specimen Description:	GRAVEL (with clay/silt, with sand)
AS 1726 - Soil Classification:	-

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	22	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	17	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	5	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	2.5	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	96		Sample History:			
9.5 mm	73		Preparation Method:			
4.75 mm	47		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	36		Linear shrinkage mould length (mm):			
1.18 mm	32		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	29		Notes:			
0.425 mm	27					
0.300 mm	24					
0.150 mm	17					
0.075 mm	11					



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Particle Size Distribution & Plasticity Index Test Report



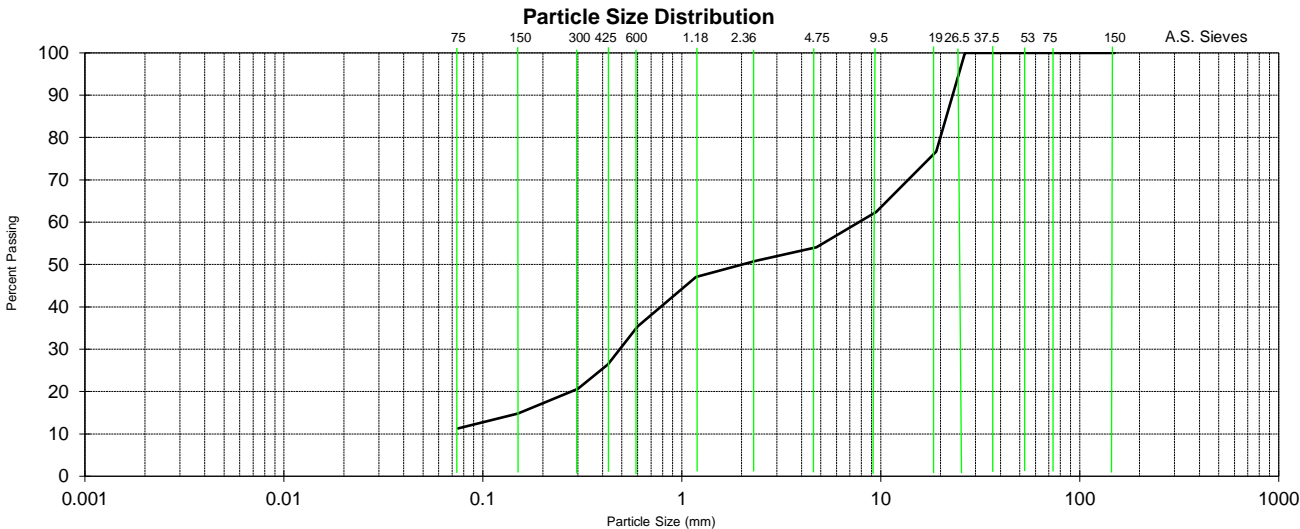
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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190
Project: Allawuna Proposed Landfill Site
Location: Allawuna Farm
Date: 9/03/15
Project No.: 147645033



Lab Reference Number: 14441783
Sample Identification: TP86
1.1-2.0

Laboratory Specimen Description: GRAVEL (with clay, with sand)
AS 1726 - Soil Classification: -

Particle Size DistributionAS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	%AS 1289.3.1.2	35	
75.0 mm	100		Plastic Limit	%AS 1289.3.2.1	22	
53.0 mm	100		Plasticity Index	%AS 1289.3.3.1	13	
37.5 mm	100		Linear Shrinkage	%AS 1289.3.4.1	6.5	
26.5 mm	100		Moisture Content	%AS 1289.2.1.1	ND	
19.0 mm	77		Sample History:			
9.5 mm	62		Preparation Method:			
4.75 mm	54		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	51		Linear shrinkage mould length (mm):			
1.18 mm	47		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	35		Notes:			
0.425 mm	26					
0.300 mm	21					
0.150 mm	15					
0.075 mm	11					



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Particle Size Distribution & Plasticity Index Test Report

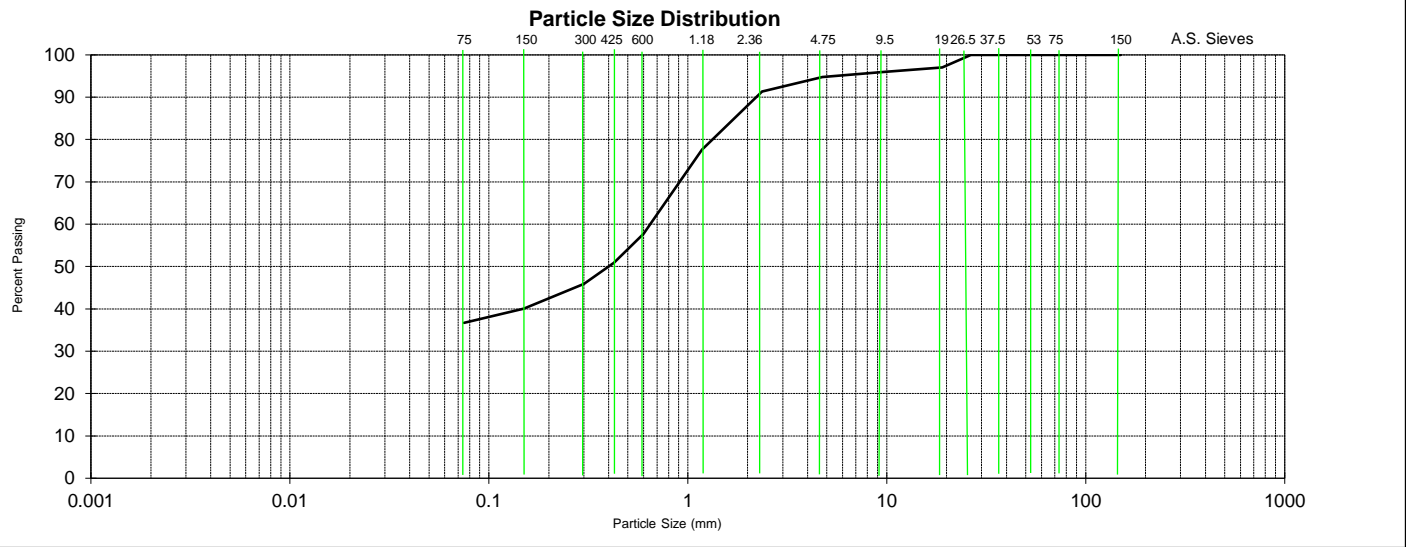


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Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	9/03/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		
Lab Reference Number:	14441784	Sample Identification:	TP86 2.0-6.0

Laboratory Specimen Description:	Clayey SAND (trace of gravel)
AS 1726 - Soil Classification:	SC

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	40	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	23	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	17	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	8.0	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	97		Sample History:			
9.5 mm	96		Preparation Method:			
4.75 mm	95		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	91		Linear shrinkage mould length (mm):			
1.18 mm	78		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	58		Notes:			
0.425 mm	51					
0.300 mm	46					
0.150 mm	40					
0.075 mm	37					



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Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

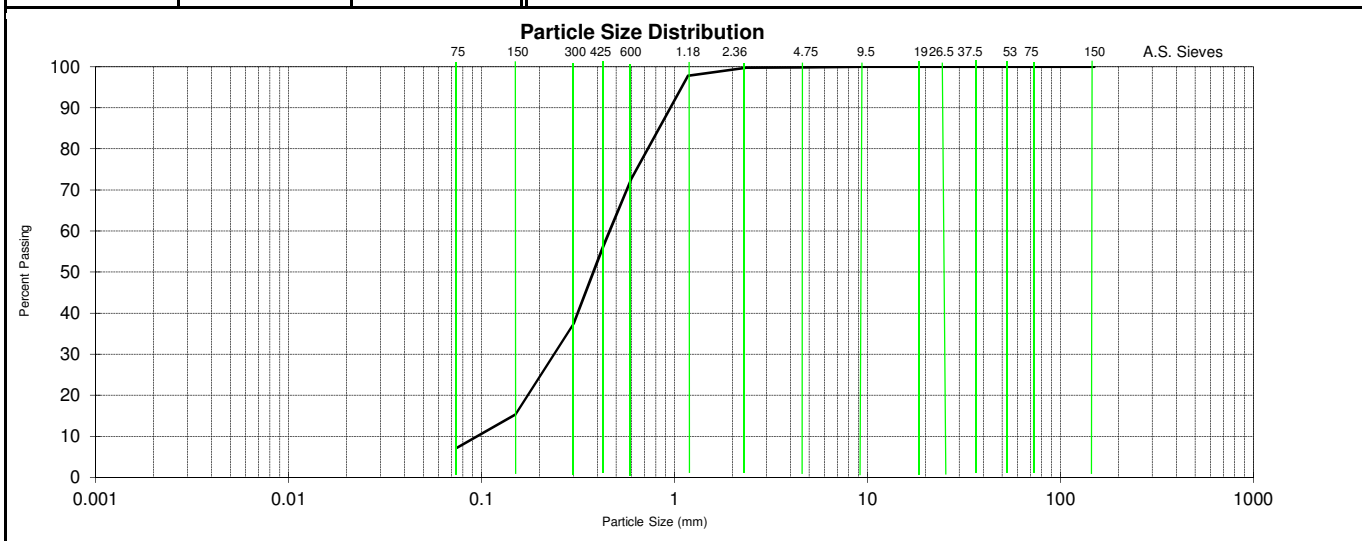
Lab Reference Number: 14441785

Sample Identification: TP94
0.2-1.8

Laboratory Specimen Description: SAND (with clay/silt)

AS 1726 - Soil Classification: -

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	ND	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	ND	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	ND	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	ND	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	100		Preparation Method:			
4.75 mm	100		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	100		Linear shrinkage mould length (mm):			
1.18 mm	98		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	73		Notes:			
0.425 mm	56					
0.300 mm	37					
0.150 mm	15					
0.075 mm	7					



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Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

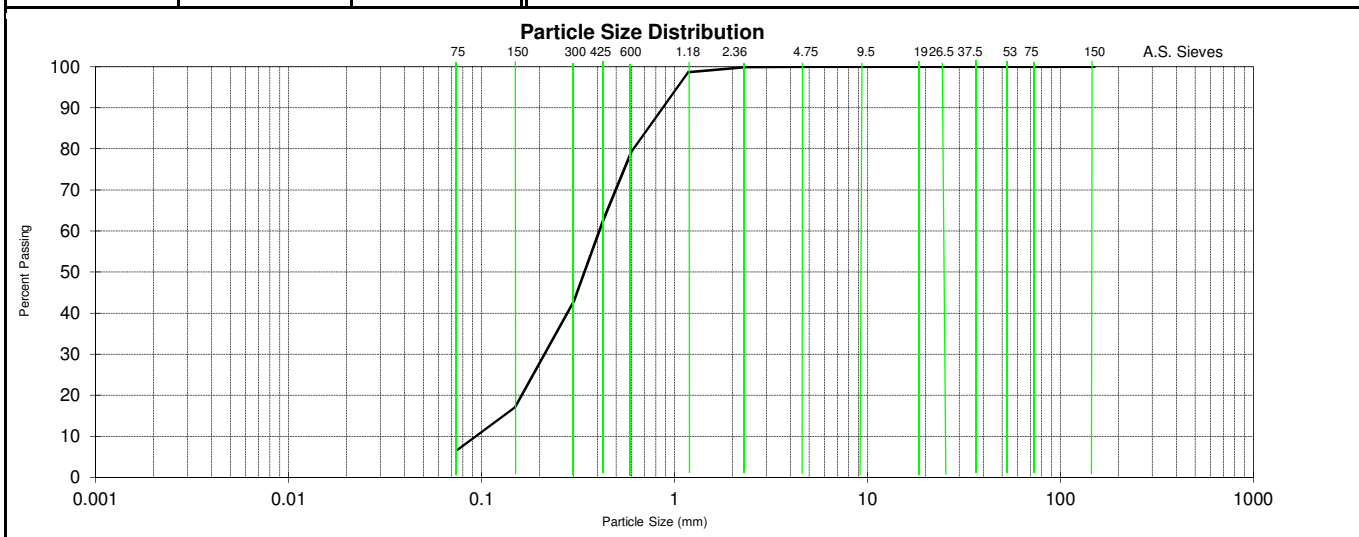
Lab Reference Number: 14441786

Sample Identification: TP94
1.8-4.2

Laboratory Specimen Description: SAND (with clay/silt)

AS 1726 - Soil Classification: -

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	ND	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	ND	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	ND	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	ND	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	100		Preparation Method:			
4.75 mm	100		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	100		Linear shrinkage mould length (mm):			
1.18 mm	99		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	79		Notes:			
0.425 mm	62					
0.300 mm	43					
0.150 mm	17					
0.075 mm	7					



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Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

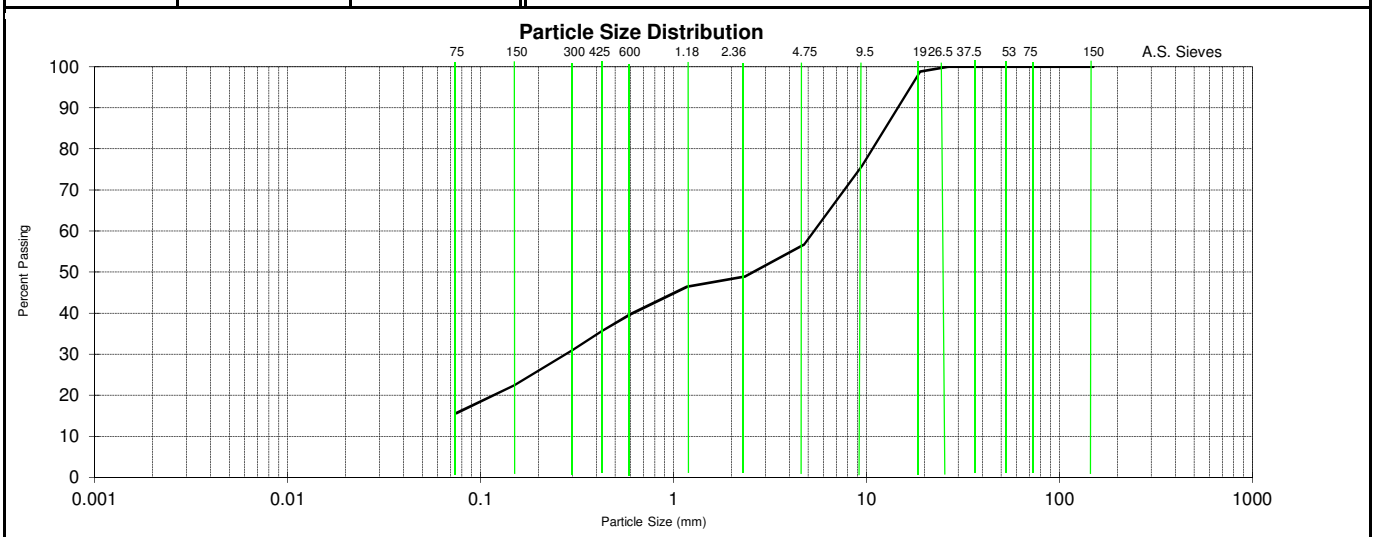
Lab Reference Number: 14441787

Sample Identification: TP102
0.2-0.8

Laboratory Specimen Description: Clayey GRAVEL (with sand)



AS 1726 - Soil Classification: GC

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	29	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	21	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	8	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	4.0	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	99		Sample History:			
9.5 mm	76		Preparation Method:			
4.75 mm	57		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	49		Linear shrinkage mould length (mm):			
1.18 mm	46		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	40		Notes:			
0.425 mm	36					
0.300 mm	31					
0.150 mm	22					
0.075 mm	16					



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Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Date: 7/01/15

Location: Allawuna Farm

Project No.: 147645033

Lab Reference Number: 14441788

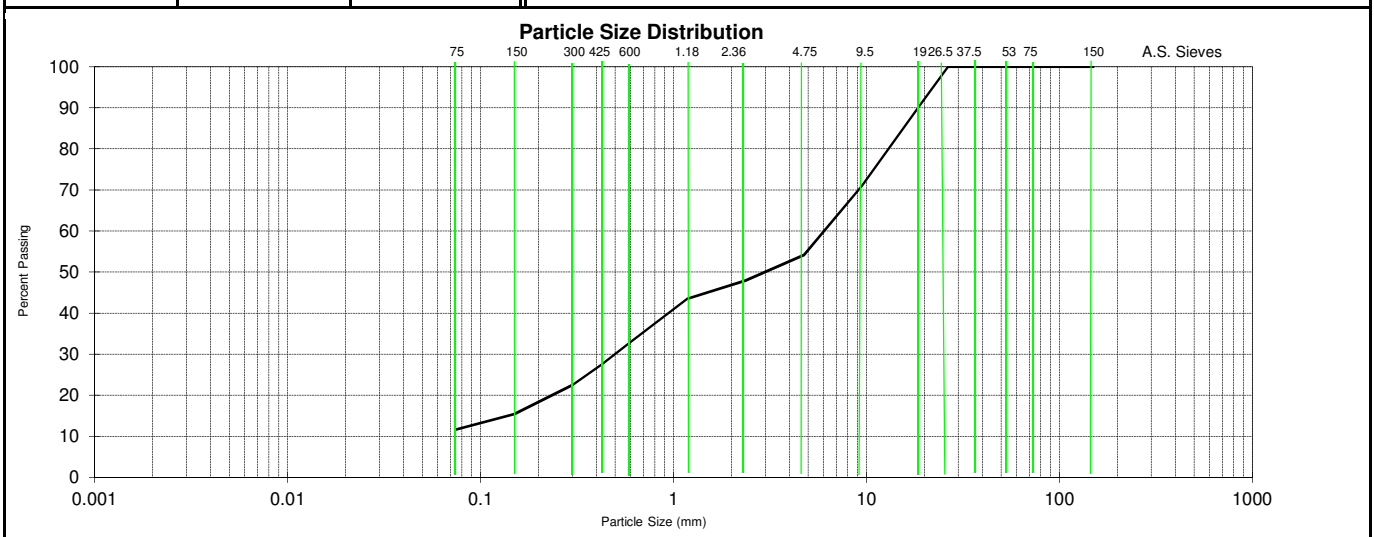
Sample Identification: TP102

0.8-1.4

Laboratory Specimen Description: GRAVEL (with clay, with sand)

AS 1726 - Soil Classification: GC

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	31	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	22	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	9	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	4.0	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	91		Sample History:			
9.5 mm	71		Preparation Method:			
4.75 mm	54		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	48		Linear shrinkage mould length (mm):			
1.18 mm	43		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	33		Notes:			
0.425 mm	27					
0.300 mm	23					
0.150 mm	15					
0.075 mm	12					



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Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

Lab Reference Number: 14441789

Sample Identification: TP102

1.4-2.8

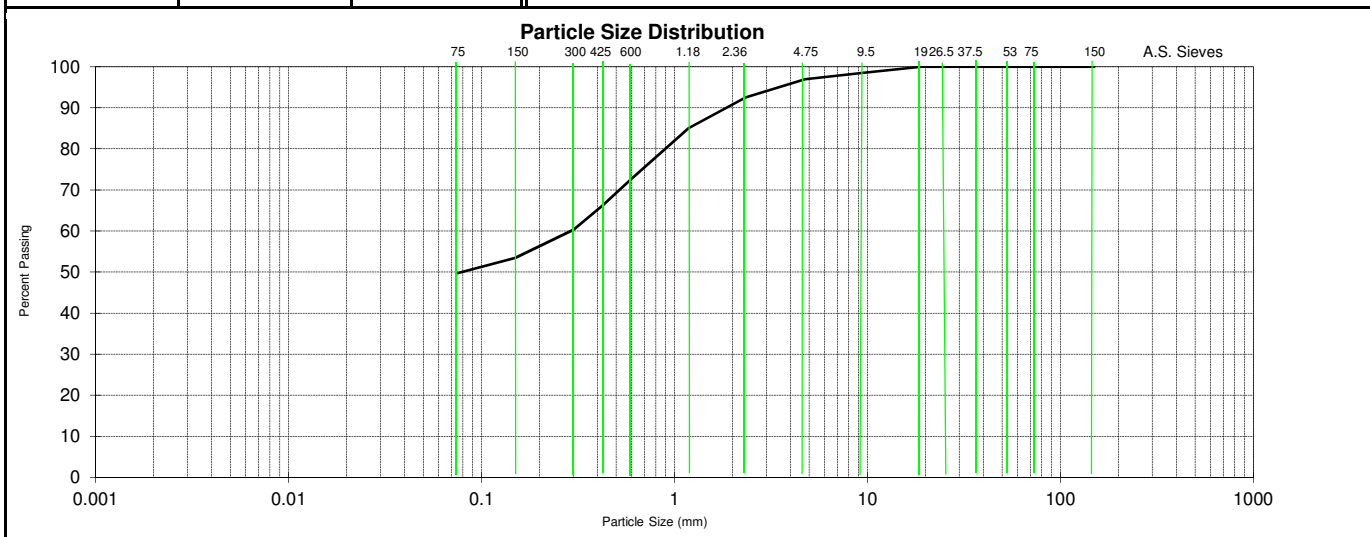
Laboratory Specimen Description: Sandy CLAY (trace of gravel)

AS 1726 - Soil Classification: CI

Particle Size Distribution AS 1289.3.6.1

Plasticity Index and Moisture Content

Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	40	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	19	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	21	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	9.0	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	98		Preparation Method:			
4.75 mm	97		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	93		Linear shrinkage mould length (mm):			
1.18 mm	85		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	73		Notes:			
0.425 mm	66					
0.300 mm	60					
0.150 mm	53					
0.075 mm	50					



Tested as received

PLF1-003 RL0 27/11/12

Certificate Reference: 147645033_14441789_TR-140208_Class_Rev0



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Sean Lenihan

Sean Lenihan - Senior Laboratory Technician

Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

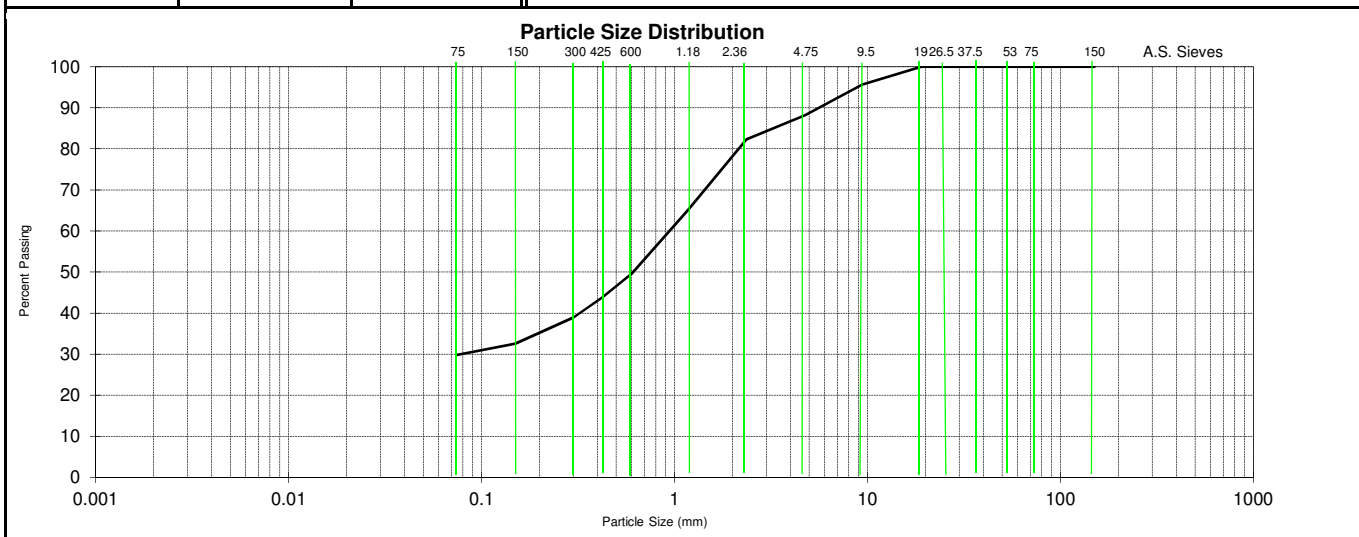
Lab Reference Number: 14441791

Sample Identification: TP104
0.7-1.5

Laboratory Specimen Description: Clayey/Silty SAND (with gravel)



AS 1726 - Soil Classification: -

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	ND	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	ND	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	ND	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	ND	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	96		Preparation Method:			
4.75 mm	88		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	82		Linear shrinkage mould length (mm):			
1.18 mm	65		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	50		Notes:			
0.425 mm	44					
0.300 mm	39					
0.150 mm	33					
0.075 mm	30					



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Particle Size Distribution & Plasticity Index Test Report



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Client: SITA Australia
70 Anzac Road, Chullora NSW 2190

Project: Allawuna Proposed Landfill Site

Location: Allawuna Farm

Date: 7/01/15

Project No.: 147645033

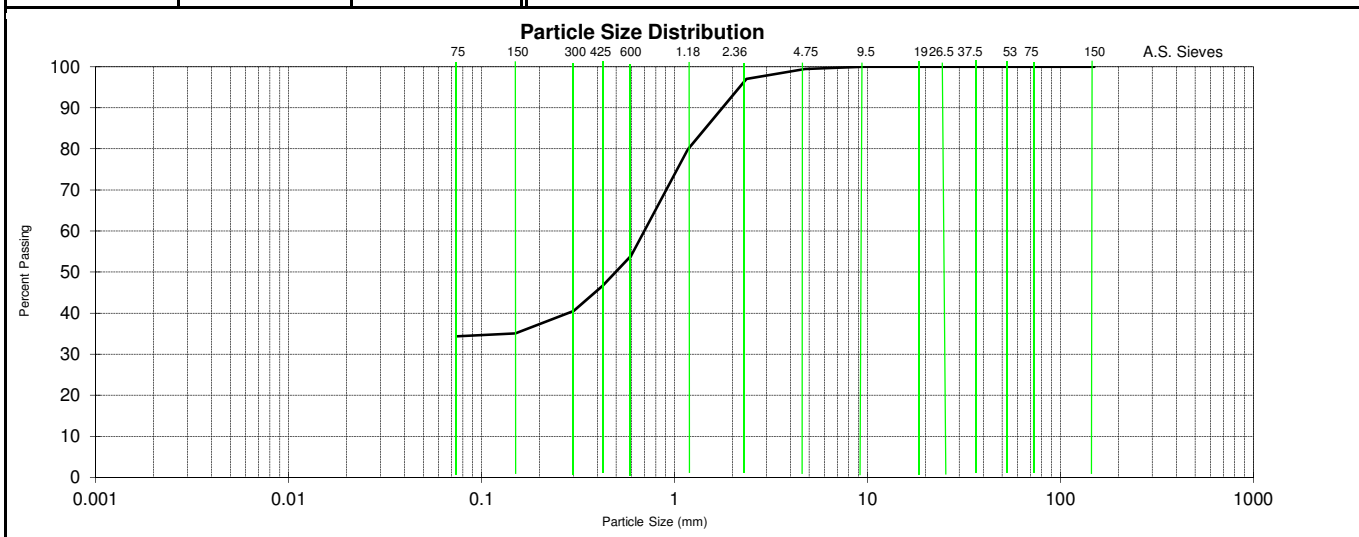
Lab Reference Number: 14441792

Sample Identification: TP104
1.5-2.5

Laboratory Specimen Description: Clayey/Silty SAND (trace of gravel)

AS 1726 - Soil Classification: -

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	ND	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	ND	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	ND	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	ND	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	100		Preparation Method:			
4.75 mm	99		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	97		Linear shrinkage mould length (mm):			
1.18 mm	80		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	54		Notes:			
0.425 mm	47					
0.300 mm	41					
0.150 mm	35					
0.075 mm	34					



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Particle Size Distribution & Plasticity Index Test Report



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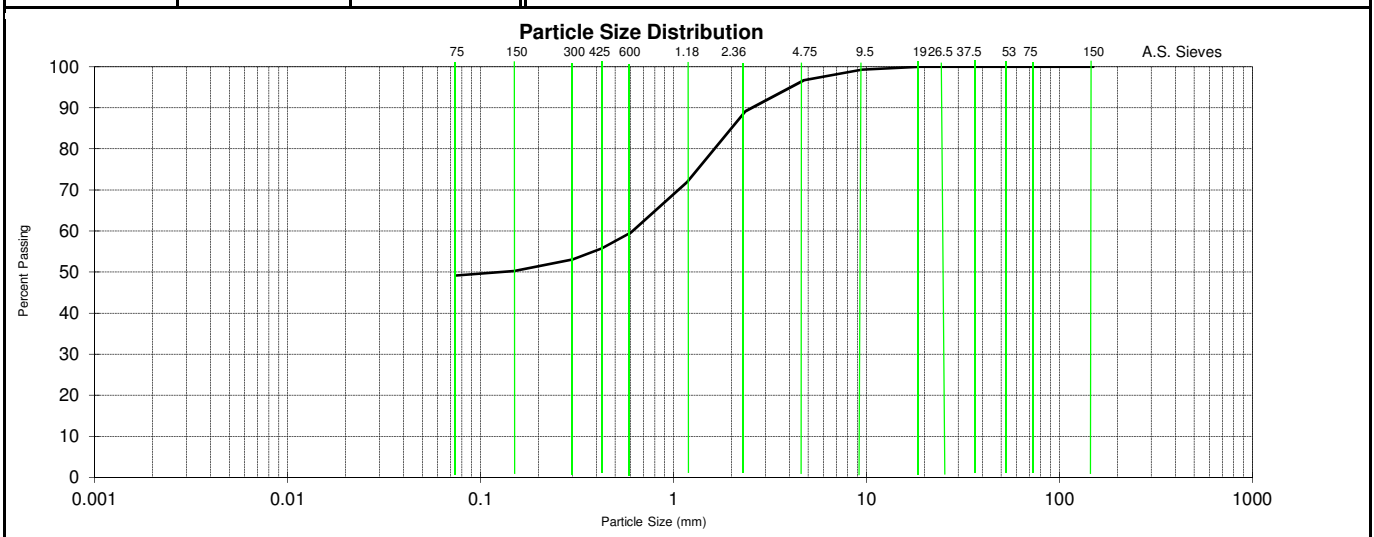
perthlab@golder.com.au

Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	7/01/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		


Lab Reference Number:	14441793	Sample Identification:	TP104 2.5-4.2
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Laboratory Specimen Description:	Clayey/Silty SAND (trace of gravel)
AS 1726 - Soil Classification:	-

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	ND	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	ND	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	ND	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	ND	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	99		Preparation Method:			
4.75 mm	97		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	89		Linear shrinkage mould length (mm):			
1.18 mm	72		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	60		Notes:			
0.425 mm	56					
0.300 mm	53					
0.150 mm	50					
0.075 mm	49					



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Particle Size Distribution & Plasticity Index Test Report

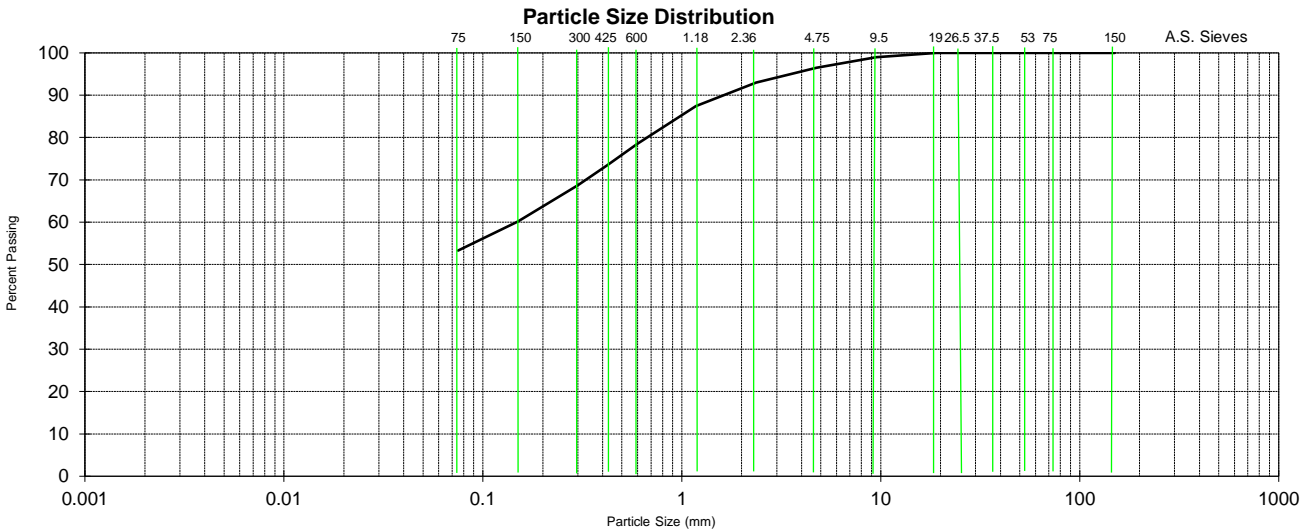


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Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	9/03/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		
Lab Reference Number:	14441794	Sample Identification:	TP116 0.3-0.8

Laboratory Specimen Description:	Sandy SILT (trace of gravel)
AS 1726 - Soil Classification:	ML

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	41	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	28	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	13	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	6.5	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	99		Preparation Method:			
4.75 mm	97		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	93		Linear shrinkage mould length (mm):			
1.18 mm	87		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	79		Notes:			
0.425 mm	74					
0.300 mm	69					
0.150 mm	60					
0.075 mm	53					



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Particle Size Distribution & Plasticity Index Test Report

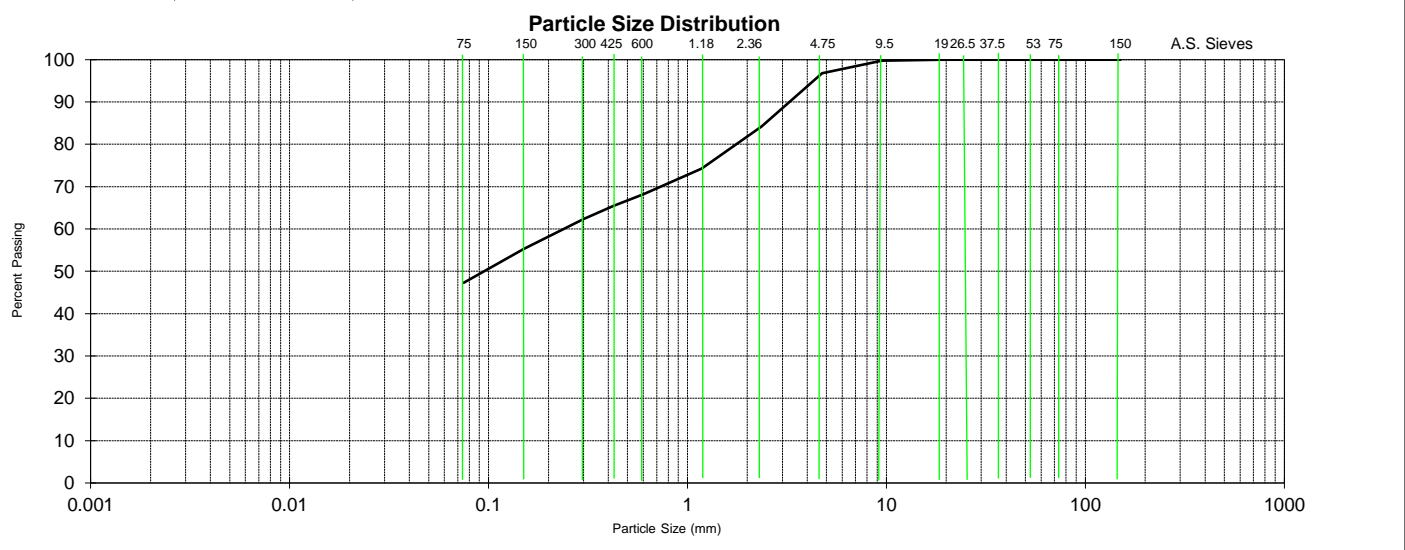


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Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	7/01/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		
Lab Reference Number:	14441795	Sample Identification:	TP116 0.8-3.6

Laboratory Specimen Description:	Clayey SAND (with gravel)
AS 1726 - Soil Classification:	SC

Particle Size Distribution AS 1289.3.6.1			Plasticity Index and Moisture Content			
Sieve Size	% Passing	Specification	Test	Method	Result	Specification
150.0 mm	100		Liquid Limit	% AS 1289.3.1.2	50	
75.0 mm	100		Plastic Limit	% AS 1289.3.2.1	27	
53.0 mm	100		Plasticity Index	% AS 1289.3.3.1	23	
37.5 mm	100		Linear Shrinkage	% AS 1289.3.4.1	9.0	
26.5 mm	100		Moisture Content	% AS 1289.2.1.1	ND	
19.0 mm	100		Sample History:			
9.5 mm	100		Preparation Method:			
4.75 mm	97		Cracking/Crumbling/Curling of linear shrinkage:			
2.36 mm	84		Linear shrinkage mould length (mm):			
1.18 mm	74		ND = not determined NO = not obtainable NP = non plastic			
0.600 mm	68		Notes:			
0.425 mm	65					
0.300 mm	62					
0.150 mm	55					
0.075 mm	47					



Tested as received		PLF1-003 RL0 27/11/12
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APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geotechnical Reports: Pinhole Dispersion Testing



N.A.T.A. Accreditation Number: 10731
as trustee for Qualcon Unit Trust
ABN: 34 736 601 547 ACN: 068 691 369

Unit 2/2 Lorries Court,
MALAGA. W.A. 6090.
Phone: (08) 9249 9895
Fax: (08) 9248 1822
Email: qualcon@inet.net.au

PINHOLE DISPERSION REPORT **AS1289.3.8.3**

Report Number	QL7059-15	Date of Report	16-Jan-15
Client	Golder Associates Pty Ltd (SITA Australia)		
Location	Allawuna Proposed Landfill Site (TP86 - 2.0m to 6.0m)	Job No.	147645033
Sampled By	As Received 15-Dec-2014	Date Sampled	NA
Prepared By	TM	Date Tested	15-Jan-15
Material Description	NA	Test Number	7050 (14441784)

Natural Moisture Content of Soil (%)	11.1
Moisture Content of Soil before Testing (%)	12.8
Dry Density of Soil before Testing (t/m3)	1.75
Time of Curing Soil in Specimen Cylinder	48 Hours
Method of moisture determination for remoulding	OMC
Souce of Water	Distilled
Hole reformed at 50mm Head	Yes
Rate of Flow at end of Test (ml/sec)	1.7
PINHOLE DISPERSION CLASSIFICATION	PD2

Note 1 : Golder Associates Pty Ltd supplied MDD/OMC values.

Authorised Signatory :


G J Donatti

Page : 1 of 1

PDREP.REV04.DEC2014

Approved by : G Donatti



N.A.T.A. Accreditation Number: 10731
as trustee for Qualcon Unit Trust
ABN: 34 736 601 547 ACN: 068 691 369

Unit 2/2 Lorries Court,
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Email: qualcon@inet.net.au

PINHOLE DISPERSION REPORT

AS1289.3.8.3

Report Number	QL7060-15	Date of Report	16-Jan-15
Client	Golder Associates Pty Ltd (SITA Australia)		
Location	Allawuna Proposed Landfill Site (TP102 - 1.4m to 2.8m)	Job No.	147645033
Sampled By	As Received 15-Dec-2014	Date Sampled	NA
Prepared By	TM	Date Tested	15-Jan-15
Material Description	NA	Test Number	7052 (14441789)

Natural Moisture Content of Soil (%)	12.2
Moisture Content of Soil before Testing (%)	13.3
Dry Density of Soil before Testing (t/m3)	1.77
Time of Curing Soil in Specimen Cylinder	48 Hours
Method of moisture determination for remoulding	OMC
Source of Water	Distilled
Hole reformed at 50mm Head	No
Rate of Flow at end of Test (ml/sec)	2.7
PINHOLE DISPERSION CLASSIFICATION	ND2

Note 1 : Golder Associates Pty Ltd supplied MDD/OMC values.

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G J Donatti

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N.A.T.A. Accreditation Number: 10731
as trustee for Qualcon Unit Trust
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Unit 2/2 Lorries Court,
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Email: qualcon@iinet.net.au


PINHOLE DISPERSION REPORT **AS1289.3.8.3**

Report Number	QL7061-15	Date of Report	16-Jan-15
Client	Golder Associates Pty Ltd (SITA Australia)		
Location	Allawuna Proposed Landfill Site (TP116 - 0.8m to 3.6m)	Job No.	147645033
Sampled By	As Received 15-Dec-2014	Date Sampled	NA
Prepared By	TM	Date Tested	15-Jan-15
Material Description	NA	Test Number	7053 (14441795)

Natural Moisture Content of Soil (%)	17.9
Moisture Content of Soil before Testing (%)	16.5
Dry Density of Soil before Testing (t/m3)	1.66
Time of Curing Soil in Specimen Cylinder	48 Hours
Method of moisture determination for remoulding	OMC
Souce of Water	Distilled
Hole reformed at 50mm Head	No
Rate of Flow at end of Test (ml/sec)	1.9
PINHOLE DISPERSION CLASSIFICATION	ND1

Note 1 : Golder Associates Pty Ltd supplied MDD/OMC values.

Authorised Signatory :


G J Donatti

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APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geotechnical Reports: Compaction Testing

Dry Density Moisture Relationship Report



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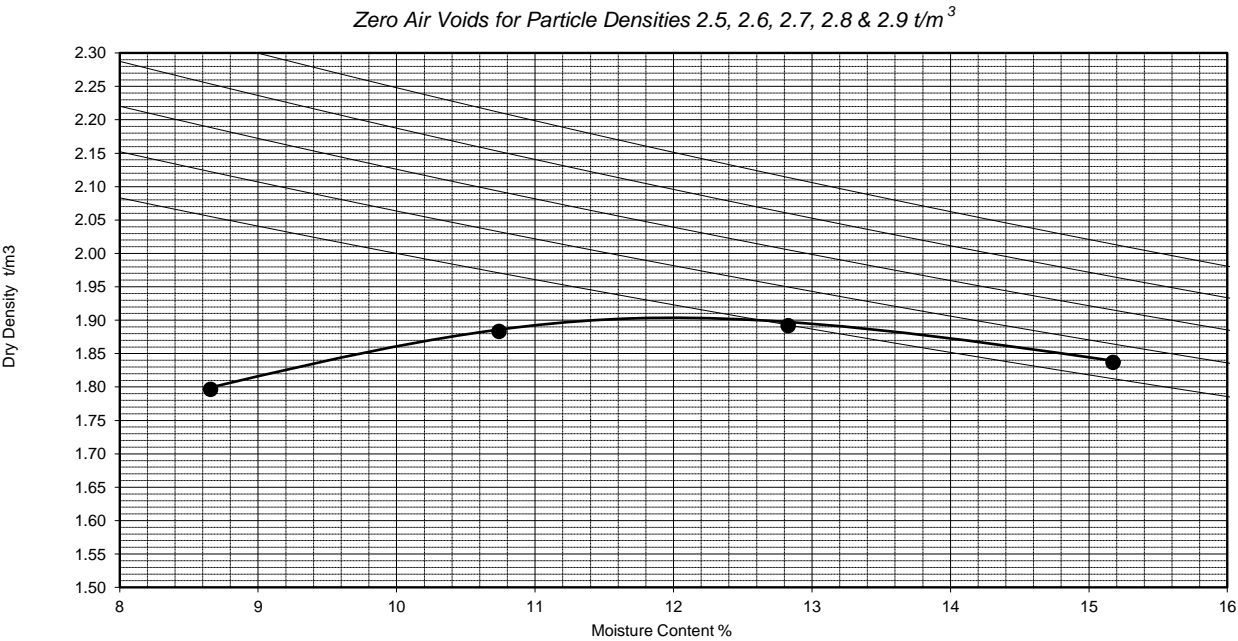
Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190		
Project:	Allawuna Proposed Landfill Site	Date:	9/03/15
Location:	Allawuna Farm	Project No.:	147645033
Lab Reference Number:	14441783	Sample Identification:	TP86 1.1-2.0
Laboratory Specimen Description:	GRAVEL (with clay, with sand)		
AS 1726 - Soil Classification:	-		

Test Procedure: AS 1289.5.1.1			
Portion Tested:	-19 mm	Checked By:	SA 16/12/14



COMPACTION TEST RESULTS

Dry Density	t/m ³		1.80	1.88	1.89	1.84
Moisture Content	%		8.7	10.7	12.8	15.2
OVERSIZE (Mass Percentage)	%	% o/s +19.0mm:		% o/s + 37.5mm:		

MDD	1.90	t/m ³	Adjusted MDD		t/m ³
OMC	12.0	%	Adjusted OMC		%
			Natural MC		%



Notes:

Tested as received		PLF1-008 RL0 28/11/12
Certificate Reference:	147645033_14441783_TR-140208_MDD_Rev0	
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Dry Density Moisture Relationship Report



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www.golder.com
perthlab@golder.com.au

Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	9/03/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		
Lab Reference Number:	14441784	Sample Identification:	TP86 2.0-6.0
Laboratory Specimen Description:	Clayey SAND (trace of gravel)		
AS 1726 - Soil Classification:	SC		

Test Procedure: AS 1289.5.1.1			
Portion Tested:	-19 mm	Checked By:	SL 7/1/15

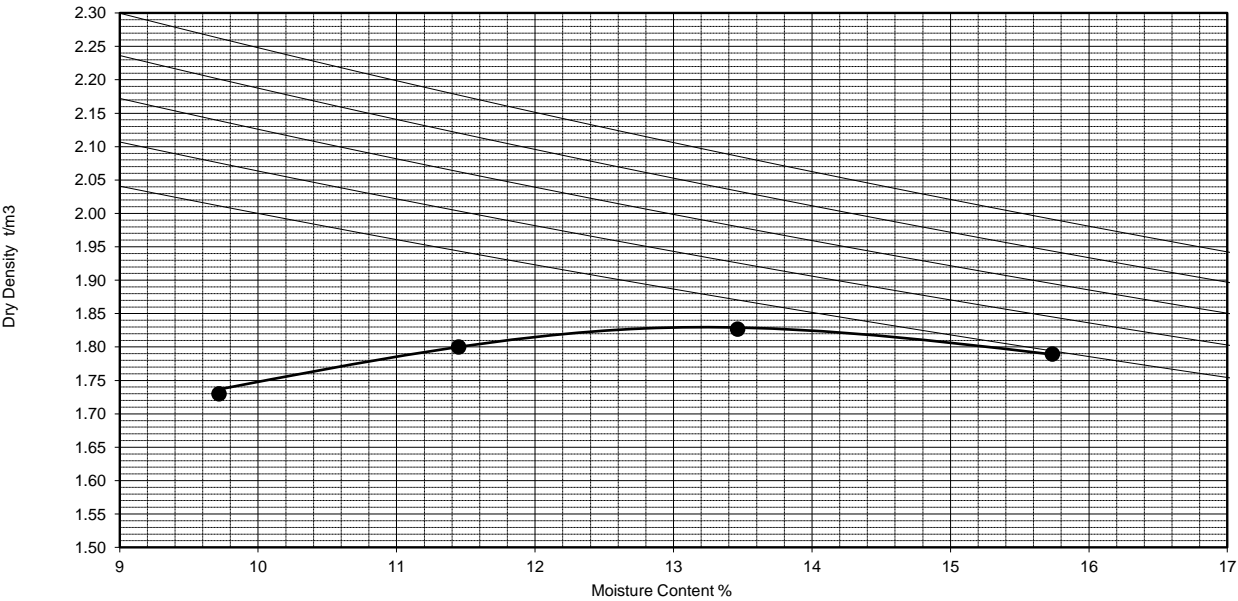
COMPACTION TEST RESULTS

Dry Density	t/m ³		1.73	1.80	1.83	1.79
Moisture Content	%		9.7	11.4	13.5	15.7
OVERSIZE (Mass Percentage)	%	% o/s +19.0mm:		% o/s + 37.5mm:		

MDD	1.83	t/m ³
OMC	13.3	%

Adjusted MDD		t/m ³
Adjusted OMC		%
Natural MC		%

Zero Air Voids for Particle Densities 2.5, 2.6, 2.7, 2.8 & 2.9 t/m³



Notes:

Tested as received PLF1-008 RL0 28/11/12

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Dry Density Moisture Relationship Report



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Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190	Date:	7/01/15
Project:	Allawuna Proposed Landfill Site	Project No.:	147645033
Location:	Allawuna Farm		
Lab Reference Number:	14441788	Sample Identification:	TP102 0.8-1.4
Laboratory Specimen Description:	GRAVEL (with clay, with sand)		
AS 1726 - Soil Classification:	GC		

Test Procedure: AS 1289.5.1.1

Portion Tested:	-19 mm	Checked By:	SL 7/1/15
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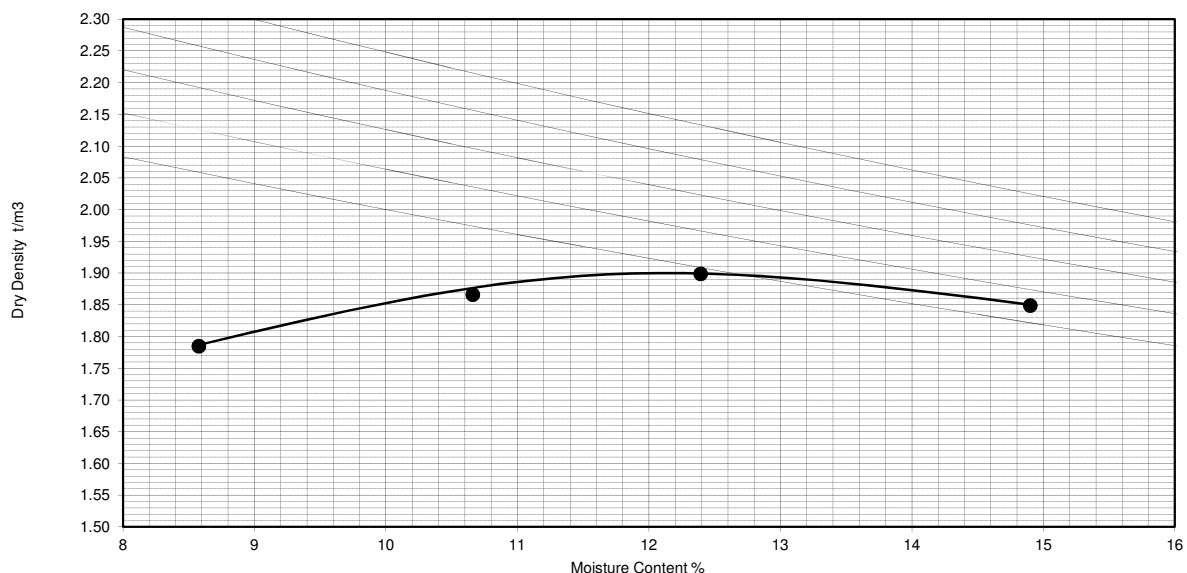
COMPACTION TEST RESULTS

Dry Density	t/m ³	1.79	1.87	1.90	1.85
Moisture Content	%	8.6	10.7	12.4	14.9
OVERSIZE (Mass Percentage)	%	% o/s +19.0mm:	% o/s + 37.5mm:		

MDD	1.90	t/m ³
OMC	12.1	%

Adjusted MDD		t/m ³
Adjusted OMC		%
Natural MC		%

Zero Air Voids for Particle Densities 2.5, 2.6, 2.7, 2.8 & 2.9 t/m³



Notes:

Tested as received

PLF1-008 RL0 28/11/12

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Dry Density Moisture Relationship Report



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Client:	SITA Australia 70 Anzac Road, Chullora NSW 2190		
Project:	Allawuna Proposed Landfill Site	Date:	7/01/15
Location:	Allawuna Farm	Project No.:	147645033
Lab Reference Number:	14441789	Sample Identification:	TP102 1.4-2.8
Laboratory Specimen Description:	Sandy CLAY (trace of gravel)		
AS 1726 - Soil Classification:	CI		

Test Procedure: AS 1289.5.1.1

Portion Tested:	-19 mm	Checked By:	SL 7/1/15
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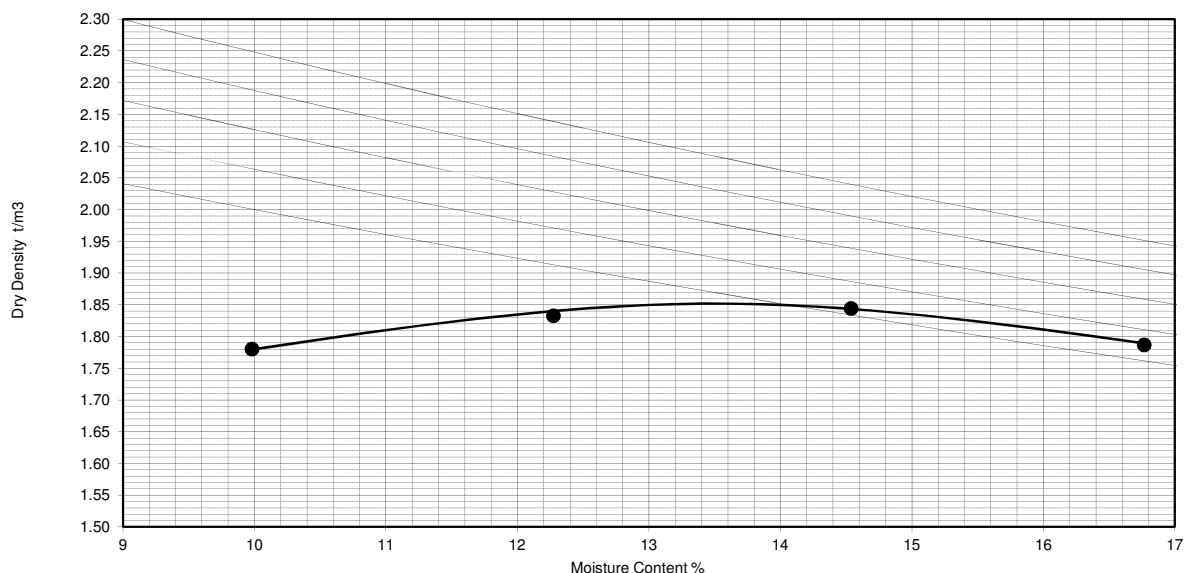
COMPACTION TEST RESULTS

Dry Density	t/m ³		1.78	1.83	1.84	1.79
Moisture Content	%		10.0	12.3	14.5	16.8
OVERSIZE (Mass Percentage)	%	% o/s +19.0mm:		% o/s + 37.5mm:		

MDD	1.85	t/m ³
OMC	13.5	%

Adjusted MDD		t/m ³
Adjusted OMC		%
Natural MC		%

Zero Air Voids for Particle Densities 2.5, 2.6, 2.7, 2.8 & 2.9 t/m³



Notes:

Tested as received PLF1-008 RL0 28/11/12

Certificate Reference: 147645033_14441789_TR-140208_MDD_Rev0



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Dry Density Moisture Relationship Report



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Client: SITA Australia 70 Anzac Road, Chullora NSW 2190		Date: 7/01/15	
Project: Allawuna Proposed Landfill Site		Project No.: 147645033	
Location: Allawuna Farm			
Lab Reference Number: 14441795		Sample Identification: TP116 0.8-3.6	
Laboratory Specimen Description: Clayey SAND (with gravel)			
AS 1726 - Soil Classification: SC			

Test Procedure: AS 1289.5.1.1			
Portion Tested:	-19 mm	Checked By:	SL 7/1/15

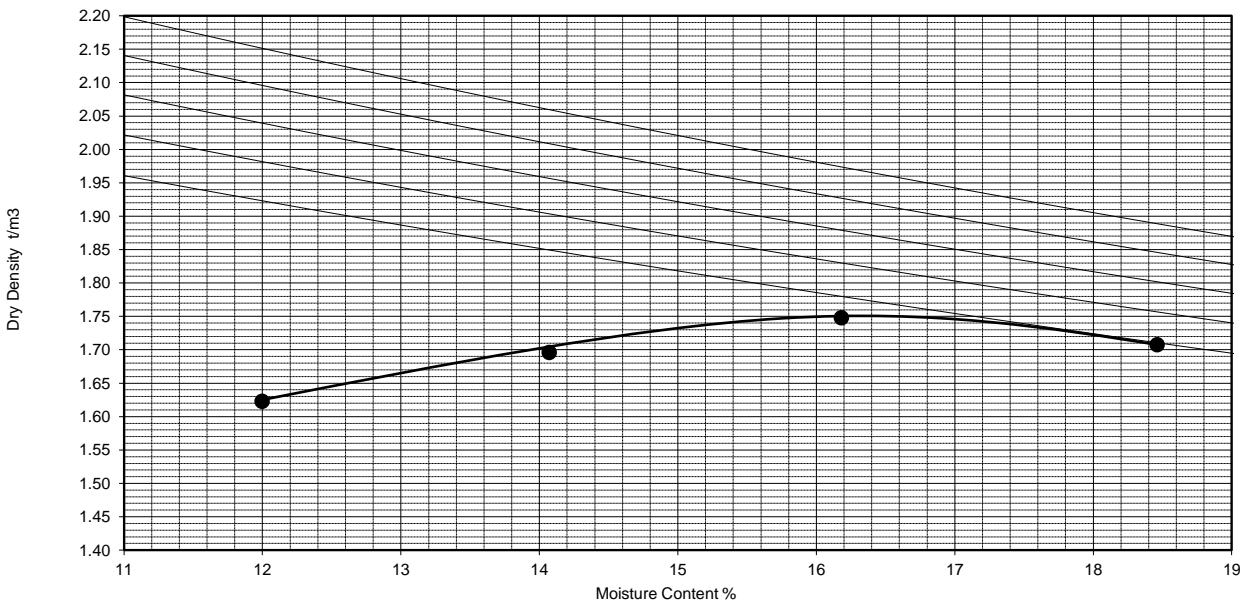
COMPACTION TEST RESULTS

Dry Density	t/m³	1.62	1.70	1.75	1.71
Moisture Content	%	12.0	14.1	16.2	18.5
OVERSIZE (Mass Percentage)	%	% o/s +19.0mm:		% o/s + 37.5mm:	

MDD	1.75	t/m³
OMC	16.4	%



Adjusted MDD		t/m³
Adjusted OMC		%
Natural MC		%

Zero Air Voids for Particle Densities 2.5, 2.6, 2.7, 2.8 & 2.9 t/m³



Notes:

Tested as received PLF1-008 RL0 28/11/12

Certificate Reference: 147645033_14441795_TR-140208_MDD_Rev0		
	NATA Accreditation No: 1961 Perth	
	Accredited for compliance with ISO/IEC 17025	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	
		Sean Lenihan - Senior Laboratory Technician



APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geotechnical Reports: Permeability Testing

PERMEABILITY BY CONSTANT HEAD TEST REPORT

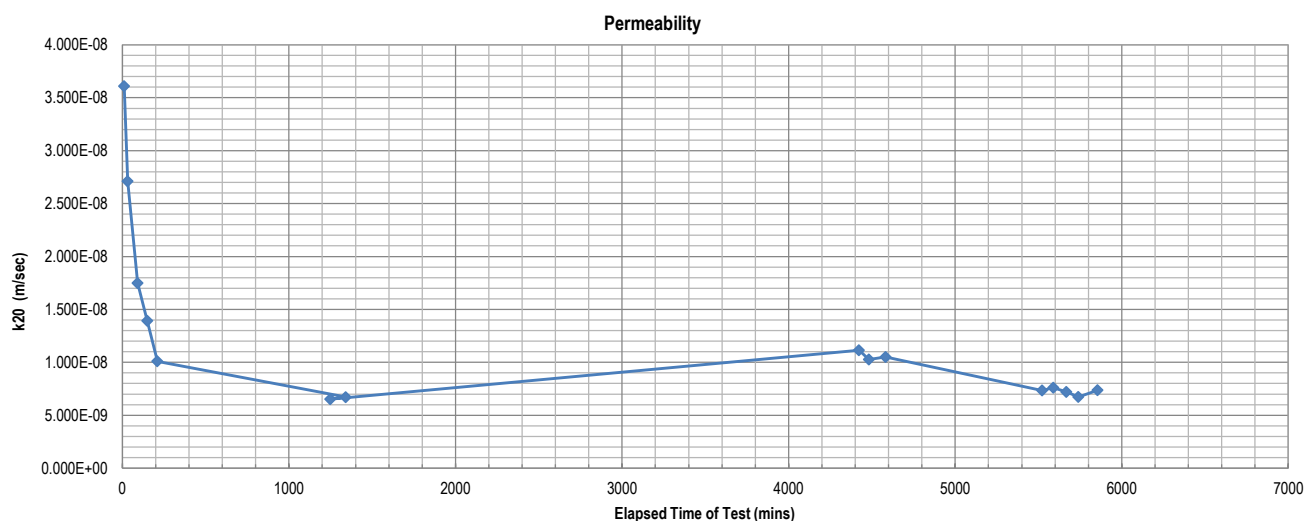
Test Method AS 1289 6.7.3, 5.1.1, KH2 (Based on K H Head (1988) Manual of Laboratory Testing, 10.7)

Client	Golder Associates Pty Ltd	Report No.	P 14120083-CHP
Project	147645033, Allawuna Proposed Landfill Site	Test Date	19/12/2014-24/12/2014
Client ID	TP86, 1441784	Report Date	6/01/2015
Description	GRAVELLY CLAY - white	Depth (m)	2.0-6.0
		Sample Type	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	AS1289.5.1.1 - Standard Compaction		
Maximum Dry Density (t/m ³)	1.83	Confining Pressure	150
Optimum Moisture Content (%)	13.3	Back Pressure	50
Placement Moisture Content (%)	12.9	Effective Stress Applied (kPa)	100
Moisture Ratio (%)	96.9	Water Type	50000ppm Salt Water
Placement Wet Density (t/m ³)	1.97	Percentage Material Retained/Sieve Size (mm)	0 / 9.5
Density Ratio (%)	95.4	Sample Height and Diameter (mm)	126.8 / 63.5

PERMEABILITY $k_{(20)} = 7.2 \times 10^{-09}$ (m/sec)

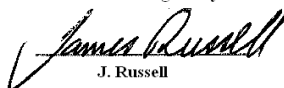


Remarks: The above specimen was remoulded to a target of 95% of Standard Dry Density and at Optimum Moisture Content.

Sample/s supplied by client The compaction data was supplied by the client. Tested as received Page: 1 of 1 REP06501

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Perth Laboratory.

Authorised Signatory

J. Russell



Laboratory No. 9926

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Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PERMEABILITY BY CONSTANT HEAD TEST REPORT

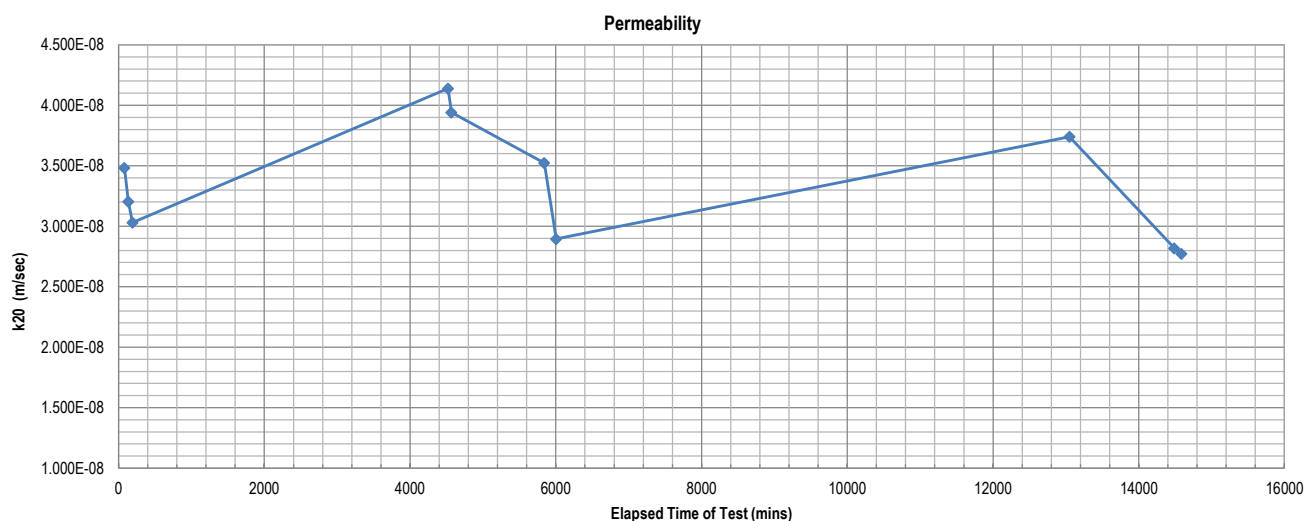
Test Method AS 1289 6.7.3, 5.1.1, KH2 (Based on K H Head (1988) Manual of Laboratory Testing, 10.7)

Client	Golder Associates Pty Ltd	Report No.	P 14120084-CHP
Project	147645033, Allawuna Proposed Landfill Site	Test Date	19/12/2014-29/12/2014
Client ID	TP102, 14441789	Report Date	6/01/2015
Description	SANDY CLAY - light brown	Depth (m)	1.4-2.8
		Sample Type	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	AS1289.5.1.1 - Standard Compaction		
Maximum Dry Density (t/m ³)	1.85	Confining Pressure	150
Optimum Moisture Content (%)	13.5	Back Pressure	50
Placement Moisture Content (%)	13.2	Effective Stress Applied (kPa)	100
Moisture Ratio (%)	97.6	Water Type	50000ppm Salt Water
Placement Wet Density (t/m ³)	1.99	Percentage Material Retained/Sieve Size (mm)	0 / 9.5
Density Ratio (%)	95.2	Sample Height and Diameter (mm)	126.8 / 63.5

PERMEABILITY $k_{(20)} = 2.8 \times 10^{-08}$ (m/sec)

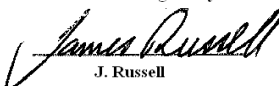


Remarks: The above specimen was remoulded to a target of 95% of Standard Dry Density and at Optimum Moisture Content.

Sample/s supplied by client The compaction data was supplied by the client. Tested as received Page: 1 of 1 REP06501

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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PERMEABILITY BY CONSTANT HEAD TEST REPORT

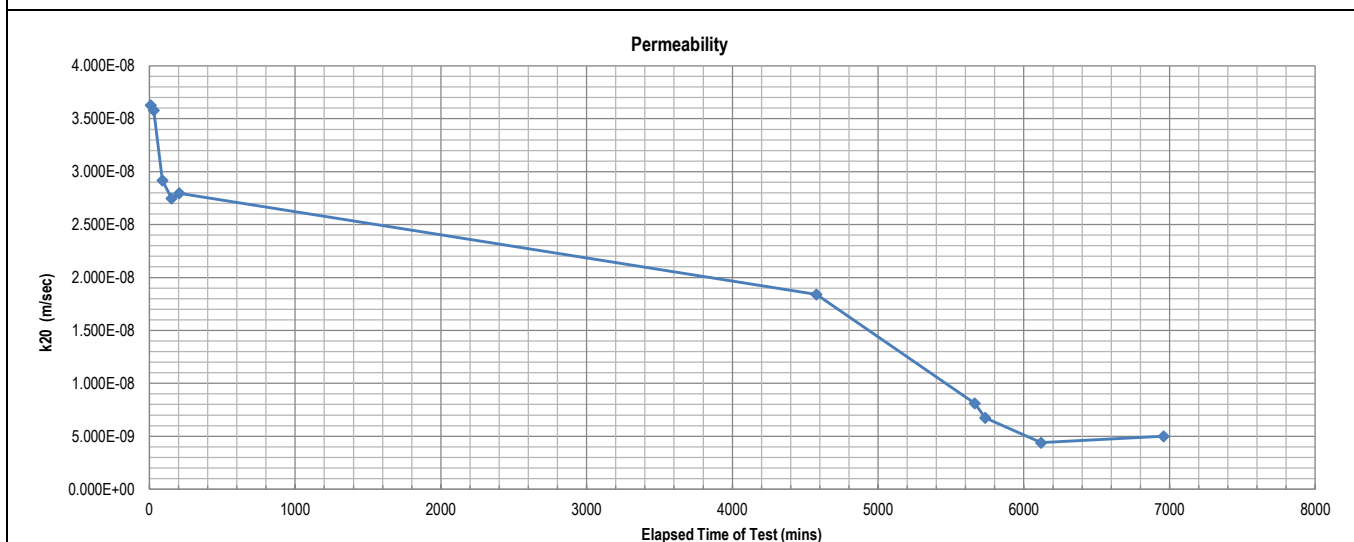
Test Method AS 1289 6.7.3, 5.1.1, KH2 (Based on K H Head (1988) Manual of Laboratory Testing, 10.7)

Client	Golder Associates Pty Ltd	Report No.	P 14120085-CHP
Project	147645033, Allawuna Proposed Landfill Site	Test Date	19/12/2014-24/12/2014
Client ID	TP116. 1441795	Report Date	6/01/2015
Description	SILTY CLAY - red/orange	Depth (m)	0.8-3.6
		Sample Type	Remoulded Soil Specimen

RESULTS OF TESTING

Compaction Method	AS1289.5.1.1 - Standard Compaction		
Maximum Dry Density (t/m ³)	1.75	Confining Pressure	150
Optimum Moisture Content (%)	16.4	Back Pressure	50
Placement Moisture Content (%)	16.6	Effective Stress Applied (kPa)	100
Moisture Ratio (%)	101.2	Water Type	50000ppm Salt Water
Placement Wet Density (t/m ³)	1.93	Percentage Material Retained/Sieve Size (mm)	0 / 9.5
Density Ratio (%)	94.8	Sample Height and Diameter (mm)	126.8 / 63.5

PERMEABILITY $k_{(20)} = 5.0 \times 10^{-09}$ (m/sec)

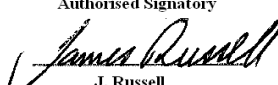


Remarks: The above specimen was remoulded to a target of 95% of Standard Dry Density and at Optimum Moisture Content.

Sample/s supplied by client The compaction data was supplied by the client. Tested as received Page: 1 of 1 REP06501

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Laboratory No. 9926

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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING



APPENDIX G2

Laboratory Testing Certificates: Test Pit Investigation November 2014

Geotechnical Reports: Triaxial Testing

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

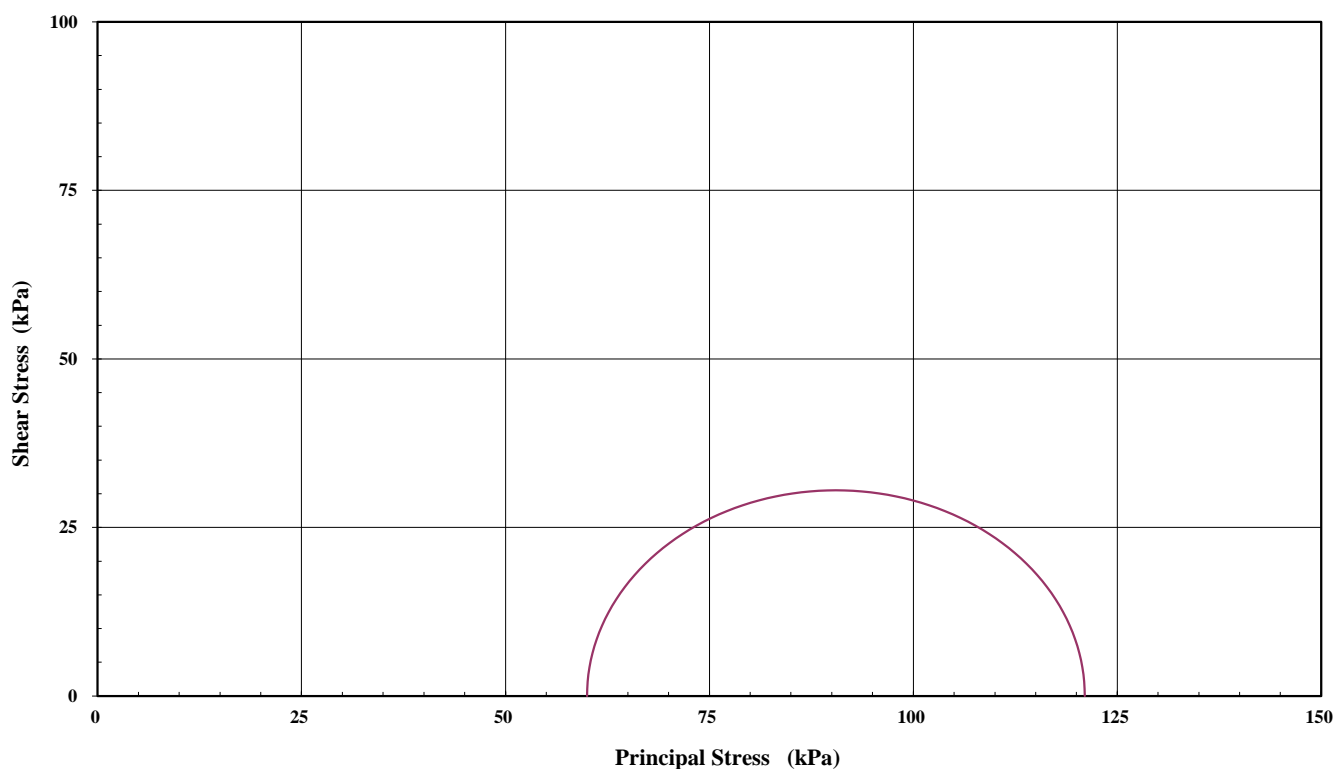
Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 100kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00

Description: SILTY SAND- white

SAMPLE & TEST DETAILS

Initial Height: 150.9 mm	Initial Moisture Content: 14.1 %	Rate of Strain: 0.003 %/min
Initial Diameter: 75.0 mm	Final Moisture Content: 17.0 %	B Response: 97 %
L/D Ratio: 2.0 : 1	Wet Density: 1.97 t/m ³	
	Dry Density: 1.73 t/m ³	

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

Failure Criteria: Peak Principal Stress Ratio

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

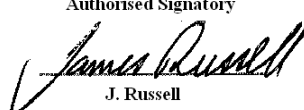
Note: Graph not to scale

Page 1

REP03001

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Authorised Signatory

J. Russell



Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd

Report No.: 14120770 - CU 100kPa

Project: 147645033 Allawuna Proposed Landfill Site

Test Date: 5/01/2015

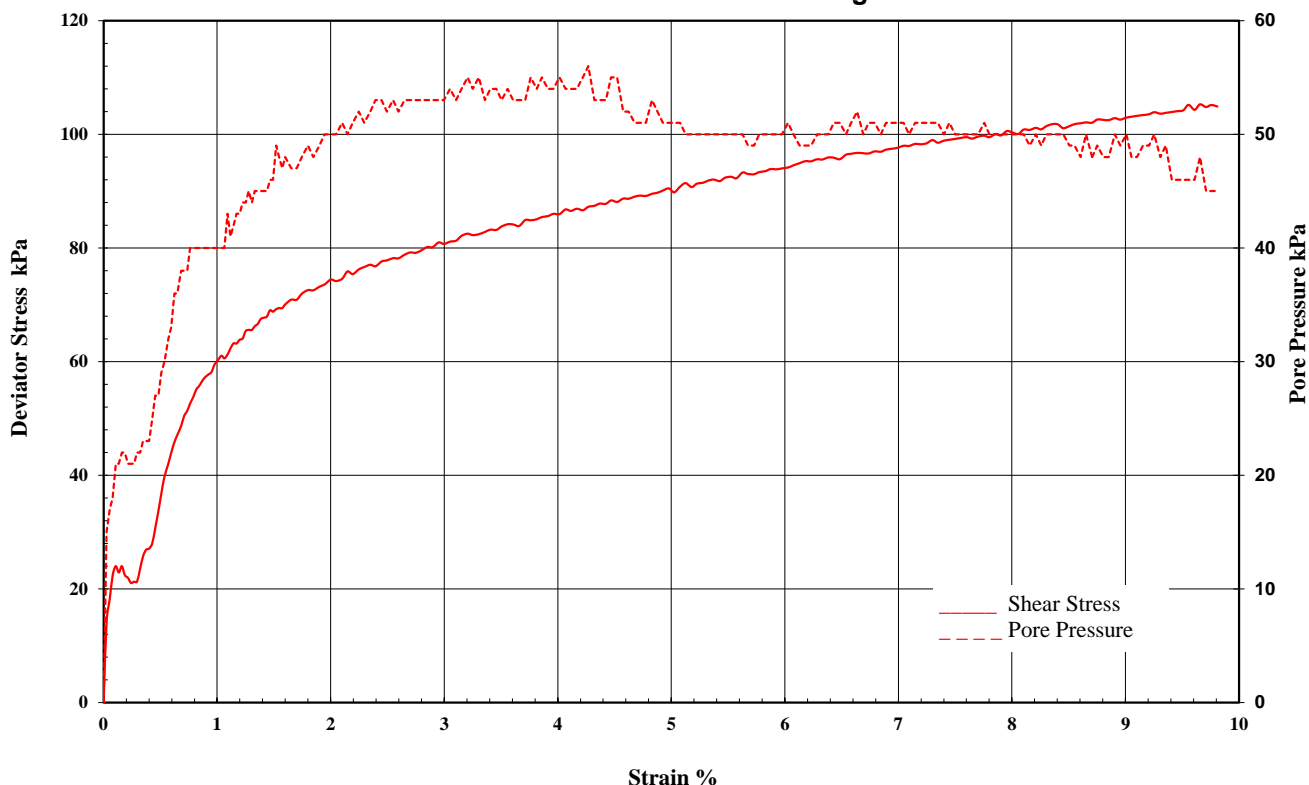
Report Date: 16/01/2015

Client Id.: TP86 14441784

Depth (m): 2.00-6.00

Description: SILTY SAND- white

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Effective Pressure	Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
					σ'_1	σ'_3	σ'_1 / σ'_3		
100 kPa	550 kPa	450 kPa	450 kPa	490 kPa	121 kPa	60 kPa	2.017	61 kPa	1.04 %

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

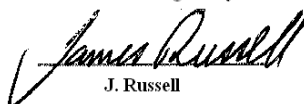
Page 2

REP03001

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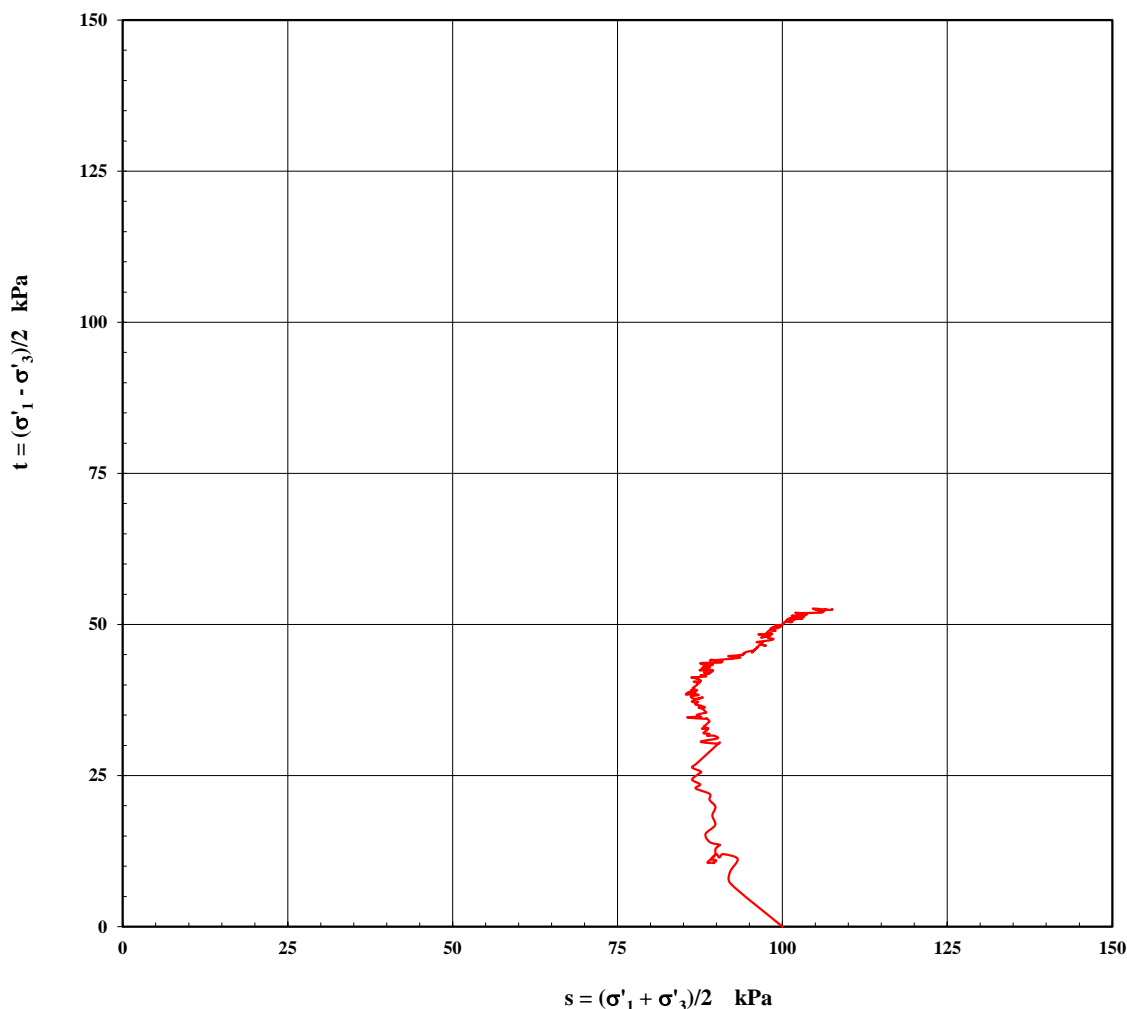
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 100kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

MIT Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

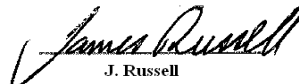
Note: Graph not to scale

Page 3

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Authorised Signatory

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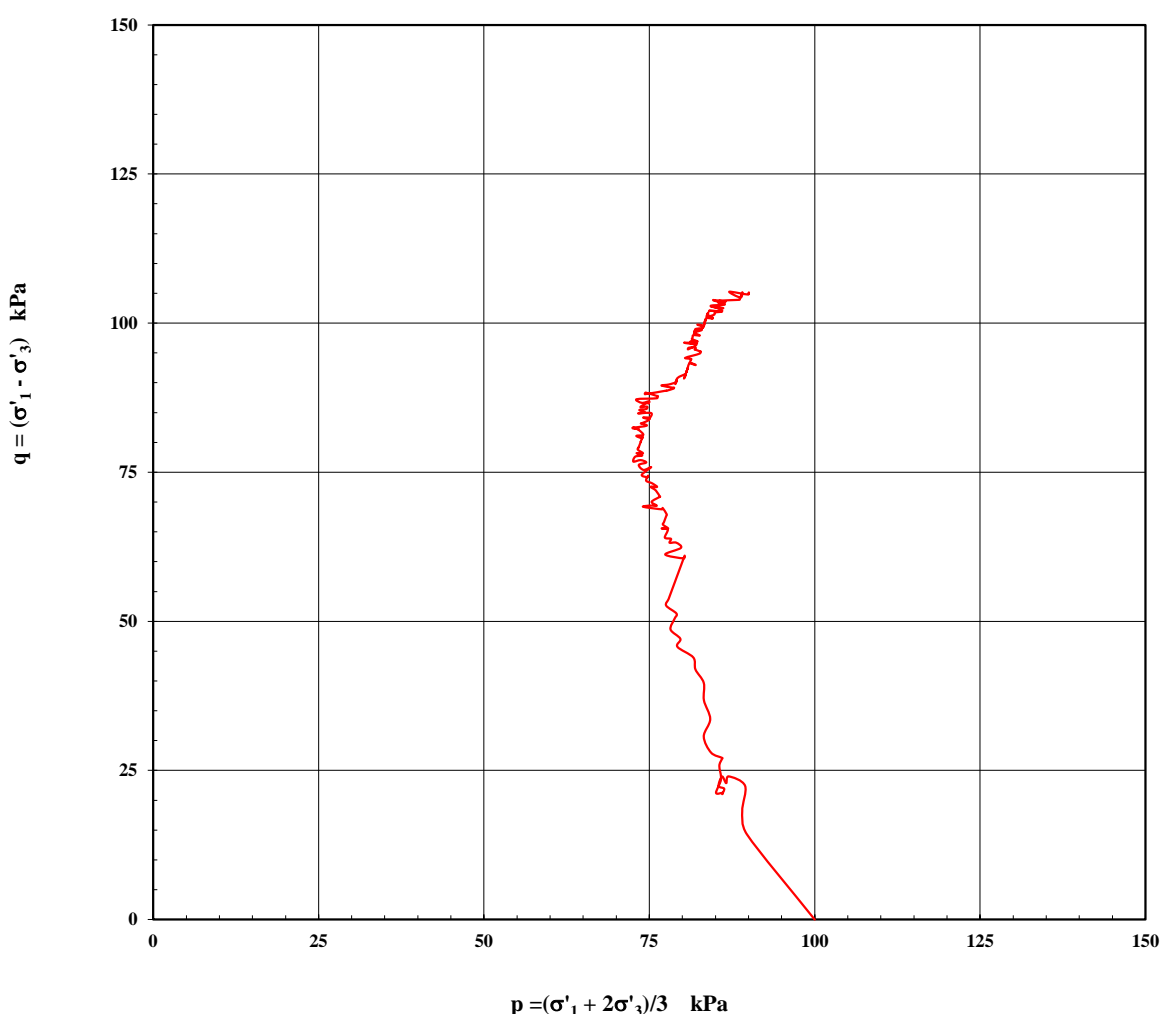
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 100kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

Page 4

REP03001

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Tested at Trilab Brisbane Laboratory.

Authorised Signatory

James Russell
J. Russell



Laboratory Number
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Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 100kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	147645033 Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	14120770	DATE: 09 01 15
BOREHOLE:	TP86 14441784	DEPTH: 2.00-6.00



Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

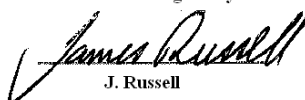
Note: Graph not to scale

Page 5

REP03001

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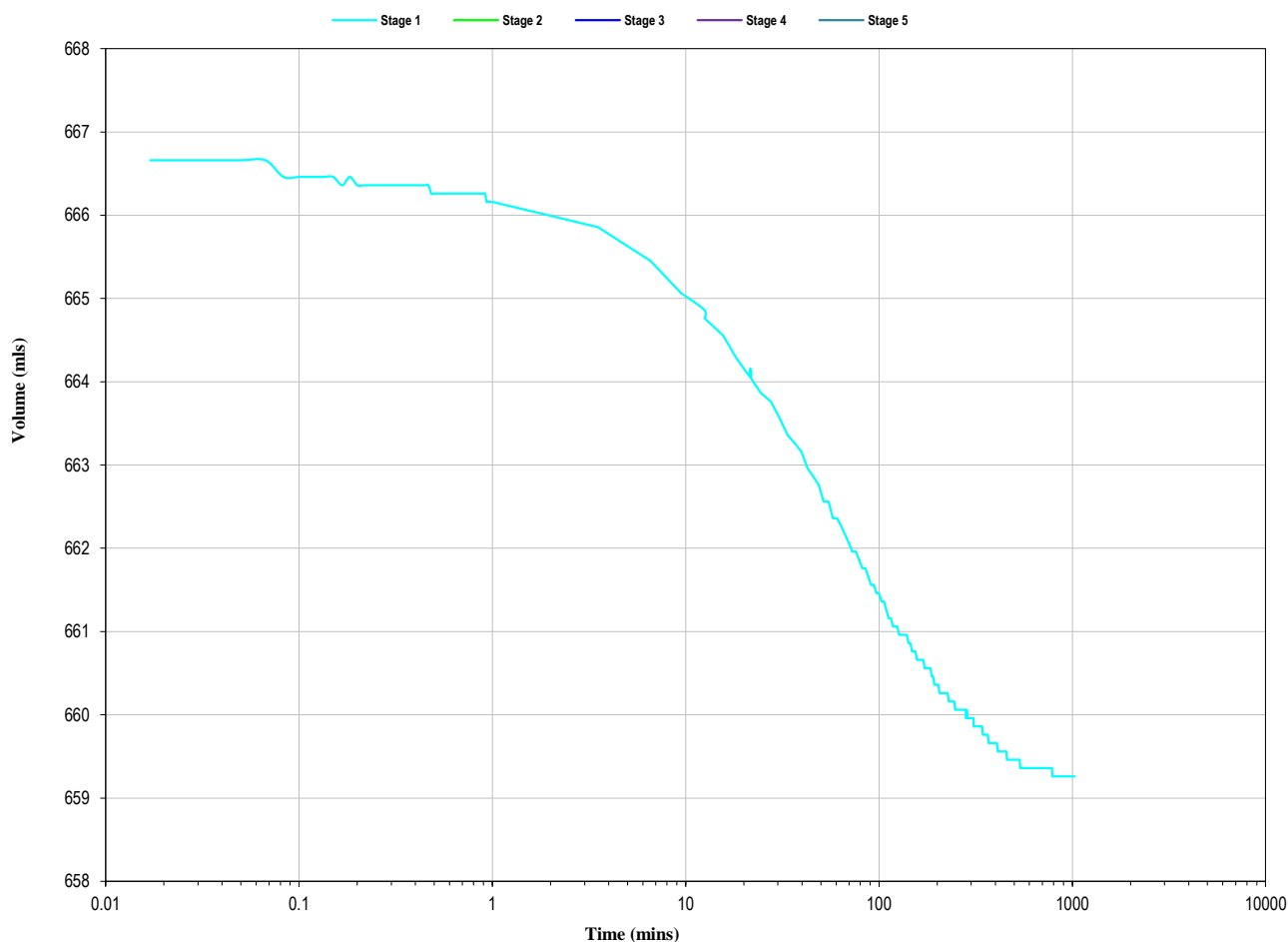
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 100kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

Volume v's Time (Log Scale)



Stage 1
Cv (m²/year) : 0.50
Mv (m²/MN) : 0.105
k (m/s) : 1.63E-11

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

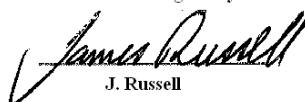
Page 6

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J. Russell



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ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

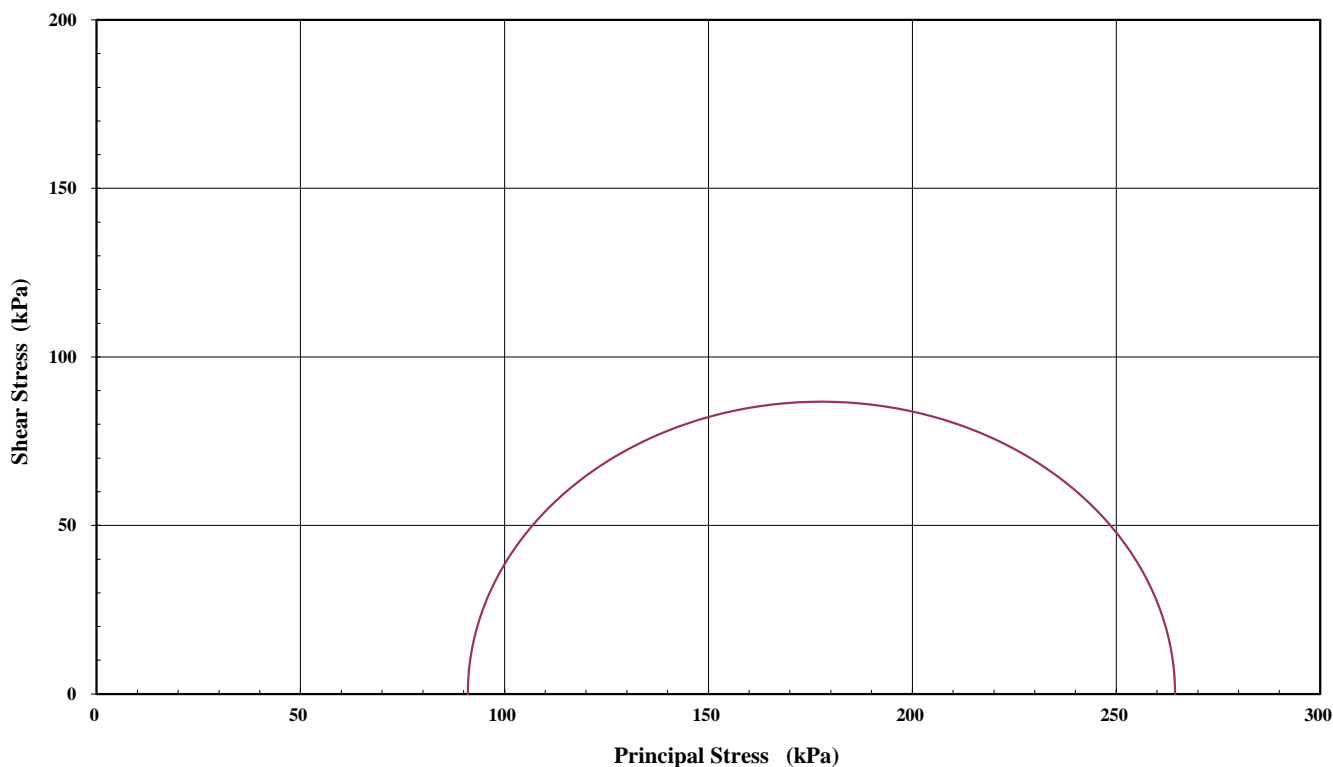
Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 250kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00

Description: SILTY CLAY- white

SAMPLE & TEST DETAILS

Initial Height: 150.8 mm	Initial Moisture Content: 14.1 %	Rate of Strain: 0.003 %/min
Initial Diameter: 75.0 mm	Final Moisture Content: 16.1 %	B Response: 99 %
L/D Ratio: 2.0 : 1	Wet Density: 1.97 t/m ³	
	Dry Density: 1.73 t/m ³	

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

Failure Criteria: Peak Principal Stress Ratio

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

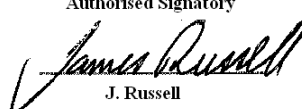
Note: Graph not to scale

Page 1

REP03001

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Authorised Signatory

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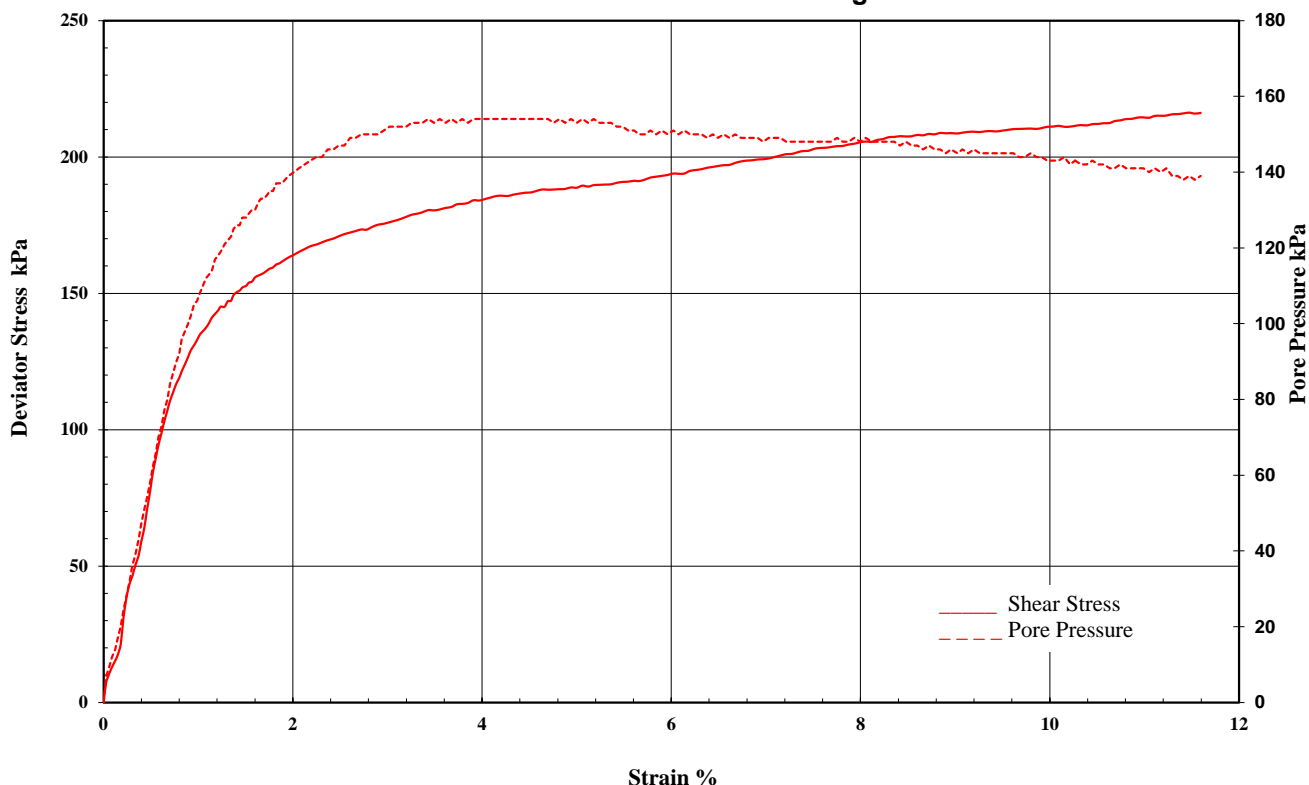
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 250kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY CLAY- white	

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Effective Pressure	Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
					σ'_1	σ'_3	σ'_1 / σ'_3		
241 kPa	747 kPa	506 kPa	506 kPa	656 kPa	264 kPa	91 kPa	2.906	173 kPa	2.73 %

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

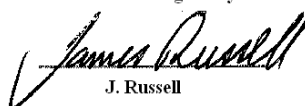
Page 2

REP03001

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Authorised Signatory


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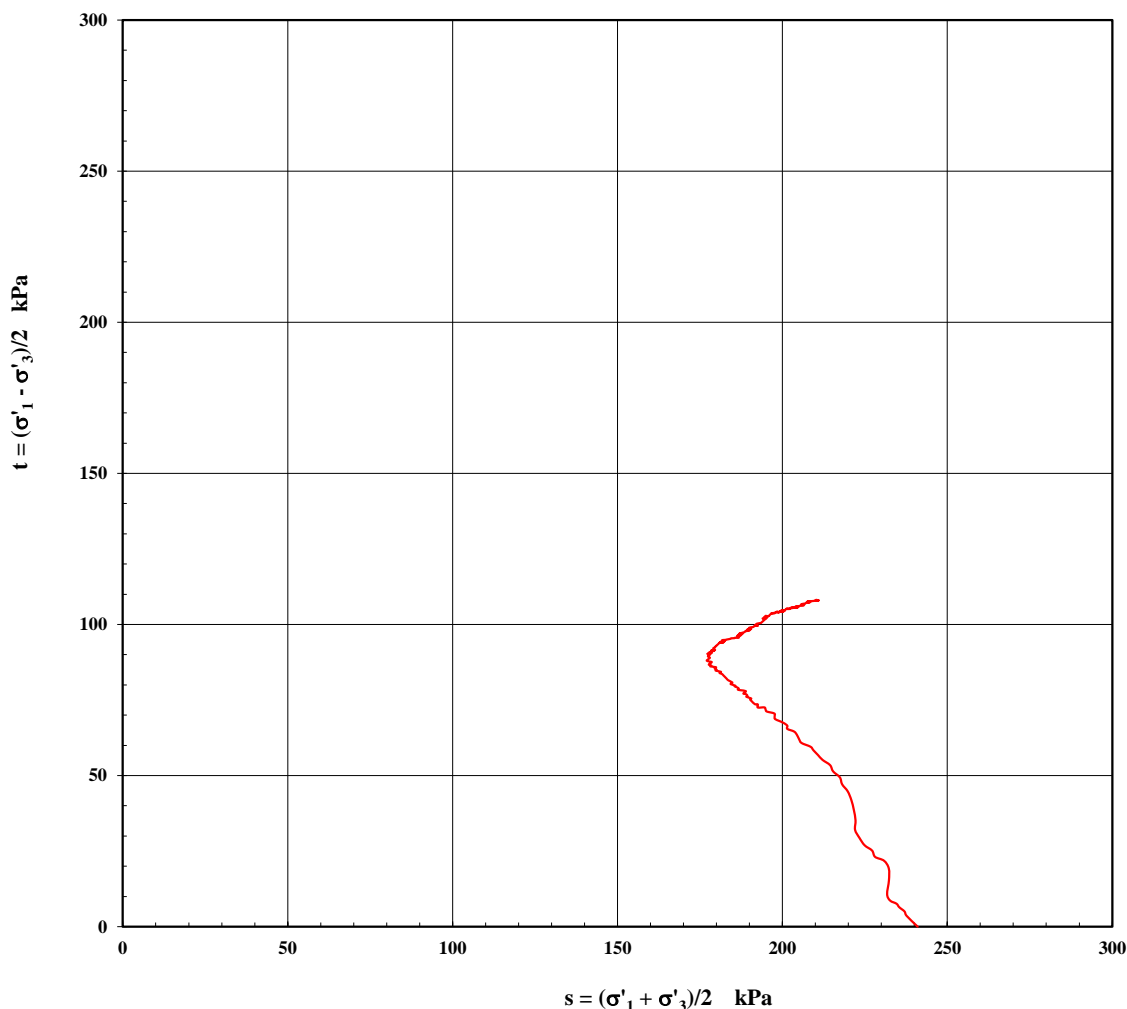
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 250kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY CLAY- white	

MIT Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

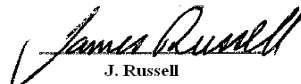
Note: Graph not to scale

Page 3

REP03001

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Laboratory Number
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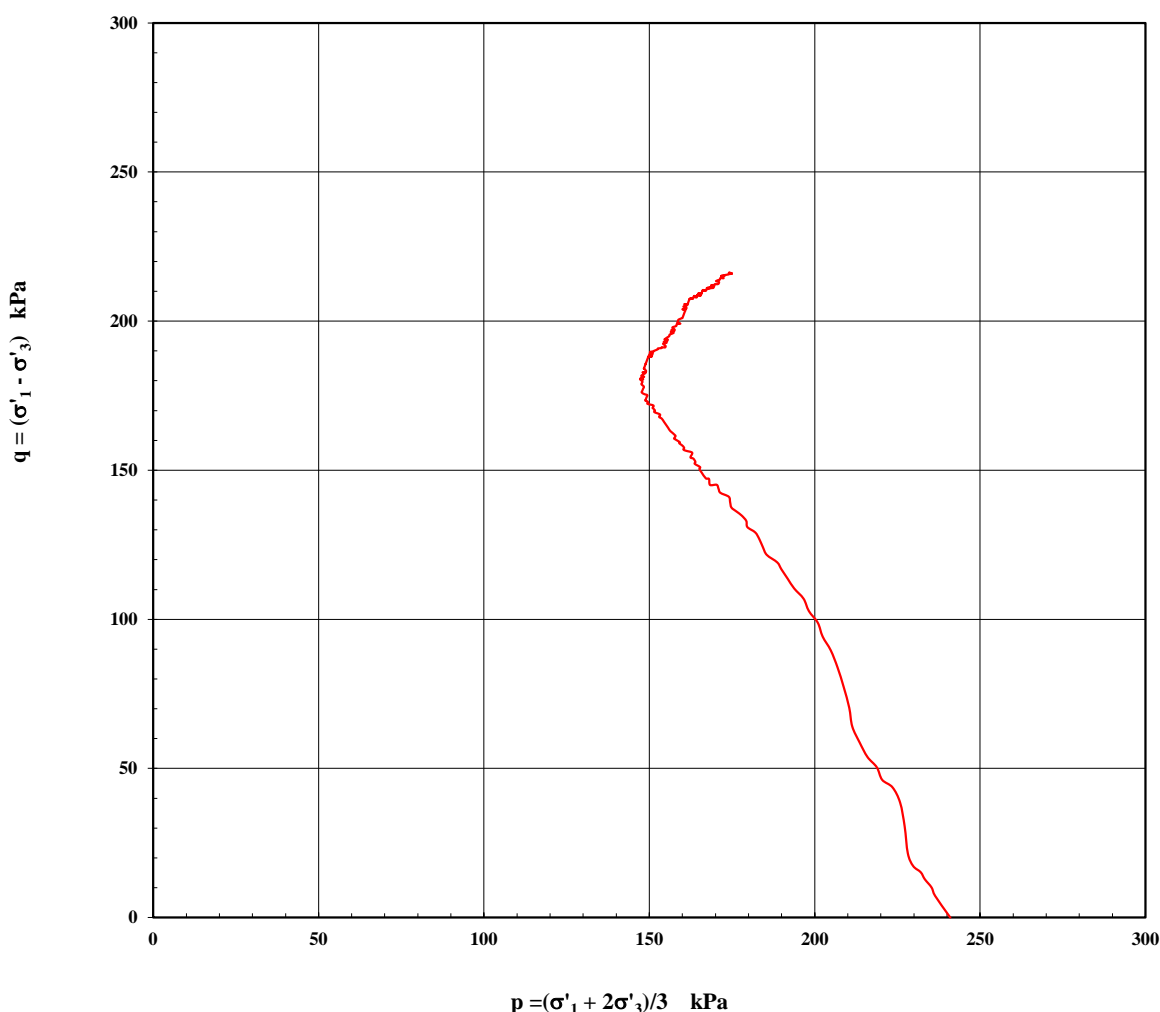
Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 250kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY CLAY- white	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

Page 4

REP03001

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Tested at Trilab Brisbane Laboratory.

Authorised Signatory

James Russell
J. Russell



Laboratory Number
9926

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Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 250kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY CLAY- white	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	147645033 Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	14120770	DATE: 08.01.15
BOREHOLE:	TP86 14441784	DEPTH: 2.00-6.00



Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

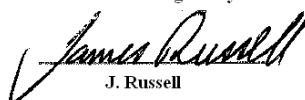
Page 5

REP03001

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Tested at Trilab Brisbane Laboratory.

Authorised Signatory


J. Russell



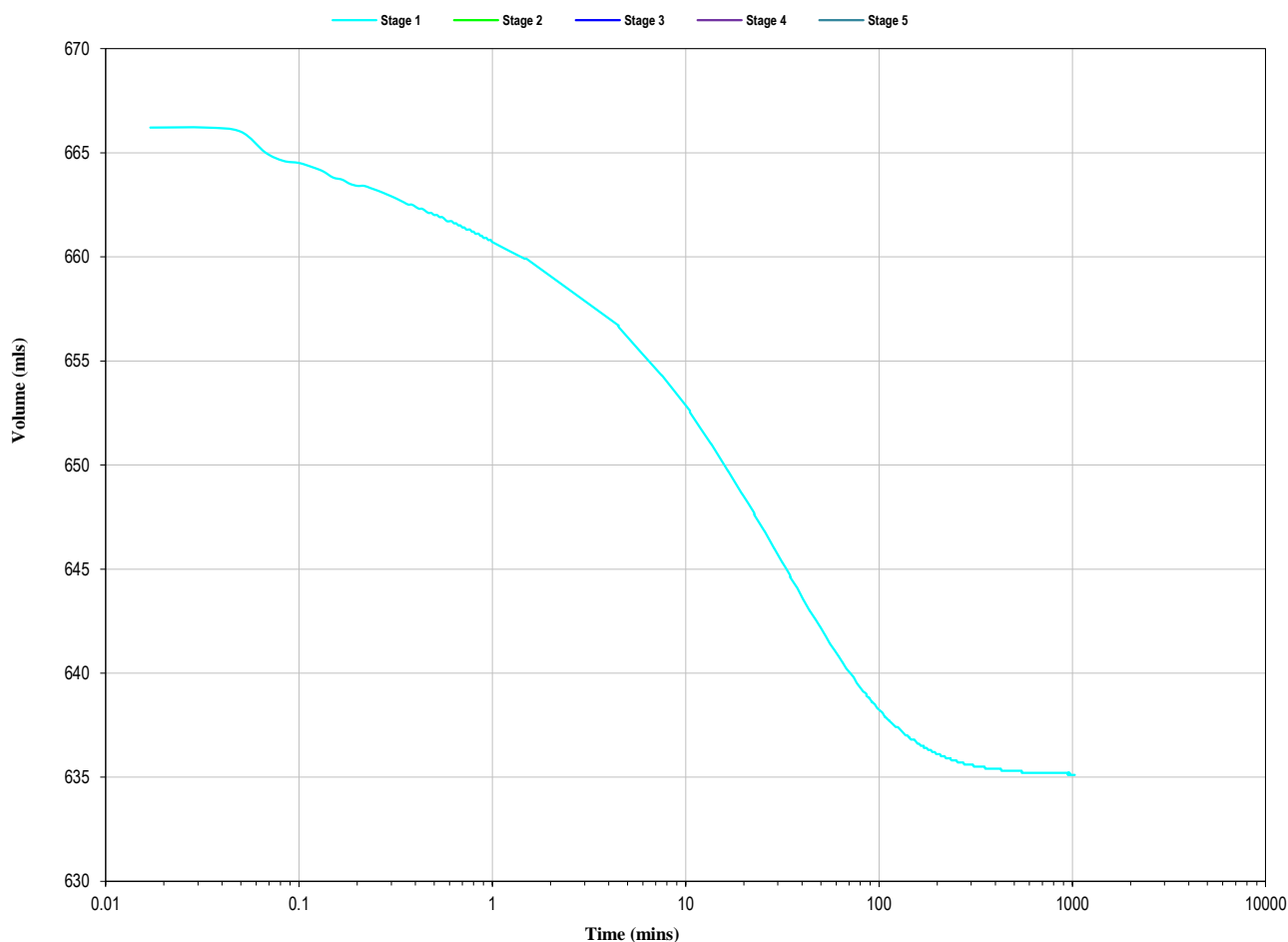
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 250kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY CLAY- white	

Volume v's Time (Log Scale)



Stage 1
Cv (m²/year) : 1.06
Mv (m²/MN) : 0.189
k (m/s) : 6.21E-11

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

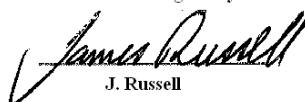
Page 6

REP03001

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Tested at Trilab Brisbane Laboratory.

Authorised Signatory


J. Russell



Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

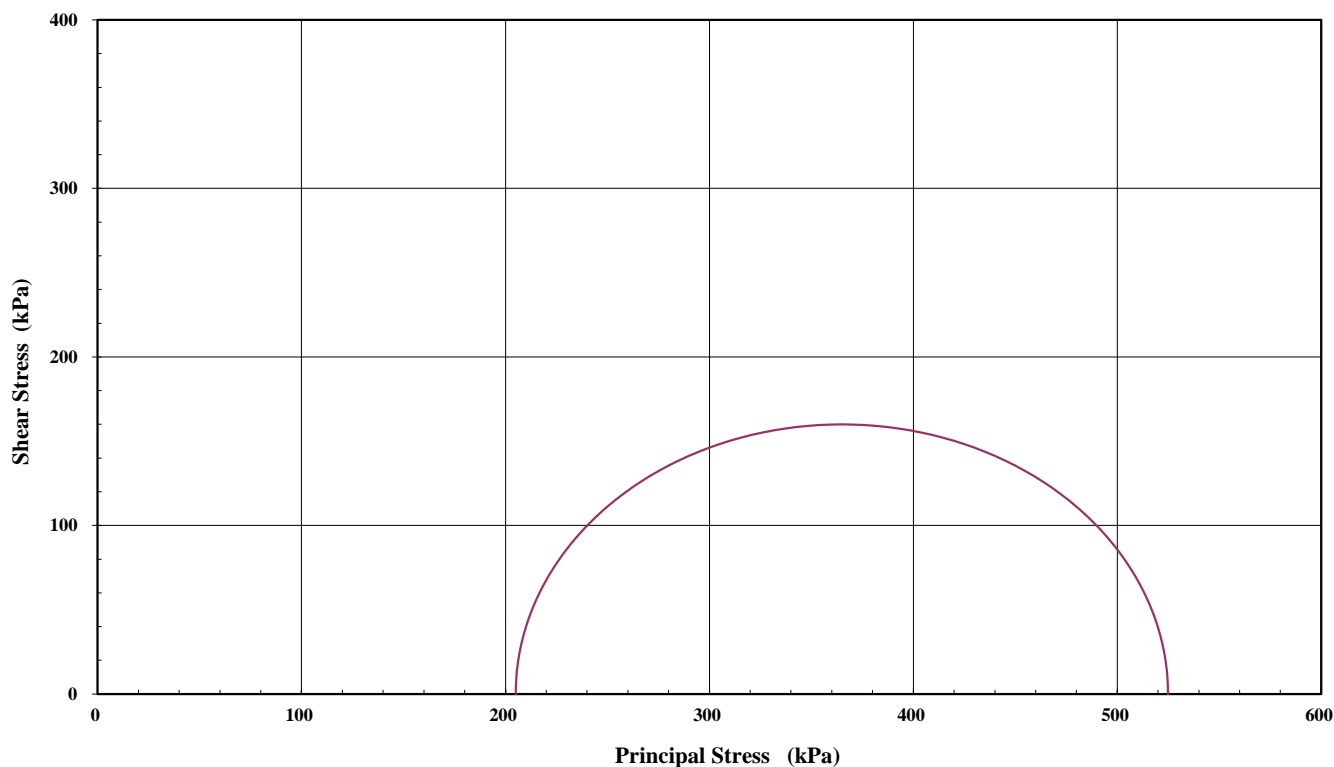
Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 500kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00

Description: SILTY SAND- white

SAMPLE & TEST DETAILS

Initial Height: 150.8 mm	Initial Moisture Content: 14.1 %	Rate of Strain: 0.003 %/min
Initial Diameter: 75.0 mm	Final Moisture Content: 14.6 %	B Response: 99 %
L/D Ratio: 2.0 : 1	Wet Density: 1.97 t/m ³	
	Dry Density: 1.73 t/m ³	

Mohr Circle Diagram



Interpretation between stages :

Cohesion C' (kPa) :

Angle of Shear Resistance Φ' (Degrees) :

Failure Criteria: Peak Principal Stress Ratio

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

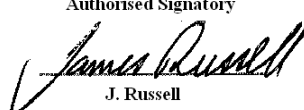
Note: Graph not to scale

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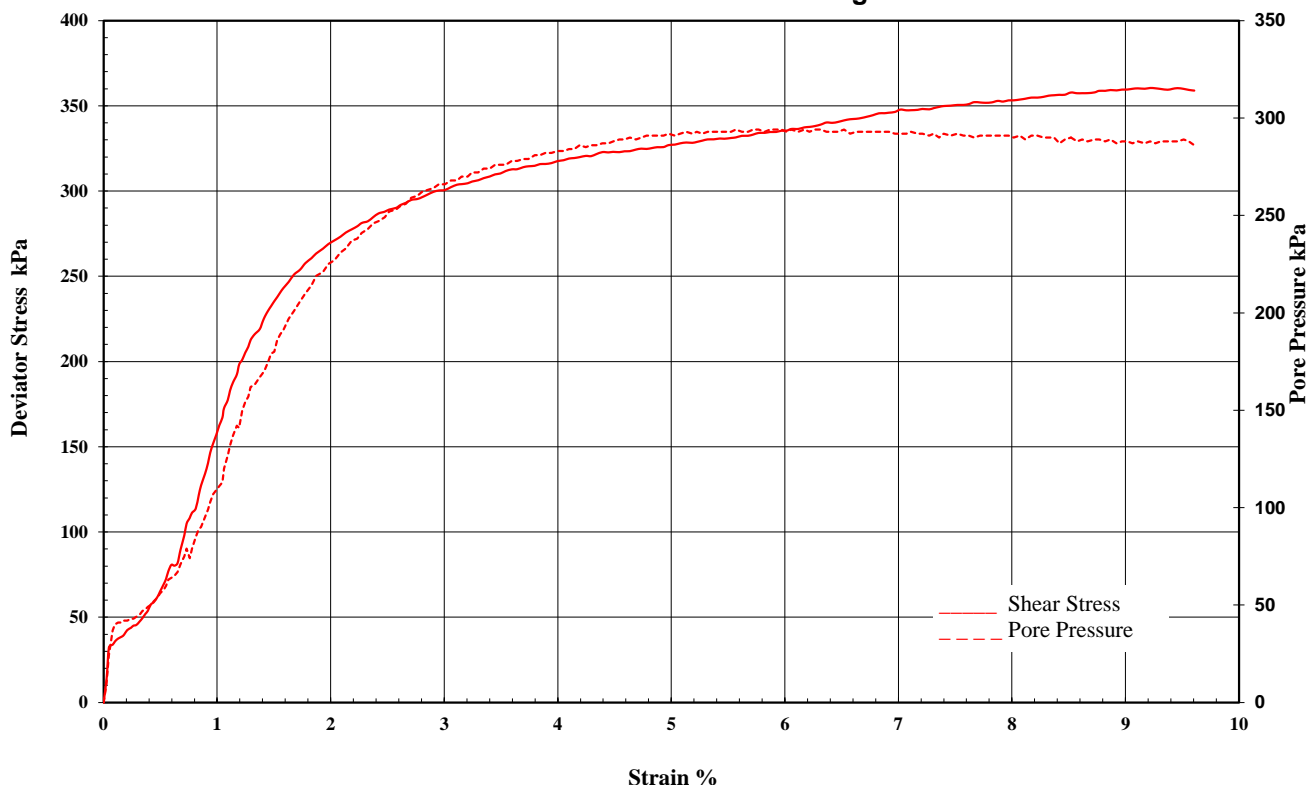
TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 500kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00

Description: SILTY SAND- white

Stress/Strain & Pore Pressure/Strain Diagram



FAILURE DETAILS

Effective Pressure	Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
					σ'_1	σ'_3	σ'_1 / σ'_3		
491 kPa	796 kPa	305 kPa	305 kPa	591 kPa	525 kPa	205 kPa	2.560	320 kPa	4.19 %

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

Page 2

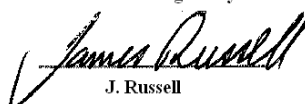
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Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd

Report No.: 14120770 - CU 500kPa

Project: 147645033 Allawuna Proposed Landfill Site

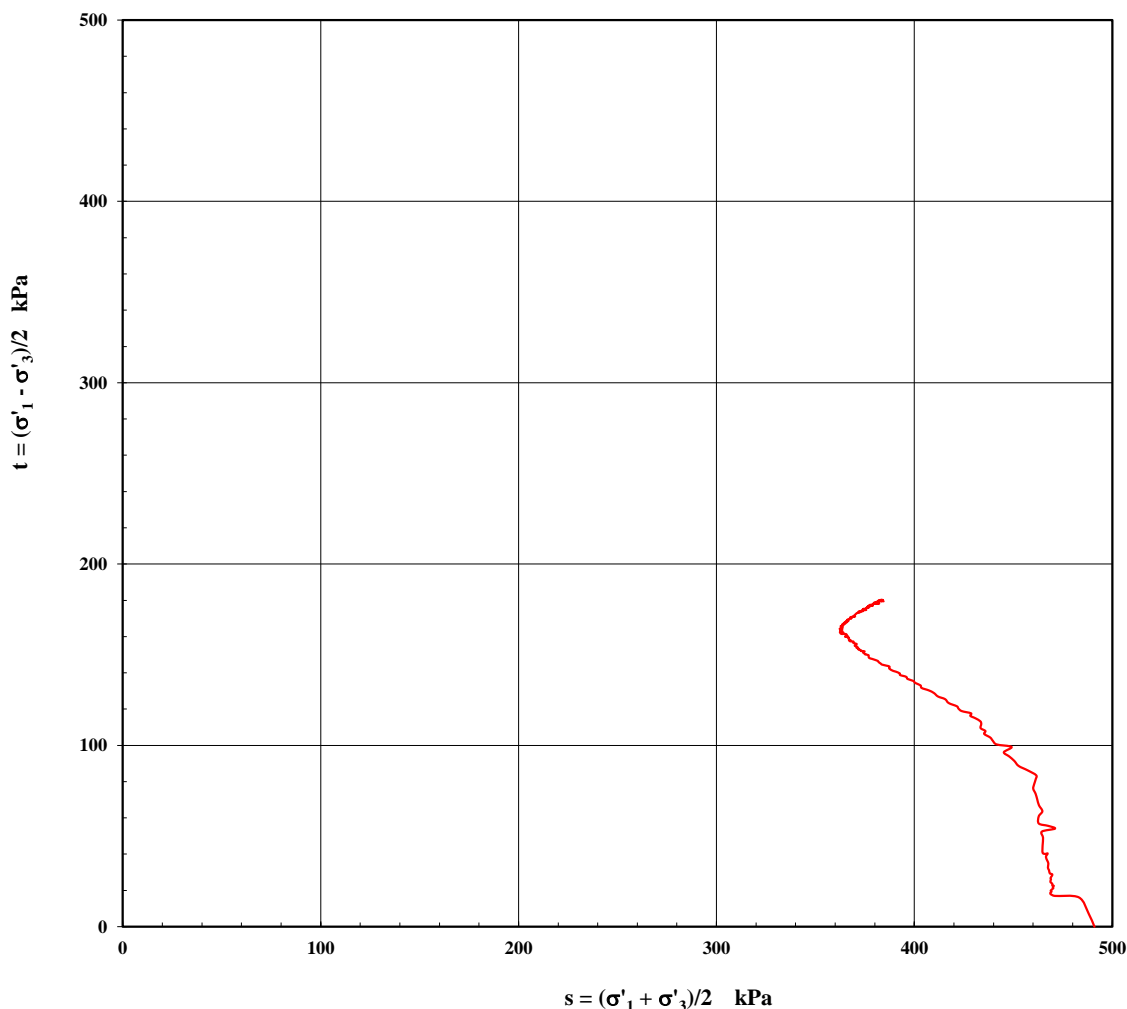
Test Date: 5/01/2015
Report Date: 16/01/2015

Client Id.: TP86 14441784

Depth (m): 2.00-6.00

Description: SILTY SAND- white

MIT Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

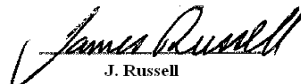
Note: Graph not to scale

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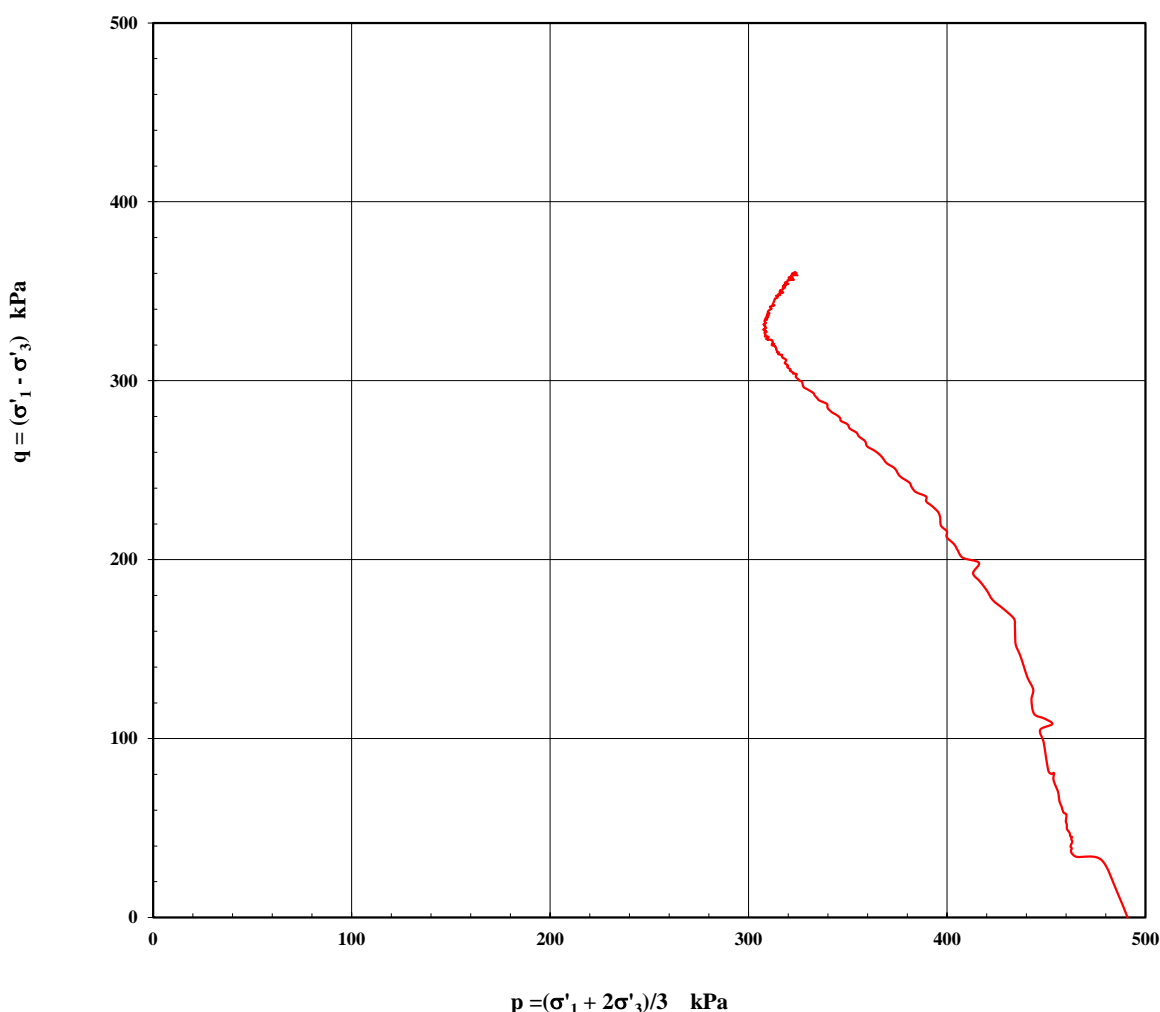
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 500kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

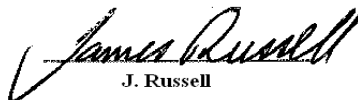
Note: Graph not to scale

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Laboratory Number
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 500kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

CLIENT:	Golder Associates Pty Ltd	
PROJECT:	147645033 Allawuna Proposed Landfill Site	AFTER TEST
LAB SAMPLE No.	14120770	DATE: 08.01.15
BOREHOLE:	TP86 14441784	DEPTH: 2.00-6.00



Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

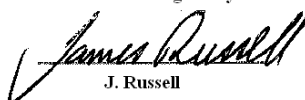
Note: Graph not to scale

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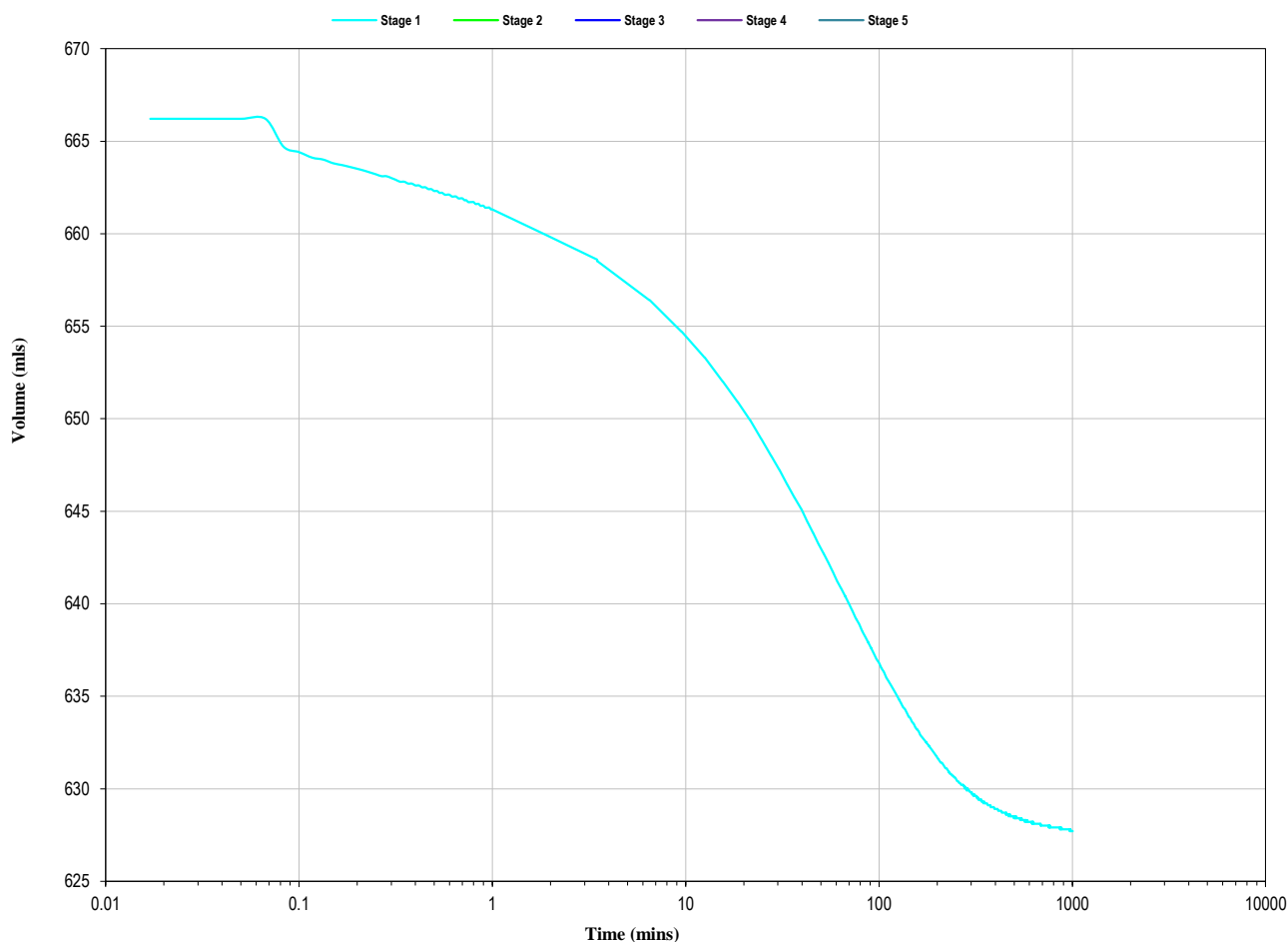
Trilab Pty Ltd
ABN 25 065 630 506

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Golder Associates Pty Ltd	Report No.: 14120770 - CU 500kPa
Project: 147645033 Allawuna Proposed Landfill Site	Test Date: 5/01/2015 Report Date: 16/01/2015
Client Id.: TP86 14441784	Depth (m): 2.00-6.00
Description: SILTY SAND- white	

Volume v's Time (Log Scale)



Stage 1
Cv (m²/year) : 0.58
Mv (m²/MN) : 0.112
k (m/s) : 2.02E-11

Sample Type: Single Individual Specimen remoulded to a target of 95% of Standard Maximum Dry Density and Optimum Moisture Content (-13.2mm material tested)

Sample/s supplied by the client

Note: Graph not to scale

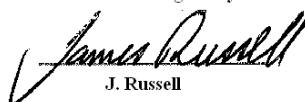
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APPENDIX G3

Laboratory Testing Certificates: Test Pit Investigation February 2014

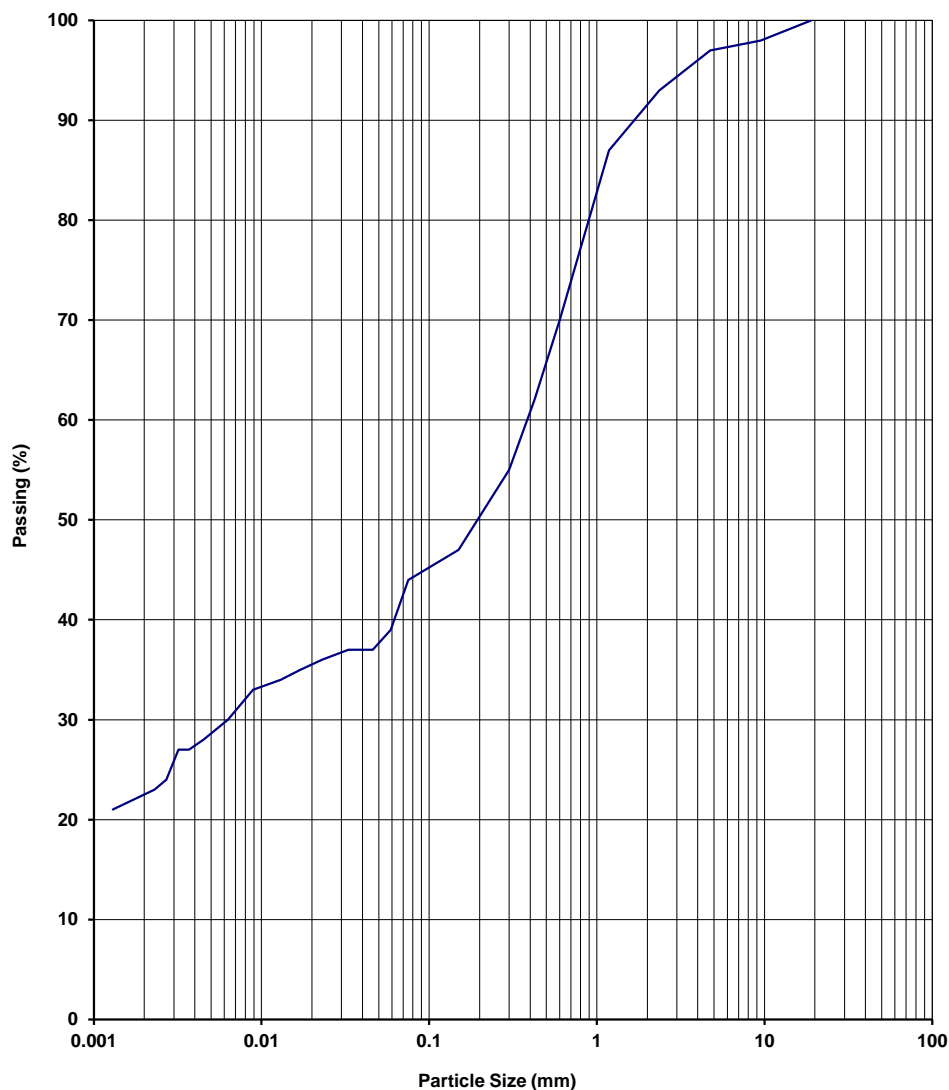
Geotechnical Reports: Particle Size Distribution

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020129-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA03	Depth (m)	1.8-5.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	100
9.5	98
4.75	97
2.36	93
1.18	87
0.600	70
0.425	62
0.300	55
0.150	47
0.075	44
0.059	39
0.046	37
0.033	37
0.023	36
0.017	35
0.013	34
0.009	33
0.006	30
0.005	28
0.004	27
0.003	27
0.003	24
0.002	23
0.001	21



NOTES/REMARKS:

Moisture Content 8.5% -2.36mm Soil Particle Density(t/m³) 2.69
Sample/s supplied by the client

Page 1 of 1 REP33901

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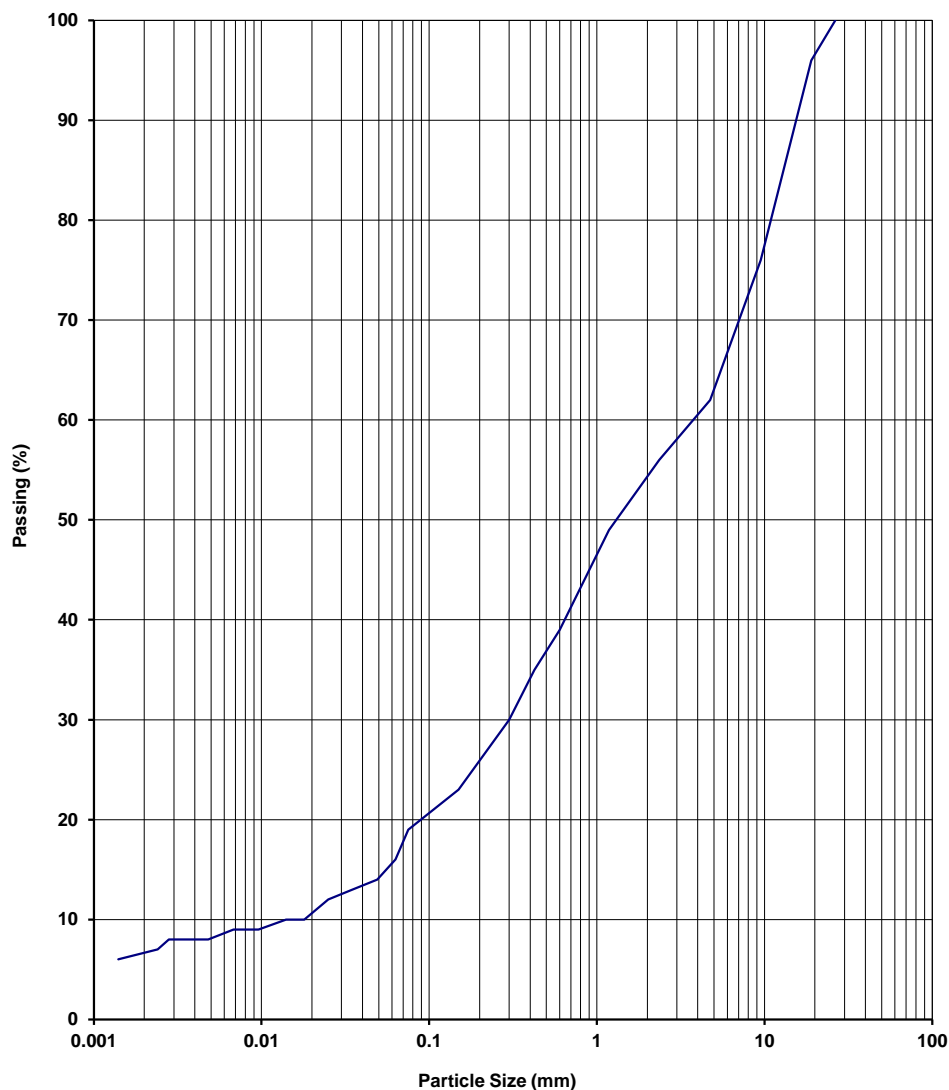
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020130-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA10	Depth (m)	1.0-2.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	100
19.0	96
9.5	76
4.75	62
2.36	56
1.18	49
0.600	39
0.425	35
0.300	30
0.150	23
0.075	19
0.063	16
0.049	14
0.035	13
0.025	12
0.018	10
0.014	10
0.010	9
0.007	9
0.005	8
0.004	8
0.003	8
0.003	8
0.002	7
0.001	6



NOTES/REMARKS:

Moisture Content 9.6% -2.36mm Soil Particle Density(t/m³) 2.63
Sample/s supplied by the client

Page 1 of 1 REP33901

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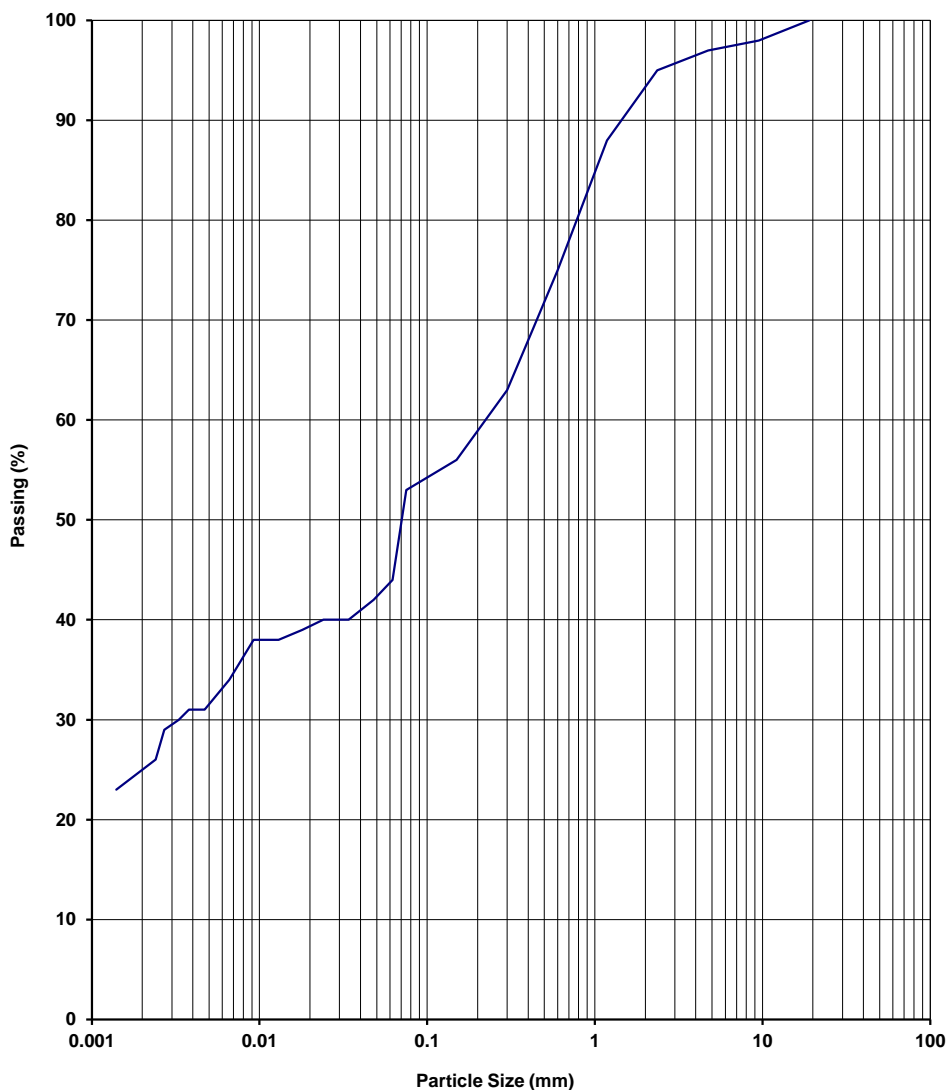
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020131-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA10	Depth (m)	2.0-4.8

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	100
9.5	98
4.75	97
2.36	95
1.18	88
0.600	75
0.425	69
0.300	63
0.150	56
0.075	53
0.062	44
0.048	42
0.034	40
0.024	40
0.018	39
0.013	38
0.009	38
0.007	34
0.005	31
0.004	31
0.003	30
0.003	29
0.002	26
0.001	23



NOTES/REMARKS:

Moisture Content 13.5% -2.36mm Soil Particle Density(t/m³) 2.65
Sample/s supplied by the client

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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

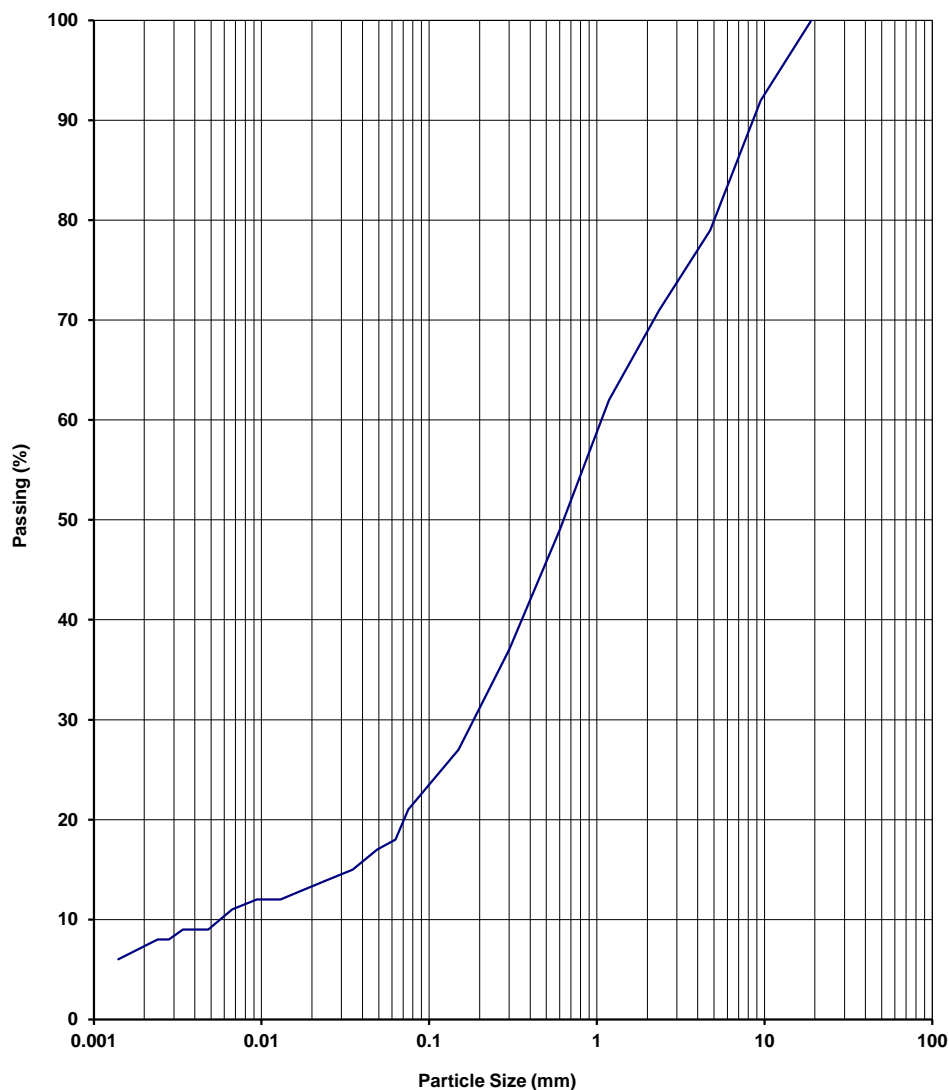
Client Golder Associates Pty Ltd
Project Allawuna Proposed Landfill Site

Report No. P 15020132-G
Test Date 19/02/2015-25/02/2015
Report Date 26/02/2015

Client ID BA12

Depth (m) 1.0-2.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	100
9.5	92
4.75	79
2.36	71
1.18	62
0.600	49
0.425	43
0.300	37
0.150	27
0.075	21
0.063	18
0.049	17
0.035	15
0.025	14
0.018	13
0.013	12
0.009	12
0.007	11
0.005	9
0.004	9
0.003	9
0.003	8
0.002	8
0.001	6



NOTES/REMARKS:

Moisture Content 9.7% -2.36mm Soil Particle Density(t/m³) 2.64
Sample/s supplied by the client

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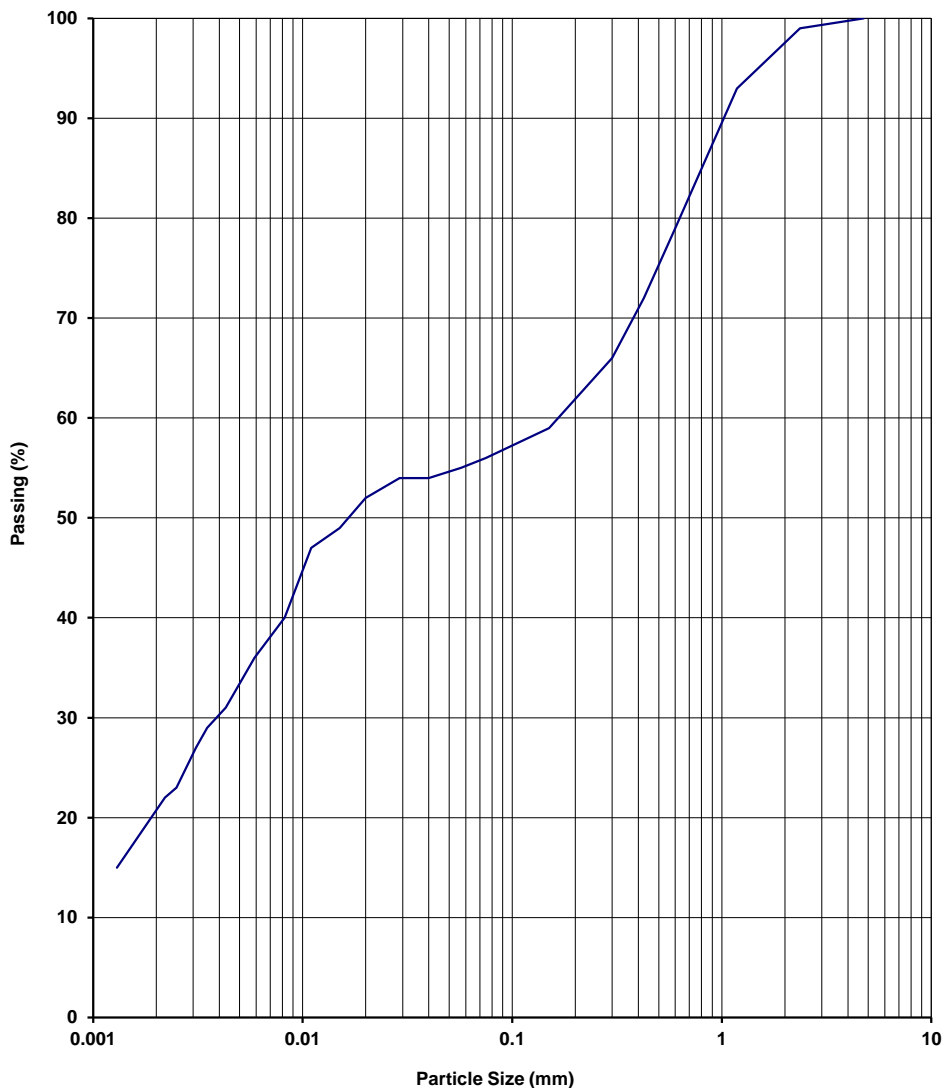
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020133-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA12	Depth (m)	2.0-4.8

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	
9.5	
4.75	100
2.36	99
1.18	93
0.600	79
0.425	72
0.300	66
0.150	59
0.075	56
0.057	55
0.04	54
0.029	54
0.02	52
0.015	49
0.011	47
0.008	40
0.006	36
0.004	31
0.004	29
0.003	27
0.003	23
0.002	22
0.001	15



NOTES/REMARKS:

Moisture Content 12.1% -2.36mm Soil Particle Density(t/m³) 2.66
Sample/s supplied by the client

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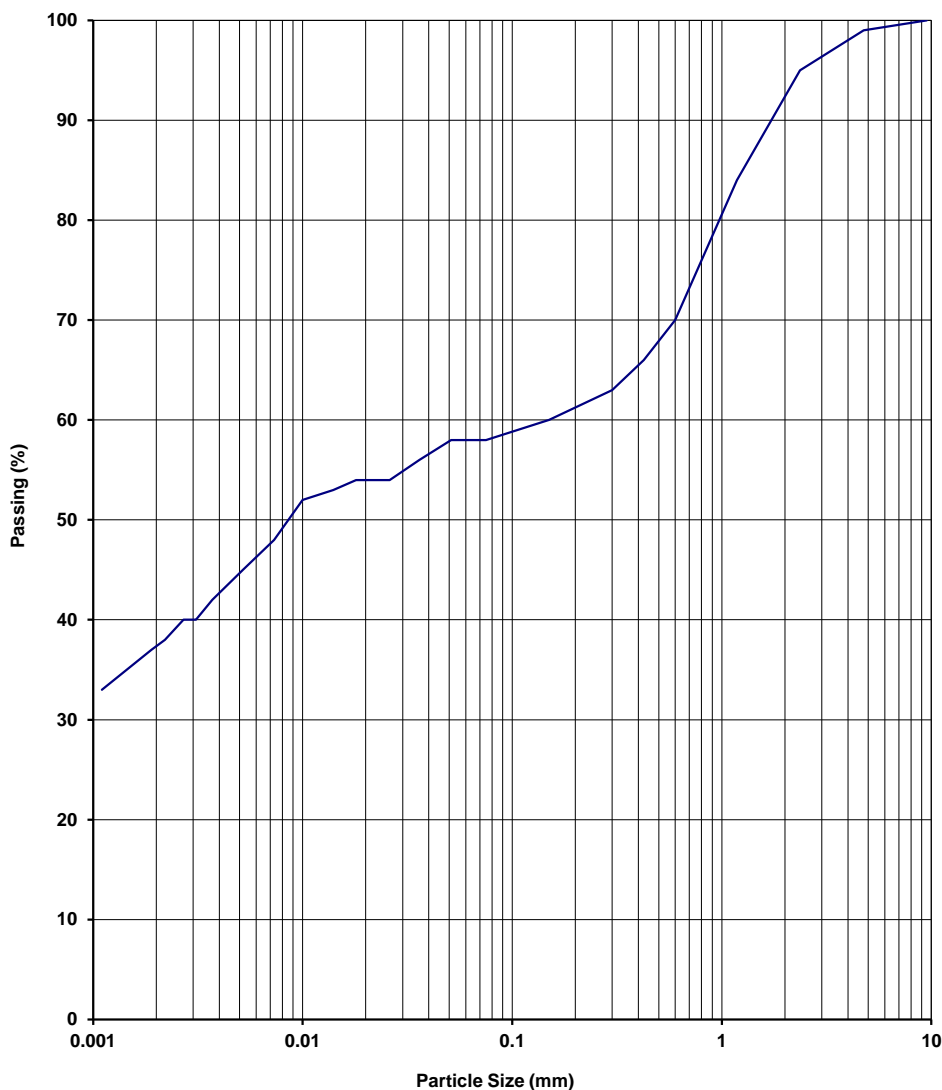
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020134-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-27/02/2015
		Report Date	27/02/2015
Client ID	BA23	Depth (m)	1.4-4.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	
9.5	100
4.75	99
2.36	95
1.18	84
0.600	70
0.425	66
0.300	63
0.150	60
0.075	58
0.051	58
0.036	56
0.026	54
0.018	54
0.014	53
0.01	52
0.007	48
0.005	45
0.004	42
0.003	40
0.003	40
0.002	38
0.002	37
0.001	33



NOTES/REMARKS:

Moisture Content 14.8% -2.36mm Soil Particle Density(t/m³) 2.88
Sample/s supplied by the client

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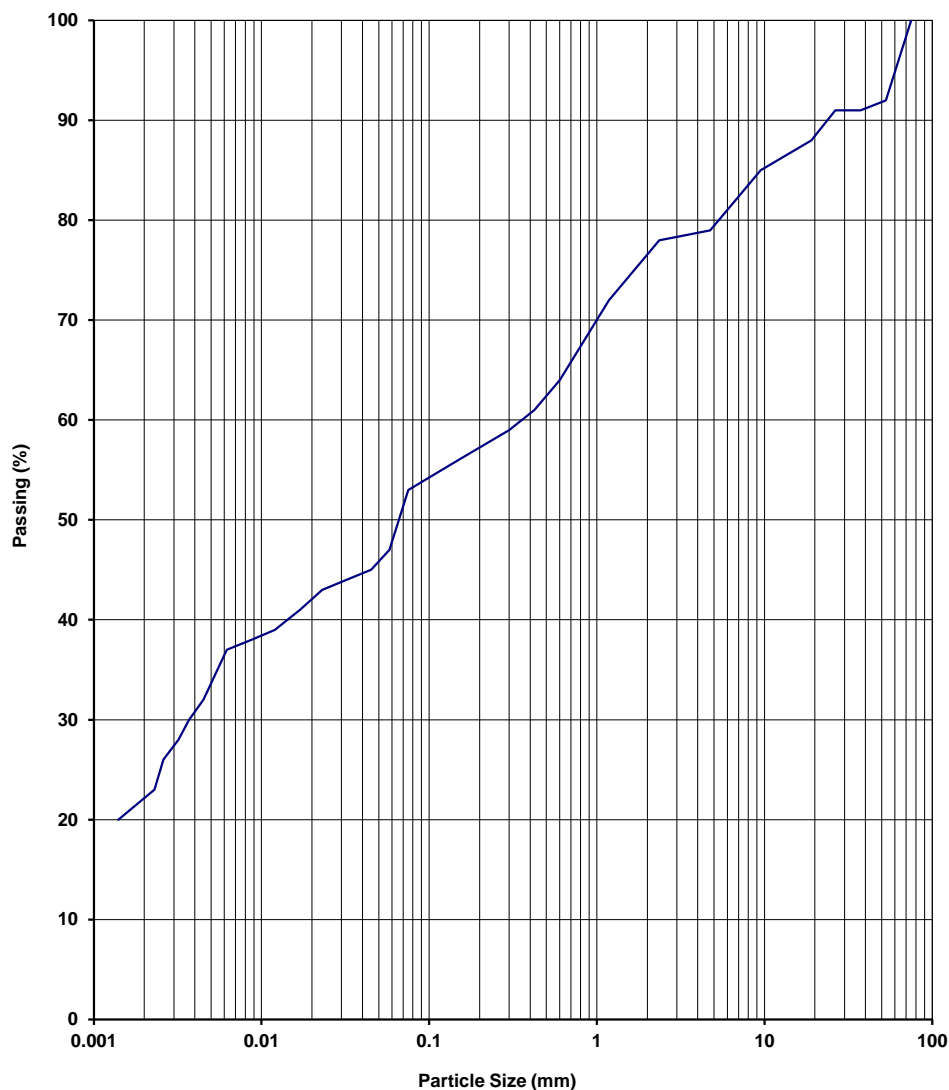
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020135-G
Project	Allawuna Proposed Landfill Site	Test Date	19/02/2015-25/02/2015
		Report Date	26/02/2015
Client ID	BA24	Depth (m)	1.0-5.0

Sieve Size (mm)	Passing %
150.0	
75.0	100
53.0	92
37.5	91
26.5	91
19.0	88
9.5	85
4.75	79
2.36	78
1.18	72
0.600	64
0.425	61
0.300	59
0.150	56
0.075	53
0.058	47
0.045	45
0.032	44
0.023	43
0.017	41
0.012	39
0.009	38
0.006	37
0.005	32
0.004	30
0.003	28
0.003	26
0.002	23
0.001	20



NOTES/REMARKS:

Moisture Content 21.4% -2.36mm Soil Particle Density(t/m³) 2.67
Sample/s supplied by the client

Page 1 of 1 REP33901

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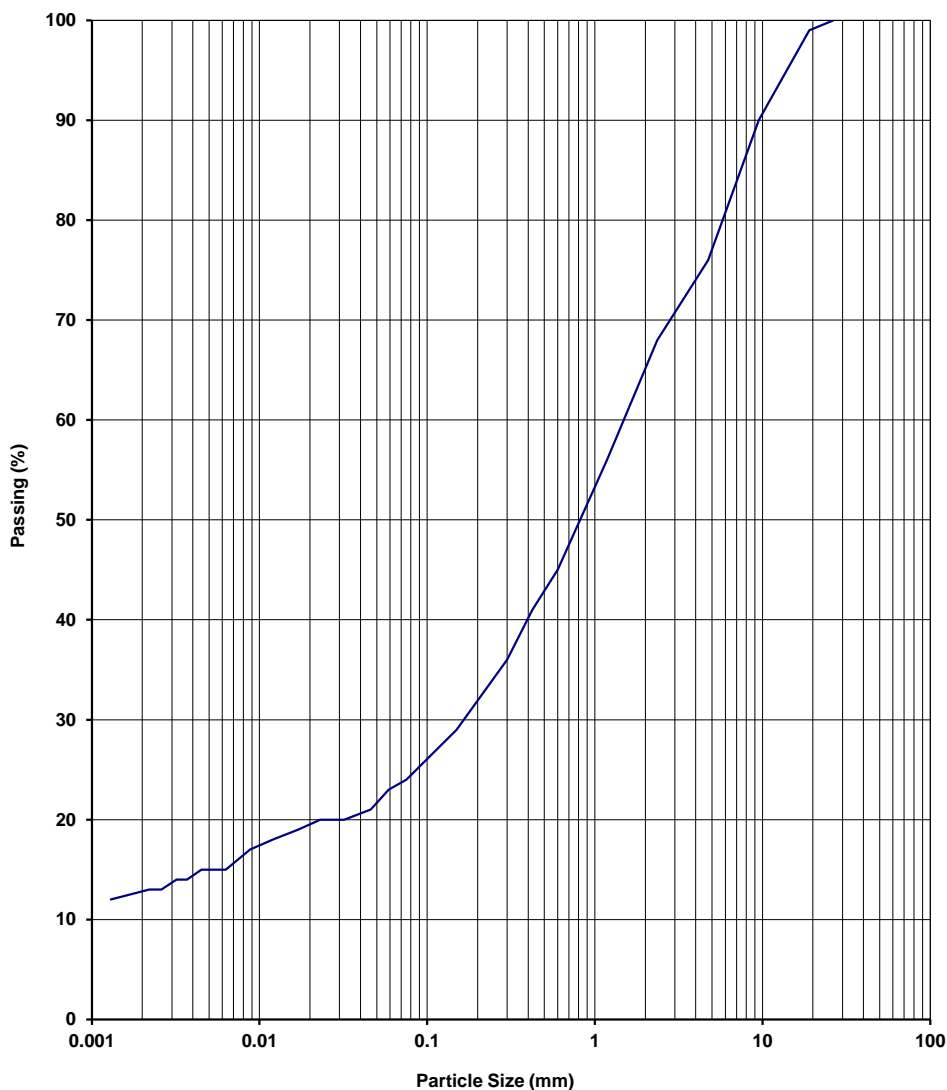
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020136-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-27/02/2015
		Report Date	27/02/2015
Client ID	BA20	Depth (m)	0.5-2.5

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	100
19.0	99
9.5	90
4.75	76
2.36	68
1.18	56
0.600	45
0.425	41
0.300	36
0.150	29
0.075	24
0.059	23
0.046	21
0.032	20
0.023	20
0.017	19
0.012	18
0.009	17
0.006	15
0.005	15
0.004	14
0.003	14
0.003	13
0.002	13
0.001	12



NOTES/REMARKS:

Moisture Content 12.2% -2.36mm Soil Particle Density(t/m³) 2.64
Sample/s supplied by the client

Page 1 of 1 REP33901

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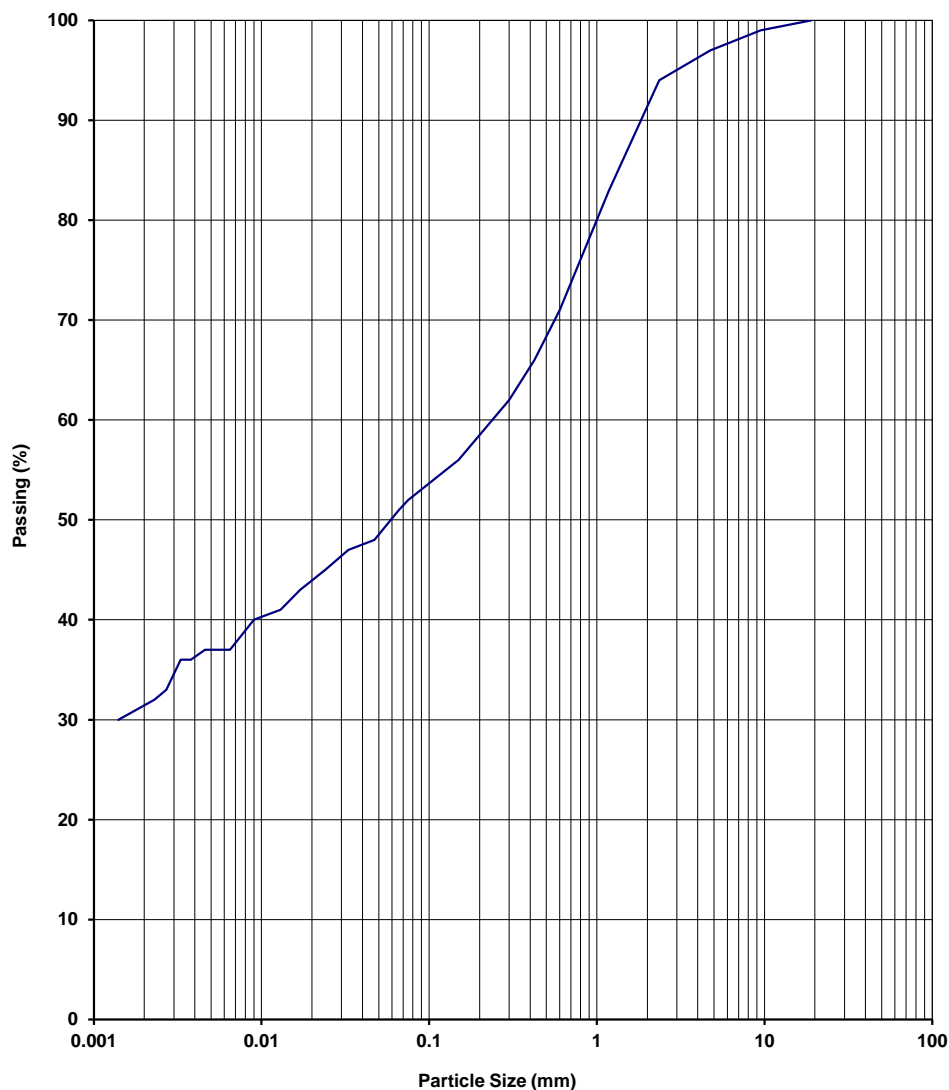
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020137-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA20	Depth (m)	3.0-5.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	100
9.5	99
4.75	97
2.36	94
1.18	83
0.600	71
0.425	66
0.300	62
0.150	56
0.075	52
0.066	51
0.047	48
0.033	47
0.024	45
0.017	43
0.013	41
0.009	40
0.007	37
0.005	37
0.004	36
0.003	36
0.003	33
0.002	32
0.001	30



NOTES/REMARKS:

Moisture Content 14.6% -2.36mm Soil Particle Density(t/m³) 2.68
Sample/s supplied by the client

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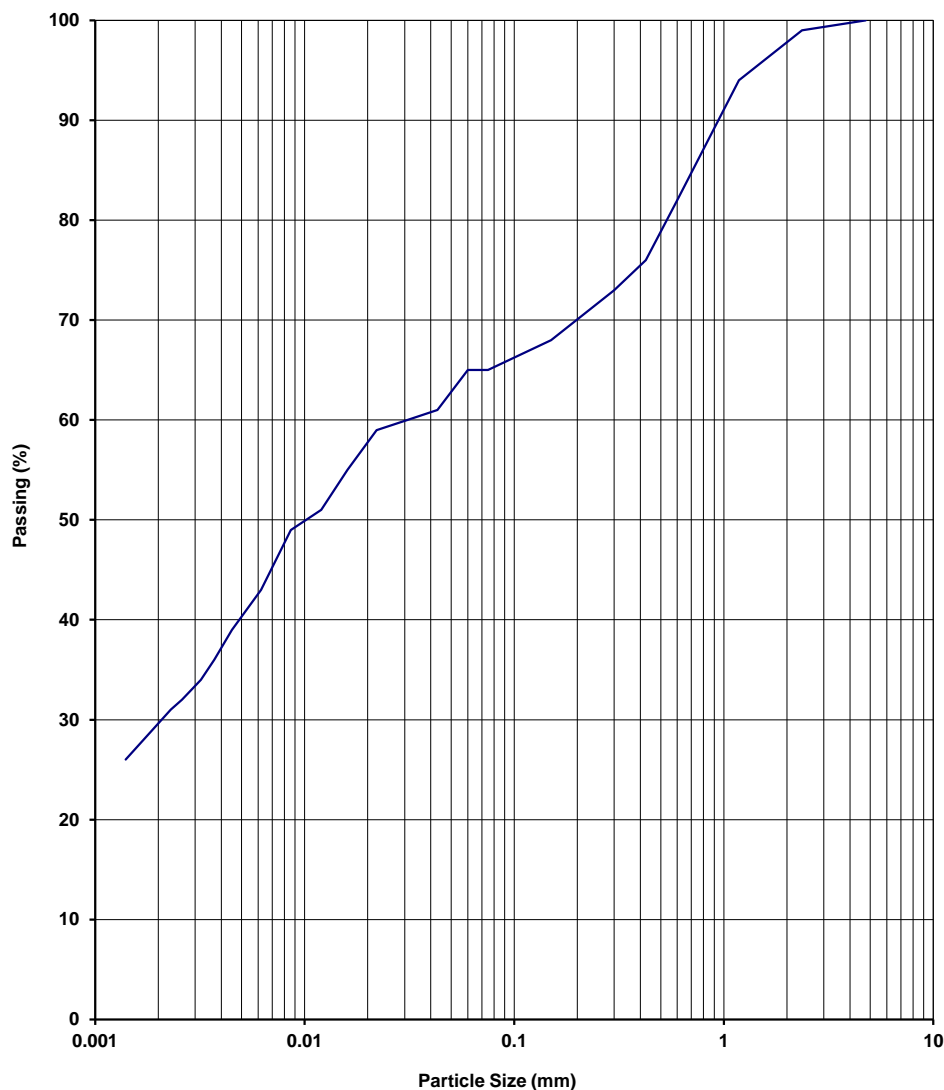
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020138-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA35	Depth (m)	1.2-4.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	
9.5	
4.75	100
2.36	99
1.18	94
0.600	82
0.425	76
0.300	73
0.150	68
0.075	65
0.06	65
0.043	61
0.031	60
0.022	59
0.016	55
0.012	51
0.009	49
0.006	43
0.005	39
0.004	36
0.003	34
0.003	32
0.002	31
0.001	26



NOTES/REMARKS:

Moisture Content 16% -2.36mm Soil Particle Density(t/m³) 2.66
Sample/s supplied by the client

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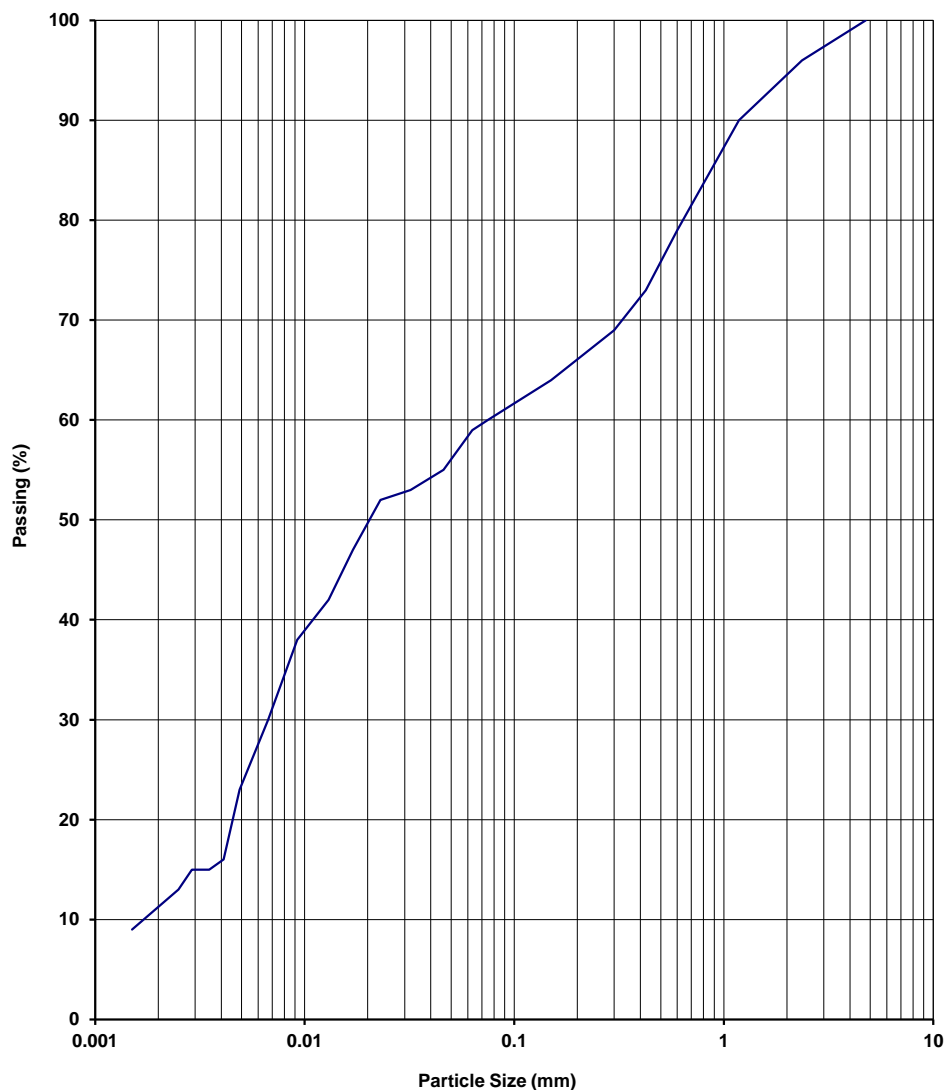
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020139-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-23/02/2015
		Report Date	24/02/2015
Client ID	BA35	Depth (m)	4.0-5.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	
9.5	
4.75	100
2.36	96
1.18	90
0.600	79
0.425	73
0.300	69
0.150	64
0.075	60
0.063	59
0.046	55
0.032	53
0.023	52
0.017	47
0.013	42
0.009	38
0.007	30
0.005	23
0.004	16
0.004	15
0.003	15
0.003	13
0.002	9



NOTES/REMARKS:

Moisture Content 20.4% -2.36mm Soil Particle Density(t/m³) 2.58
Sample/s supplied by the client

Page 1 of 1 REP33901

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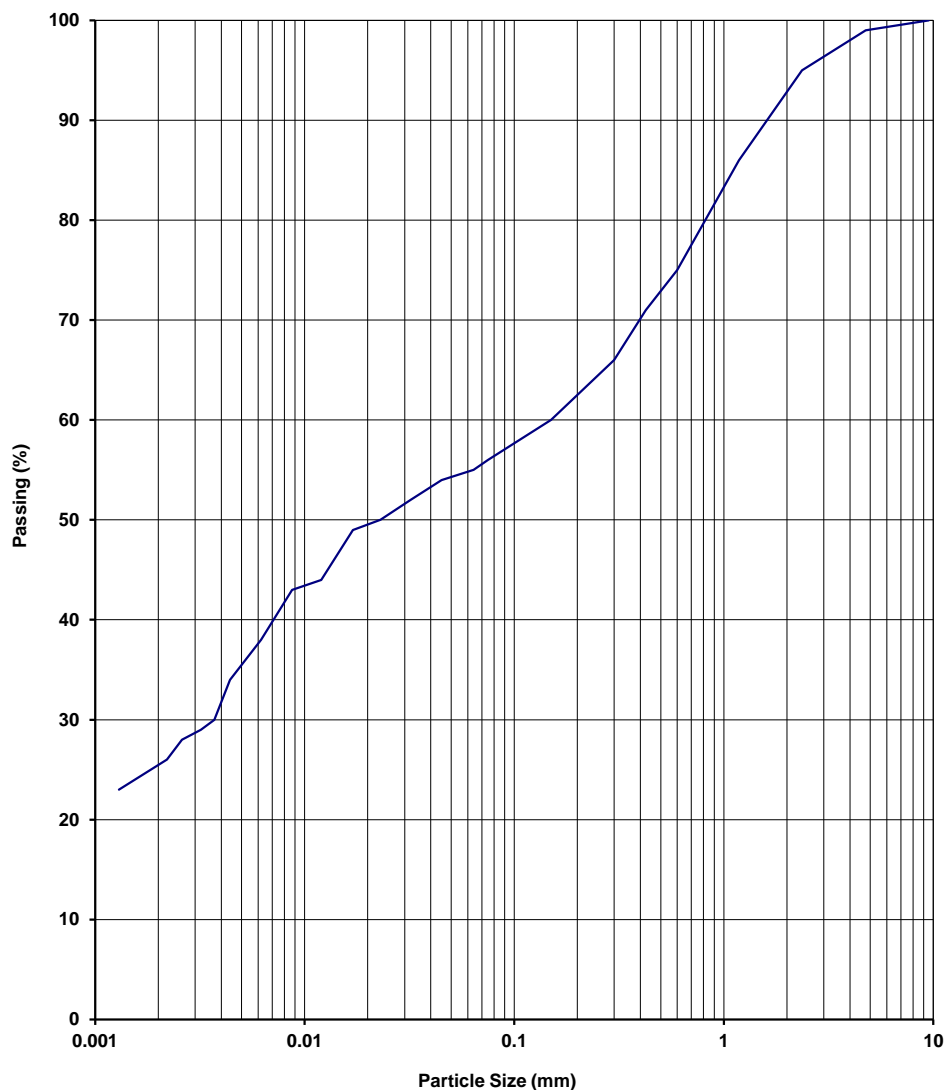
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020140-G
Project	Allawuna Proposed Landfill Site	Test Date	18/02/2015-25/02/2015
		Report Date	26/02/2015
Client ID	BA38	Depth (m)	1.8-5.0

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	
9.5	100
4.75	99
2.36	95
1.18	86
0.600	75
0.425	71
0.300	66
0.150	60
0.075	56
0.064	55
0.045	54
0.032	52
0.023	50
0.017	49
0.012	44
0.009	43
0.006	38
0.004	34
0.004	30
0.003	29
0.003	28
0.002	26
0.001	23



NOTES/REMARKS:

Moisture Content 19.6% -2.36mm Soil Particle Density(t/m³) 2.65
Sample/s supplied by the client

Page 1 of 1 REP33901

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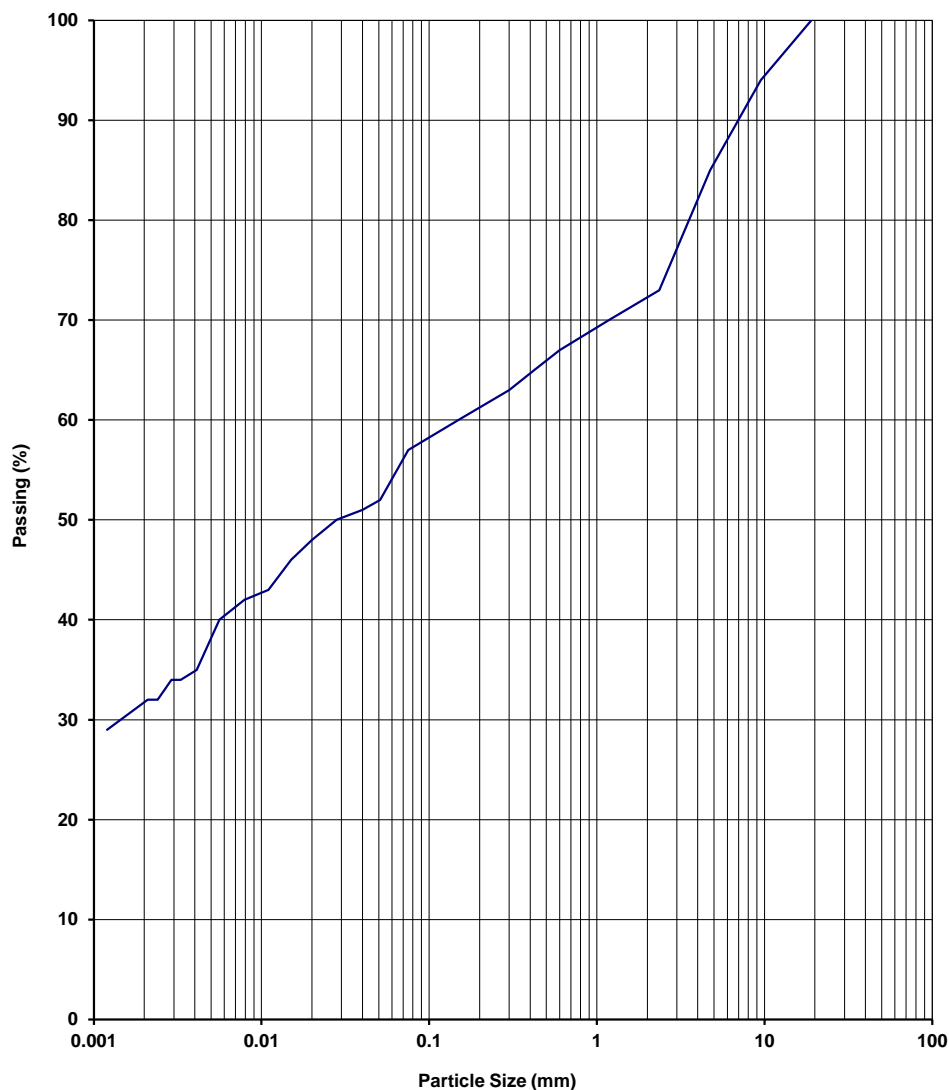
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PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.3, 3.5.1

Client	Golder Associates Pty Ltd	Report No.	P 15020141-G
Project	Allawuna Proposed Landfill Site	Test Date	19/02/2015-25/02/2015
		Report Date	26/02/2015
Client ID	BA41	Depth (m)	1.5-4.2

Sieve Size (mm)	Passing %
150.0	
75.0	
53.0	
37.5	
26.5	
19.0	100
9.5	94
4.75	85
2.36	73
1.18	70
0.600	67
0.425	65
0.300	63
0.150	60
0.075	57
0.051	52
0.04	51
0.028	50
0.02	48
0.015	46
0.011	43
0.008	42
0.006	40
0.004	35
0.003	34
0.003	34
0.002	32
0.002	32
0.001	29



NOTES/REMARKS:

Moisture Content 23.2% -2.36mm Soil Particle Density(t/m³) 2.74
Sample/s supplied by the client

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ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING



APPENDIX G3

Laboratory Testing Certificates: Test Pit Investigation February 2014

Geotechnical Reports: Atterberg Limits

ATTERBERG LIMITS TEST REPORT

Test Method: AS 1289 2.1.1, 3.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Ltd	Report No.	P 15020129-AL
Project	Allawuna Proposed Landfill Site	Test Date	20/02/2015
		Report Date	23/02/2015

Sample No.	15020129	15020130	15020131	15020132	15020133	15020134
Client ID	BA03	BA10	BA10	BA12	BA12	BA23
Depth (m)	1.8-5.0	1.0-2.0	2.0-4.8	1.0-2.0	2.0-4.8	1.4-4.0
Liquid Limit (%)	39	32	49	28	34	52
Plastic Limit (%)	22	21	26	16	23	28
Plasticity Index (%)	17	11	23	12	11	24
Linear Shrinkage (%)	6.5*	6.0*+	8.5+	6.5+	4.5*+	10.5+
Field Moisture Content (%)	8.5	9.6	13.5	9.7	12.1	14.8

Sample No.	15020135	15020136	15020137	15020138	15020139	15020140
Client ID	BA24	BA20	BA20	BA35	BA35	BA38
Depth (m)	1.0-5.0	0.5-2.5	3.0-5.0	1.2-4.0	4.0-5.0	1.8-5.0
Liquid Limit (%)	61	35	48	44	47	46
Plastic Limit (%)	34	23	24	30	34	31
Plasticity Index (%)	27	12	24	14	13	15
Linear Shrinkage (%)	10.0+	5.5*+	8.5+	6.4+	4.0*	7.5*+
Field Moisture Content (%)	21.4	12.2	14.6	16.0	20.4	21.4

NOTES/REMARKS: The samples were tested oven dried, dry sieved and in a 125-250mm mould.

Sample/s supplied by the client * Crumbling occurred + Curling occurred Page 1 of 1 REP30101

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ATTERBERG LIMITS TEST REPORT

Test Method: AS 1289 2.1.1, 3.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Ltd	Report No.	P 15020141-AL
Project	Allawuna Proposed Landfill Site	Test Date	20/02/2015
		Report Date	23/02/2015

Sample No.	15020141					
Client ID	BA41					
Depth (m)	1.5-4.2					
Liquid Limit (%)	56					
Plastic Limit (%)	29					
Plasticity Index (%)	27					
Linear Shrinkage (%)	12.0+					
Field Moisture Content (%)	23.3					

NOTES/REMARKS: The samples were tested oven dried, dry sieved and in a 125-250mm mould.

Sample/s supplied by the client * Crumbling occurred + Curling occurred Page 1 of 1 REP30101

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APPENDIX H

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