



# SITE CLASSIFICATION REPORT

Zuccoli 3 & 4 Stage 1B

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

[HIQA.COM.AU](http://HIQA.COM.AU)

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## Document Information

Client	Ostojic Group Pty Ltd
Project	Zuccoli 3 & 4 Stage 1A – Site Classifications
Job/Report Number	D722 – 7532
Revision Number	1
Date	6/06/2016

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

[HIQA.COM.AU](http://HIQA.COM.AU)

### DARWIN

PHONE: (08) 8947 4802  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## Table of Contents

<b>1</b>	<b>Introduction</b>	<b>4</b>
1.1	Background	4
1.2	Scope of Works	4
<b>2</b>	<b>Site Conditions</b>	<b>6</b>
2.1	Regional Geological Description	6
2.2	Site Description	6
2.3	Subsurface Conditions	6
<b>3</b>	<b>Site Classification</b>	<b>7</b>
3.1	Allowable Bearing Capacity	7
3.2	Site Classification	7
3.3	Moisture Control	8
<b>4</b>	<b>Comments</b>	<b>8</b>
<b>5</b>	<b>Important Information about your Site Investigation &amp; Classification Report</b>	<b>9</b>
<b>6</b>	<b>General Notes &amp; Limitations of Geotechnical Site Investigation</b>	<b>11</b>

### Appendices

Appendix A	Site Plan
Appendix B	Visual & Tactile Classification - Test Pits
Appendix C	Laboratory Test Reports
Appendix D	CSIRO Information Sheet BTF 18

### Tables

Table 3.1	Classification Based off Site Reactivity	7
Table 3.2	Summary of Site Classifications	7

## 1. Introduction

HiQA Geotechnical (HiQA) have been commissioned by the Ostojic Group Pty Ltd (OST GRP) to undertake the site classification report for Zuccoli 3 & 4 Stage 1B. An investigation was undertaken on Stage 1B to ascertain the site classifications for each of the lots.

### 1.1 Background

Zuccoli 3 & 4 Stage 1B is located in Palmerston, a satellite city of Darwin located approximately 21km south east of Darwin. (refer **Figure 1**) Stage 1B is centred approximately at; Zone 52 L, Easting 718 149m & Northing 8616 230m.



**Figure 1 – Approximate Location of Stage 1B**

### 1.2 Scope of Works

The primary objective of the investigation was to assess the lots for their classification according to AS2870-2011. This is to aid the purchasers when building a home. OST GRP completed all filling operations on the site as per the requirements of AS3798-2007. The report covering the Level 1 Statement of Compliance indicates that all filling on the site is **Controlled** as per the requirements. The test pits undertaken are presented in **Appendix A**.

The scope of works were as follows;

- Undertake test pitting as per the requirements of AS2870-2011
- Log each test pit to AS1726
- DCP testing was undertaken adjacent to each test pit

HIQA.COM.AU



- Summarise all of the findings into a final report outlining the classifications

The site investigation, laboratory testing & reporting requirements were conducted with reference to the following publications;

- AS 1726 – Geotechnical Site Investigations
- AS 2870-2011 – Residential Slabs & Footings
- AS 3798-2007 – Guidelines on Earthworks for Commercial & Residential Developments
- Northern Territory Geological Survey, Geological Map Series

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## 2. Site Conditions

### 2.1 Regional Geological Description

The project site area is best described by the published maps & information provided by the Northern Territory Geological Survey. The particular map referenced is the 1:250,000 Geological Map Series (Sheet SD 52-4, Second Edition).

The map indicates that the site is underlain by Quaternary age deposits comprising unconsolidated sands and pisolitic and mottled laterite. The unconsolidated sands consist of ferruginous and clayey, sandy and gravelly soils commonly containing limonite pisolites, while the lateritic soils consist of both in-situ and re-worked remnants of standard lateritic profiles. The Quaternary deposits are indicated to be underlain by the Early Proterozoic Age Finnis River Group and the Mount Partridge Group.

### 2.2 Site Description

When the investigation took place the earthworks had been completed for Stage 1B. Stage 1B has a general slope from the northeast to the southeast. The blocks are flat and well graded with no vegetation on the site.

No groundwater or seepage was observed during the site works.

### 2.3 Subsurface Conditions

The subsurface material was assessed by undertaking bore holes (BH 1 – BH 200) with a Pioneer Drill Rig and 100mm auger attachment. An image of the site is attached in **Appendix A**. Detailed descriptive visual & tactile observations are presented in **Appendix B**.

The material encountered on site can be predominately described as a Sandy Silty GRAVEL or a Silty Sandy GRAVEL. The test pits that were undertaken in the cut areas predominately refused on an extremely weathered Sandstone/Siltstone. This layer of extremely weathered rock is consistent throughout the test pits and follows a typical pattern.

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

### 3. Site Classification

Australian Standard *AS2870-2011* establishes performance requirements and specific designs for common foundation conditions.

Site Classifications as defined in *AS2870-2011 – 2.1 - General – Table 2.1 – Classification Based on Site Reactivity* are summarised in **Table 3.1**.

**Table 3.1 – Classification Based on Site Reactivity**

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture change
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture change
H1	Highly reactive clay sites, which may experience high ground movement from moisture change
H2	Highly reactive clay sites, which may experience very high ground movement from moisture change
E	Extremely reactive sites, which may experience extreme ground movement from moisture change

#### 3.1 Allowable Bearing Capacity

Allowable bearing capacity assessments were undertaken via the use of DCP testing adjacent to select test pit. These results are presented in **Appendix C**.

The results of the fieldwork indicate the near surface foundation strata of the site **should** provide an allowable bearing capacity of at least 100 kpa.

#### 3.2 Site Classifications

In accordance with *AS2870-2011 Residential Slabs & Footings* the sites have been classified in **Table 3.2 – Summary of Site Classifications**.

**Table 3.2 – Summary of Site Classifications**

Lot Numbers	Site Classification
62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,90,91,92,93,94,96,101,102,104,106,107,108,109,110,112,113,115,116,122,123,131,132,133,134,135,136,143,144,145,146,147,148,149,150,169,179,180,181.	<b>Class S</b> – Slightly Reactive
89,97,98,99,100,124,125,126,127,128,129,130,137,138,139,140,141,142,151,152,153,154,155,156,157,158,160,161,162,163,164,165,166,167,168,170,171,172,173.	<b>Class P = S</b> - Reclassified due to <b>Controlled Fill</b> on the site. Slightly Reactive
159,174,175,176.	<b>Class P = M</b> - Reclassified due to <b>Controlled Fill</b> on the site. Moderately Reactive
95,103,105,111,114,117,118,119,120,121.	<b>Class M</b> – Moderately Reactive

HIQA.COM.AU

Detailed visual & tactile test pit logs are presented in **Appendix B**.

### 3.3 Moisture Control

In order to minimize the potential for unnatural or extreme moisture variation and subsequent soil volume changes within the foundation strata, the recommendations given in the CSIRO "Guide to home owners on foundation maintenance and footing performance" should be adopted.

## 4. Comments

Should you have any queries in relation to this report, please do not hesitate to contact HiQA.

Approved By;



Daniel Gaunt

HiQA Geotechnical  
Darwin Laboratory Branch Manager  
P: (08) 8947 4802  
M: 0458 726 111  
E: d.gaunt@hiqa.com.au

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## 5. Important Information about your Site Investigation & Classification Report

More construction problems are caused by site subsurface conditions than any other factor. As troublesome as subsurface problems can be, their frequency and extent have been lessened considerably in recent years, due in large measure to programs and publications of ASFE / The Association of Engineering Firms Practicing in Geosciences.

The following suggestions and observations are offered to help you reduce the geotechnical - related delays, costs – overruns and other costly headaches that can occur during a construction project.

### SITE INVESTIGATION & CLASSIFICATION REPORT IS BASED ON A UNIQUE SET OF PROJECT – SPECIFIC FACTORS

A Site Investigation & Classification Report is based on a surface exploration plan designed to incorporate a unique set of project-specific factors. These typically include: the general nature of the structure involved; its size and configuration; location of the structure on the site and its orientation; physical contaminants such as access roads, parking lots and underground utilities, and the level of additional risk which the client assumed by the virtue of limitations imposed upon the exploratory program. To help avoid costly problems, consult the geotechnical engineer to determine how any factors which change subsequent to the date of the report may affect its recommendations.

Unless your consulting geotechnical engineer indicates otherwise, your Geotechnical Engineering Report should not be used:

- When the nature of the proposed structure is changed, for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an un-refrigerated one;
- When the size or configuration of the proposed structure is altered;
- When the location or orientation of the proposed structure is modified;
- When there is a change of ownership;
- For an application to an adjacent site

*Geotechnical professionals cannot accept responsibility for problems which may develop if they are not consulted after the factors considered in the report have changed.*

### MOST GEOTECHNICAL “FINDINGS” ARE PROFESSIONAL ESTIMATES

Site exploration identifies actual subsurface conditions only at those points where samples are taken, when they are taken, data derived through sampling and subsequent laboratory testing are extrapolated by geotechnical engineers who then render an opinion about overall subsurface conditions, their likely reaction to proposed construction activity, and appropriate foundation design. Even under optimal circumstances actual conditions may differ from those inferred to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimize their impact. For this reason, most experienced owners retain their geotechnical consultants through the construction stage, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered onsite.

### SUBSURFACE CONDITIONS CAN CHANGE

Subsurface conditions may be modified by constantly changing natural forces. Because a geotechnical report is based on conditions which existed at the time of subsurface exploration, construction decisions should not be based on a geotechnical engineering report whose adequacy may have been affected by time. Speak with the geotechnical consultant to learn if additional tests are advisable before construction starts.

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Construction operations at or adjacent to the site and natural events such as floods, earthquakes or ground water fluctuations may also effect subsurface conditions and, thus continuing adequacy of a geotechnical report. The geotechnical engineer should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

**GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS**

Geotechnical engineer's reports are prepared to meet the specific needs of specific individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor, or even some other consulting civil engineer. Unless indicated otherwise, this report was prepared expressly for the client involved and expressly for purposes indicated by the client. Use by any other persons for any purpose, may result in problems. No individual other than the client should apply this report for its intended purpose without first conferring with the geotechnical engineer. No person should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.

#### **A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION**

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a geotechnical report. To help avoid these problems, the geotechnical engineer should be retained to work with other appropriate design professionals to explain relevant geotechnical findings and review adequacy of the plans and specifications relevant to geotechnical issues.

#### **BORING LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT**

Further boring logs are developed based upon interpretation of field logs assembled by site personnel and laboratory evaluation of field samples. Only final boring logs customarily are included in Site Investigation & Classification Reports. These logs should not under any circumstance be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimize the possibility of contractors, misinterpreting the logs during bid preparation. When this occurs delays, disputes and unanticipated results are the all too frequent result.

To minimize the likelihood of boring log misinterpretation, give contractors ready access to the complete geotechnical engineering report prepared or authorized for their use. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and adversarial attitudes which aggravate them to disproportionate scale.

#### **READ RESPONSIBILITY CLAUSES CLOSELY**

Because geotechnical engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines.

This situation has resulted in wholly unwarranted claims being lodged against geotechnical consultants. To help prevent this problem, geotechnical engineers have developed model clauses for use in written transmittals. These are not exculpatory clauses designed to foist geotechnical engineer's responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely.

[HIQA.COM.AU](http://HIQA.COM.AU)

#### **DARWIN**

PHONE: (08) 8947 4802  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### **KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### **ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## 6. General Notes & Limitations of Geotechnical Site Investigation

### GENERAL

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the introduction section(s) of the document. The report should not be used by other parties or for other purposes as it may not contain adequate or appropriate information.

### TEST PIT / BOREHOLE LOGGING

The information on the Logs (Borehole, Backhoe Pits, and Exposures etc.) has been based on a visual and tactile assessment except at the discrete locations where test information is available (field and/or laboratory results).

Reference should be made to our standard sheets for the definition of our logging procedures (Soils and Rock Description).

### GROUNDWATER

Unless otherwise indicated the water levels given on the test hole logs are the levels of free water or seepage in the test hole recorded at the given time of measuring. The actual groundwater level may differ from this recorded level depending on material permeability. Further variations of this level could occur with time due to such effects as seasonal and tidal fluctuations or construction activities. Final confirmation of levels can only be made by appropriate instrumentation and techniques and programs.

### INTERPRETATION OF RESULTS

The discussions and recommendations contained in this report are normally based on site evaluation from discrete test hole data. Generalized or idealized subsurface conditions (including any cross-sections contained in the report) have been assumed or prepared by interpolation/extrapolation of these data. As such these conditions are interpretation and must be considered as a guide only.

### CHANGE IN CONDITIONS

Local variations or anomalies in the generalized ground conditions used for this report can occur, particularly between discrete test hole locations. Furthermore, certain design or construction procedures may have been assumed in assessing the soil-structure interaction behaviour of the site.

### FOUNDATION DEPTH

Where referred to in this report, the recommended depth of any foundation (piles, caissons, footings, etc.) is an engineering estimate of the depth to which they should be constructed. The estimate is influenced and perhaps limited by the fieldwork method and testing carried out in connection with the site investigation, and other pertinent information as has been made available. The depth remains, however, an estimate and therefore liable to variation. Foundation drawings, designs and specifications based on this report should provide for variations in the final depth depending upon the ground conditions at each point of support.

### REPRODUCTION OF REPORTS

Where it is desired to reproduce the information contained in this report for the inclusion in the contract documents or engineering specifications of the subject development, such reproduction should include at least the entire relevant trial hole and test data, together with the appropriate standard description sheets and remarks in the written report of a factual or descriptive nature.

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## SCOPE OF SERVICES

This geotechnical site assessment report ("The Report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed between the Client and HiQA ("Scope of Services"). In some circumstances the Scope of Services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

## RELIANCE ON DATA

In preparing the report, HiQA has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("The Data"). Except as otherwise stated in the report, HiQA has not verified the accuracy or completeness of The Data to the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("Conclusions") are based in whole or part on The Data, those conclusions are contingent upon the accuracy and completeness of The Data. HiQA will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to HiQA.

## GEOTECHNICAL INVESTIGATION

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared to meet the specific needs of individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor or even some other consulting civil engineer. This report was prepared expressly for the Client and expressly for purposes indicated by the Client or his/her representative. Use by any other persons for any purpose or by the Client for a different purpose, might result in problems. The Client should not use this report for other than its intended purpose without seeking additional geotechnical advice.

## THIS GEOTECHNICAL REPORT IS BASED ON PROJECT-SPECIFIC FACTORS

This report is based on a subsurface investigation which was designed for project-specification factors, including the nature of any development, its size and configuration, the location of any development on the site and its orientation, and the location of access roads and parking areas. Unless further geotechnical advice is obtained this report cannot be used when the nature of any proposed development is changed, or when the size, configuration location or orientation of any proposed development is modified.

This report cannot be applied to an adjacent site. The Limitations of Site Investigation in making an assessment of a site from a limited number of boreholes or test pits there is the possibility that variations may occur between test locations. Site exploration identifies specific subsurface conditions only at those points from which samples have been taken. The risk that variations will not be detected can be reduced by increasing the frequency of test locations; however this often does not result in any overall cost savings for the project. The investigation programme undertaken is a professional estimate of the scope of investigation required to provide a general profile of the subsurface conditions. The data derived from the site investigation programme and subsequent laboratory testing are extrapolated across the site to form an inferred geological model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite investigations the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration programme, no matter how comprehensive, can reveal all subsurface details and anomalies. The borehole logs are the subjective interpretation of subsurface conditions at a particular location, made by trained personnel the interpretation may be limited by the method of investigation, and cannot always be definitive. For example, inspection of an excavation or test pit allows a greater area of the subsurface profile to be inspected than borehole investigation; however, such methods are limited by depth and site disturbance restrictions. In borehole investigation the actual interface between materials may be more gradual or abrupt than a report indicates.

## SUBSURFACE CONDITIONS ARE TIME DEPENDENT

Subsurface conditions may be modified by changing natural forces or man-made influences. This report is based on conditions which existed at the time of subsurface exploration. Construction operations at, or adjacent to the site and natural

HIQA.COM.AU

### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

events such as floods, or groundwater fluctuations, may also affect subsurface conditions and thus the continuing adequacy of a report. The geotechnical engineer should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

#### AVOID MISINTERPRETATION

A geotechnical engineer should be retained to work with other appropriate design professionals explaining relevant geotechnical findings and in reviewing the adequacy of their plans and specifications relative to geotechnical issues.

#### BORE PROFILE LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT

Bore/profile logs are developed by geotechnical engineers based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final bore/profile logs are included in geotechnical engineering reports. These logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings. To minimise the likelihood of bore/profile log misinterpretation, contractors should be given access to the complete geotechnical engineering report prepared or authorised for their use. Providing the best available information to contractors helps prevent costly construction problems. For further information on this matter reference should be made to Guidelines for the Provision of Geotechnical Information in Construction Contracts published by the Institution of Engineers Australia, National Headquarters. Canberra 1987.

#### GEOTECHNICAL INVOLVEMENT DURING CONSTRUCTION

During construction, excavation is frequently undertaken which exposes the actual subsurface conditions. For this reason geotechnical consultants should be retained through the construction stage, to identify variations if they are exposed and to conduct additional tests which may be required and to deal quickly with geotechnical problems if they arise

#### REPORT FOR BENEFIT OF CLIENT

The report has been prepared for the benefit of the Client and no other party. HiQA assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including, without limitation, matters arising from any negligent act or omission of HiQA or to any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

#### OTHER LIMITATIONS

HiQA will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

## APPENDIX A

### Site Plan

[HIQA.COM.AU](http://HIQA.COM.AU)

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871





HIQA.COM.AU

DARWIN

KATHERINE

ALICE SPRINGS





HIQA.COM.AU

DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

## APPENDIX B

### Visual & Tactile Classification - Test Pits

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
1	0.00 – 0.30	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
1	0.30 – 0.40	Moist	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Bedrock Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718008 Northing: 8615559 Lot 77												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
2	0.00 – 0.10	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
2	0.10 – 0.45	Moist	SM	Dark Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718009 Northing: 8615552 Between Lot 77 & 78												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	17/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
3	0.00 – 0.50	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
3	0.50 – 0.65	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718011 Northing: 8615547 Lot 78												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		17/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
4	0.00 – 0.25	Moist	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
4	0.25 – 0.40	Dry	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718014 Northing: 8615556 Lot 76												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
5	0.00 – 0.25	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
5	0.25 – 0.50	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 20 15	Fine to Course	Fine to Course	Angular-Sub Angular	-	Natural
5	0.50 – 0.70	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Angular-Sub Angular	-	Bedrock Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718021 Northing: 8615558 Between Lot 75 & 76												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
6	0.00 – 0.25	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
6	0.25 – 0.50	Dry	SM	Pale Yellow/Brown – SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 5	Fine to Course	-	-	-	Natural Extremely Weathered Sandstone
6	0.50 – 0.70	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 - -	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Sandstone Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718027 Northing: 8615560 Lot 75												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
7	0.00 – 0.25	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
7	0.25 – 1.50	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718035 Northing: 8615561 Between Lot 74/75												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
8	0.00 – 0.25	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 20 15	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	
8	0.25 – 0.50	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 15 15	Fine to Course	Fine to Medium	Angular-Sub Angular	EXTREMELY WEATHERD ROCK	Natural
8	0.50 – 1.00	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718043  
Northing: 8615566  
Lot 74

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	07/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
9	0.00 – 0.25	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
9	0.25 – 0.50	Dry	SM	Dark Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
9	0.50 – 0.70	Dry	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718048 Northing: 8615569 Between Lot 73/74												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	17/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
10	0.00 – 0.25	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
10	0.25 – 0.50	Moist	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Quartzite, Roots, Stump present Natural
10	0.50 – 0.55	Dry	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718048 Northing: 8615567 Lot 73												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
11	0.00 – 0.40	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
11	0.40 – 0.55	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Weathered Rock Quartzite present Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718052 Northing: 8615568 Between Lot 72/73												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	17/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
12	0.00 – 0.25	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
12	0.25 – 0.70	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
12	0.70 – 1.15	Dry	SM	Dark Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 1.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718067 Northing: 8615572 Lot 72												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
13	0.00 – 0.25	Moist	SC	Pale Red/Brown – Gravelly SAND with Clay	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
13	0.25 – 0.65	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
13	0.65 – 0.75	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural Roots, Wood present
13	0.75 – 1.05	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.05m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718073 Northing: 8615576 Between Lot 71 & 72												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	14/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
14	0.00 – 0.30	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
14	0.30 – 0.40	Moist	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Roots present Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718082 Northing: 8615580 Lot 71												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 17/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
15	0.00 – 0.25	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
15	0.25 – 0.70	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718090 Northing: 8615583 Between Lot 70 & 71												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		17/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
16	0.00 – 0.25	Moist	CI	Dark Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 55	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
16	0.25 – 0.65	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718096  
Northing: 8615585  
Lot 70

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	17/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
17	0.00 – 0.25	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
17	0.25 – 0.75	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
17	0.75 – 1.00	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718100 Northing: 8615588 Between Lot 69 & 70												

Easting: 0718100  
Northing: 8615588  
Between Lot 69 & 70

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
18	0.00 – 0.15	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
18	0.15 – 0.75	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 10 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
18	0.75 – 0.95	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 45 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718106 Northing: 8615589 Lot 69												

Easting: 0718106  
Northing: 8615589  
Lot 69

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
19	0.00 – 0.25	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
19	0.25 – 0.70	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	

Easting: 0718109  
 Northing: 8615593  
 Between Lot 68 & 69

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
20	0.00 – 0.20	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
20	0.20 – 0.30	Dry	SC	Gravelly Clayey SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 40 30	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718116  
Northing: 8615595  
Lot 68

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
21	0.00 – 0.20	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
21	0.20 – 0.45	Dry	GM	Pale Yellow/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Sandstone Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718122 Northing: 8615597 Between Lot 67 & 68												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
22	0.00 – 0.20	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
22	0.20 – 0.50	Dry	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
22	0.50 – 0.80	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718128 Northing: 8615599 Lot 67												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
23	0.00 – 0.20	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
23	0.20 – 0.55	Dry	CI	Pale Yellow/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718133 Northing: 8615601 Between Lot 66 & 67												

Easting: 0718133  
 Northing: 8615601  
 Between Lot 66 & 67

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
24	0.00 – 0.15	Moist	SM	Pale Red/Brown – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
24	0.15 – 0.35	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718140 Northing: 8615603 Lot 66												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
25	0.00 – 0.15	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 55 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
25	0.15 – 0.50	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718145 Northing: 8615605 Between Lot 65 & 66												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
26	0.00 – 0.20	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 45 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
26	0.20 – 0.35	Dry	SM	Pale Yellow – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Sandstone
26	0.35 – 0.45	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718151 Northing: 8615608 Lot 65												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
27	0.00 – 0.15	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 45 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
27	0.15 – 0.50	Dry	SC	Dark Orange/Brown – Gravelly SAND with Clay	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 50 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
27	0.50 – 0.70	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718154 Northing: 8615610 Between Lot 64 & 65												

Easting: 0718154  
Northing: 8615610  
Between Lot 64 & 65

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
28	0.00 – 0.15	Moist	CI	Dark Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
28	0.15 – 0.35	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 40 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
28	0.35 – 0.65	Dry	CI	Pale Yellow/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718163 Northing: 8615612 Lot 64												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
29	0.00 – 0.20	Moist	SC	Pale Red/Brown – Gravelly Clayey SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 35 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
29	0.20 – 0.50	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
29	0.50 – 0.55	Dry	SM	Pale Brown – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718167 Northing: 8615615 Between Lot 63 & 64												

Easting: 0718167  
Northing: 8615615  
Between Lot 63 & 64

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
30	0.00 – 0.20	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
30	0.20 – 0.40	Dry	GM	Pale Yellow/Brown – Clayey Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 45 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	
30	0.40 – 0.55	Dry	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718172 Northing: 8615617 Lot 63												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
31	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	30 0 5	-	-	Sub Angular-Sub Rounded	FILL	Quartzite present
31	0.25 – 0.50	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718217  
Northing: 8615675  
Lot 62

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
32	0.00 – 0.25	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
32	0.25 – 0.50	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
32	0.50 – 0.75	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718234 Northing: 8615646 Lot 62												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
33	0.00 – 0.25	Moist	GM	Dark Brown – Sandy Silty GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
33	0.25 – 0.70	Moist	SC	Dark Orange – Gravelly Clayey SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 35 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
33	0.70 – 0.95	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718281 Northing: 8615606 Lot 97												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
34	0.00 – 0.25	Moist	GC	Pale Orange/Brown – Clayey Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 35 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
34	0.25 – 0.50	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
34	0.50 – 0.75	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	60 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	
34	0.75 – 0.80	Dry	SC	Pale Orange/Brown – Gravelly Clayey SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 35 30	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718270 Northing: 8615604 Between Lot 97 & 98												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
35	0.00 – 0.25	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
35	0.25 – 0.50	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
35	0.50 – 1.00	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
35	1.00 – 1.10	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 1.10m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718264 Northing: 8615599 Lot 98												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
36	0.00 – 0.25	Moist	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
36	0.25 – 0.50	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	30 0 5	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	Quartzite present
36	0.50 – 0.60	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 15 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718261 Northing: 8615593 Between Lot 98 & 99												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
37	0.00 – 0.30	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
37	0.30 – 0.50	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	35 10 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	Quartzite present Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718255 Northing: 8615593 Lot 99												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
38	0.00 – 0.25	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
38	0.25 – 0.35	Moist	GM	Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Quartzite present Refusal @ 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718252 Northing: 8615591 Between Lot 99 & 100												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
39	0.00 – 0.35	Wet	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	30 10 15	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	Quartzite present Refusal @ 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718235 Northing: 8615592 Lot 100												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
40	0.00 – 0.50	Moist	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
40	0.50 – 0.65	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718226  
Northing: 8615589  
Between Lot 100 & 101

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		18/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
41	0.00 – 0.25	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
41	0.25 – 0.60	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718222  
Northing: 8615579  
Lot 101

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 18/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
42	0.00 – 0.20	Moist	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
42	0.20 – 0.65	Dry	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718217 Northing: 8615575 Between Lot 101 & 102												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
43	0.00 – 0.35	Moist	SM	Dark Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
43	0.35 – 0.45	Dry	SM	Dark Yellow/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718217 Northing: 8615583 Lot 102												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
44	0.00 – 0.35	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
44	0.35 – 0.50	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	
44	0.50 – 1.00	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718214  
Northing: 8615581  
Between Lot 102 & 103

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
45	0.00 – 0.25	Moist	GM	Dark Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
45	0.25 – 0.75	Dry	CI	Pale Orange/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
45	0.75 – 0.95	Dry	CI	Very Dark Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Easting: 0718208  
Northing: 8615576  
Lot 103

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
46	0.00 – 0.15	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 10 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	
46	0.15 – 0.70	Dry	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718201  
Northing: 8615571  
Between Lot 103 & 104

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
47	0.00 – 0.05	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
47	0.05 – 0.60	Dry	GM	Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718189  
Northing: 8615574  
Lot 104

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
48	0.00 – 0.20	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
48	0.20 – 0.95	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718183 Northing: 8615573 Between Lot 104 & 105												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
49	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
49	0.10 – 0.70	Dry	CI	Pale Orange/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718177  
Northing: 8615571  
Lot 105

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
50	0.00 – 0.10	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
50	0.10 – 0.50	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718168  
Northing: 8615567  
Between Lot 105 & 106

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :		22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
51	0.00 – 0.05	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
51	0.05 – 0.90	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 15 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.90m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	

Easting: 0718161  
Northing: 8615563  
Lot 106

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
52	0.00 – 0.10	Moist	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 10 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	
52	0.10 – 0.30	Moist	CI	Very Pale Orange/Brown – Sandy Gravelly SILT	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718134 Northing: 8615555 Lot 107												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
53	0.00 – 0.05	Moist	GM	Pale Yellow/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
53	0.05 – 0.25	Dry	SM	Pale Red/Brown – SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 5	Fine to Medium	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.25m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718137  
Northing: 8615550  
Between Lot 107 & 108

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface		
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
54	0.00 – 0.10	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
54	0.10 – 0.30	Dry	SM	Pale Orange – SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 10	Fine to Medium	-	-	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Easting: 0718135  
Northing: 8615541  
Lot 108

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
55	0.00 – 0.02	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
55	0.02 – 0.20	Dry	SM	Pale Yellow – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718140  
 Northing: 8615534  
 Between Lot 108 & 109

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
56	0.00 – 0.45	Moist	SM	Pale Orange – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718141 Northing: 8615529 Lot 109												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
57	0.00 – 0.75	Moist	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 5 5	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718146 Northing: 8615525 Between Lot 109 & 110												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
58	0.00 – 0.30	Moist	GM	Very Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718149 Northing: 8615515 Lot 110												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
59	0.00 – 0.15	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 5 5	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718150 Northing: 8615508 Between Lot 110 & 111												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
60	0.00 – 0.55	Moist	CI	Very Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718154 Northing: 8615501 Lot 111												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16		Drill Rig/Excavator :			Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
61	0.00 – 0.50	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 20 15	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
61	0.50 – 0.80	Dry	SM	Pale Brown – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	

Easting: 0718157  
Northing: 861494  
Between Lot 111 & 112

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
62	0.00 – 0.20	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718157 Northing: 8615490 Lot 112												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
63	0.00 – 0.25	Dry	CI	Pale Orange – Sandy Gravelly CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 45 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
63	0.25 – 1.00	Dry	CI	Very Pale – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718162 Northing: 8615486 Between Lot 112 & 113												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
64	0.00 – 0.30	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 5 5	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Quartzite present Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
					Easting: 0718166 Northing: 8615481 Lot 113							

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
65	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 10 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Quartzite present
65	0.25 – 0.55	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718168  
Northing: 8615474  
Between Lot 113 & 114

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
66	0.00 – 0.30	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
66	0.30 – 0.60	Dry	CI	Pale Yellow/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 45 40	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718169  
Northing: 8615468  
Lot 114

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
67	0.00 – 0.35	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
67	0.35 – 1.10	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with SILT	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 1.10m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718173 Northing: 8615460 Between Lot 114 & 115												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
68	0.00 – 0.30	Moist	GM	Dark Grey – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	25 0 5	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	
68	0.30 – 0.35	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718178 Northing: 8615449 Lot 115												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
69	0.00 – 0.25	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 0 5	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	
69	0.25 – 0.40	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718182 Northing: 8615438 Between Lot 115 & 116												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
70	0.00 – 0.30	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Quartzite present Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718184 Northing: 8615432 Lot 116												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		22/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
71	0.00 – 0.05	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
71	0.05 – 1.00	Dry	CI	Dark Orange – Sandy Gravelly CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718189  
Northing: 8615427  
Between Lot 116 & 117

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 22/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
72	0.00 – 0.20	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
72	0.20 – 0.60	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718186  
Northing: 8615413  
Lot 117

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
73	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
73	0.25 – 0.70	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718189 Northing: 8615405 Between Lot 117 & 118												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
74	0.00 – 0.20	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
74	0.20 – 0.50	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
74	0.50 – 0.95	Dry	CI	Very Pale Orange/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718194 Northing: 8615405 Lot 118												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
75	0.00 – 0.15	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
75	0.15 – 0.50	Dry	GM	Pale Orange – sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
75	0.50 – 0.70	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718197 Northing: 8615397 Between Lot 118 & 119												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
76	0.00 – 0.15	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
76	0.15 – 0.75	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
76	0.75 – 1.50	Dry	CI	Pale Yellow – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 60 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718198  
Northing: 8615394  
Lot 119

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
77	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
77	0.10 – 0.30	Moist	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
77	0.30 – 0.65	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718201 Northing: 8615387 Between Lot 119 & 120												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
78	0.00 – 0.15	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
78	0.15 – 0.30	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
78	0.30 – 0.50	Dry	GM	Very Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
78	0.50 – 0.80	Dry	SC	Very Pale Red/Brown – SAND with Clay	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 60 50	Fine to Course	-	-	EXTREMELY WEATHERD ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718204 Northing: 8615381 Lot 120												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
79	0.00 – 0.25	Moist	SW	Pale Brown – Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
79	0.25 – 0.50	Dry	GM	Dark Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
79	0.50 – 0.85	Dry	GM	Very Pale – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718207 Northing: 8615377 Between Lot 120 & 121												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
80	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
80	0.25 – 0.60	Dry	CI	Very Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718208 Northing: 8615367 Lot 121												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
81	0.00 – 0.40	Moist	SM	Pale Orange – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718210 Northing: 8615362 Between Lot 121 & 122												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
82	0.00 – 0.20	Dry	GW	Pale Orange – Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718211 Northing: 8615353 Lot 122												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
83	0.00 – 0.45	Dry	GW	Pale Orange – Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718214 Northing: 8615348 Between Lot 122 & 123												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
84	0.00 – 0.70	Moist	SM	Pale Orange - Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
					Easting: 0718217 Northing: 8615341 Lot 123							

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
85	0.00 – 0.35	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 45 35	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718097 Northing: 8615539 Lot 79												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
86	0.00 – 0.25	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
86	0.25 – 0.45	Dry	SM	Pale Yellow/Brown – SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 5	Fine to Course	-	-	EXTREMLEY WEATHERD ROCK	Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Easting: 0718101  
 Northing: 8615532  
 Between Lot 79 & 80

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
87	0.00 – 0.45	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718107 Northing: 8615528 Lot 80												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
88	0.00 – 0.50	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
88	0.50 – 0.85	Dry	CH	Very Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 60 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718110 Northing: 8615523 Between Lot 80 & 95												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
89	0.00 – 0.20	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
89	0.20 – 0.50	Dry	CI	Pale Orange – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural
89	0.50 – 0.90	Dry	CH	Very Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 60 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.90m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718111 Northing: 8615515 Lot 95												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	23/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
90	0.00 – 0.25	Moist	GM	Very Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
90	0.25 – 0.50	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
90	0.50 – 0.80	Dry	CL	Very Pale Brown – Gravelly Sandy SILT	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718113 Northing:8615507 Between Lot 95 & 96												

Easting: 0718113  
Northing: 8615507  
Between Lot 95 & 96

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 23/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
91	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
91	0.25 – 0.70	Dry	GM	Very Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718117 Northing: 8615501 Lot 96												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
92	0.00 – 1.10	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 1.10m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718086 Northing: 8615509 Lot 94												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
93	0.00 – 0.40	Dry	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718085 Northing: 8615503 Between Lot 93 & 94												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
94	0.00 – 0.50	Dry	GM	Dark Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
94	0.50 – 0.95	Dry	SM	Pale Orange – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718080  
Northing: 8615501  
Lot 93

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
95	0.00 – 0.30	Dry	GM	Pale Brown – sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718070 Northing: 8615496 Lot 92												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
96	0.00 – 0.40	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718064 Northing: 8615493 Between Lot 91 & 92												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
97	0.00 – 0.30	Dry	SM	Very Pale – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
					Easting: 0718058 Northing: 8615491 Lot 91							

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
98	0.00 – 0.15	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718053 Northing: 8615490 Between Lot 90 & 91												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
99	0.00 – 0.30	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
99	0.30 – 0.55	Dry	CH	Very Pale Orange/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 60 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718047  
Northing: 8615490  
Lot 90

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
100	0.00 – 0.25	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Roots present
100	0.25 – 0.50	Moist	SM	Very Pale Yellow/Brown – Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 15 10	Fine to Course	-	-	FILL	Roots present
100	0.50 – 1.00	Moist	SM	Pale Orange – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Roots present
100	1.00 – 1.15	Dry	SM	Pale Orange – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 1.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718031 Northing: 8615476 Lot 89												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
101	0.00 – 0.30	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	-	-	Sub Angular-Sub Rounded	FILL	Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718028 Northing: 8615483 Between Lot 88 & 89 Drilled many hours to try to get through layer at 0.30m without success.												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
102	0.00 – 0.40	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
102	0.40 – 0.55	Moist	SM	Very Dark Grey – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	TOPSOIL	Natural
102	0.55 – 0.70	Moist	SM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Roots present Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718028  
Northing: 8615487  
Lot 88

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
103	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
103	0.25 – 0.50	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Roots present Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718024 Northing: 8615500 Lot 87												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
104	0.00 – 0.35	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	30 10 10	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	FILL	
104	0.35 – 0.45	Dry	SM	Dark Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718021  
Northing: 8615504  
Between Lot 86 & 87

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
105	0.00 – 0.40	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
105	0.40 – 0.80	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718013  
 Northing: 8615507  
 Lot 86

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
106	0.00 – 0.15	Dry	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718036 Northing: 8615516 Lot 85												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
107	0.00 – 0.50	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
107	0.50 – 0.65	Dry	GM	Pale Brown – silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718040 Northing: 8615519 Between Lot 84 & 85												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
108	0.00 – 0.20	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718046 Northing: 8615522 Lot 84												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
109	0.00 – 0.25	Dry	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.25m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718058 Northing: 8615527 Lot 83												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
110	0.00 – 0.05	Moist	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
110	0.05 – 0.50	Dry	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718067  
 Northing: 8615526  
 Between Lot 82 & 83

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :		24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
111	0.00 – 0.15	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
111	0.15 – 1.15	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 1.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718071 Northing: 8615528 Lot 82												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
112	0.00 – 0.25	Dry	GM	Dark Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
112	0.25 – 0.70	Dry	GM	Dark Orange/Brown – Sandy Silty GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718077  
 Northing: 8615530  
 Between lot 81 & 82

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
113	0.00 – 0.50	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	
113	0.50 – 1.00	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718082 Northing: 8615535 Lot 81												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
114	0.00 – 0.60	Moist	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
114	0.60 – 1.00	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 1.00m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718120  
Northing: 8615475  
Lot 125

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
115	0.00 – 0.45	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718124 Northing: 8615477 Between Lot 124 & 125 Refused in Fill, Quartzite & Cobbles present												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
116	0.00 – 0.65	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
116	0.65 – 0.70	Dry	GW	Pale Brown – Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718136  
Northing: 8615470  
Lot 124

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :		24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
117	0.00 – 0.65	Moist	SM	Dark Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
117	0.65 – 0.75	Dry	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	

Easting: 0718136  
Northing: 8615447  
Lot 126

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
118	0.00 – 0.85	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
118	0.85 – 1.00	Moist	SM	Pale Grey – SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 10	Fine to Course	-	-	-	Natural
118	1.00 – 1.30	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718139 Northing: 8615440 Between Lot 126 & 127												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
119	0.00 – 0.65	Moist	SM	Dark Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718139 Northing: 8615432 Lot 127												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
120	0.00 – 0.50	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718146 Northing: 8615421 Lot 128 Quartzite & Cobbles present												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
121	0.00 – 0.25	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
121	0.25 – 0.45	Dry	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718151 Northing: 8615414 Between Lot 128 & 129												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
122	0.00 – 0.45	Moist	SM	Dark Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
122	0.45 – 0.60	Moist	SM	Pale Grey – Sand with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 5	Fine to Course	-	-	-	Natural
122	0.60 – 0.85	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718152 Northing: 8615411 Lot 129												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	24/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
123	0.00 – 0.45	Moist	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
123	0.45 – 0.55	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
123	0.55 – 1.05	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.05m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718157 Northing: 8615403 Between Lot 129 & 130 Strong organic odour												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 24/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
124	0.00 – 0.25	Moist	SM	Pale Orange/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
124	0.25 – 0.40	Moist	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718158  
Northing: 8615397  
Lot 130

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
125	0.00 – 0.25	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
125	0.25 – 0.60	Dry	GM	Pale Yellow/Brown – Silty sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718171 Northing: 8615388 Lot 131												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
126	0.00 – 0.20	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
126	0.20 – 0.65	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718162  
Northing: 8615384  
Between Lot 131 & 132

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
127	0.00 – 0.25	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
127	0.25 – 0.70	Dry	GM	Pale Yellow/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718156  
Northing: 8615380  
Lot 132

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
128	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
128	0.25 – 0.65	Dry	GM	Pale Yellow – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718140  
Northing: 8615374  
Lot 133

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
129	0.00 – 0.25	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
129	0.25 – 0.55	Dry	GM	Pale Yellow – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.55m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718134  
Northing: 8615371  
Between Lot 133 & 134

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
130	0.00 – 0.15	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
130	0.15 – 0.30	Dry	CI	Dark Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718128 Northing: 8615371 Lot 134												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		27/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
131	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
131	0.10 – 0.40	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718116 Northing: 8615371 Lot 135												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
132	0.00 – 0.20	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
132	0.20 – 0.60	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718113 Northing: 8615379 Between Lot 135 & 136												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
133	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
133	0.10 – 0.25	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
133	0.25 – 0.50	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718115 Northing: 8615390 Lot 136												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	27/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
134	0.00 – 0.20	Moist	SM	Dark Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
134	0.20 – 0.45	Moist	SM	Dark Grey/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics
134	0.45 – 0.60	Dry	CI	Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718123 Northing: 8615411 Lot 137												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
135	0.00 – 0.30	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
135	0.30 – 0.45	Dry	SM	Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718120 Northing: 8615420 Between Lot 137 & 138												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
136	0.00 – 0.45	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
136	0.45 – 0.50	Moist	SM	Dark Grey/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718120 Northing: 8615428 Lot 138												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
137	0.00 – 0.55	Moist	SM	Dark Red/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
137	0.55 – 0.75	Moist	SM	Dark Grey/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
137	0.75 – 0.80	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718114  
Northing: 8615444  
Lot 139

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	27/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
138	0.00 – 0.50	Moist	SM	Dark Red/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
138	0.50 – 0.65	Moist	SM	Dark Grey/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
138	0.65 – 0.75	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718111 Northing: 8615451 Between Lot 139 & 140												

Easting: 0718111  
Northing: 8615451  
Between Lot 139 & 140

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
139	0.00 – 0.60	Moist	SM	Dark Red/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
139	0.60 – 0.75	Dry	SM	Dark Red/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718108 Northing: 8615462 Lot 140												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
140	0.00 – 0.40	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
140	0.40 – 0.55	Moist	SM	Pale Grey/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
140	0.55 – 0.65	Dry	SM	Dark Orange – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718065 Northing: 8615449 Lot 141												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	27/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
141	0.00 – 0.20	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
141	0.20 – 0.35	Moist	SM	Pale Grey/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
141	0.35 – 0.45	Dry	SM	Pale Orange – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718066 Northing: 8615445 Between Lot 141 & 142												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
142	0.00 – 0.20	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
142	0.20 – 0.35	Moist	SM	Dark Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
142	0.35 – 0.45	Dry	SM	Pale Orange - SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 5 5	Fine to Course	-	-	EXTREMELY WEATHERD ROCK	Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718068 Northing: 8615434 Lot 142												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
143	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
143	0.10 – 0.30	Dry	SM	Pale Orange – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	

Easting: 0718069  
Northing: 8615419  
Lot 143

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
144	0.00 – 0.15	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
144	0.15 – 0.35	Dry	SM	Pale Orange – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718069 Northing: 8615411 Between Lot 143 & 144												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	27/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
145	0.00 – 0.15	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
145	0.15 – 0.25	Dry	GM	Dark Red/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
145	0.25 – 0.35	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718070 Northing: 8615405 Lot 144												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
146	0.00 – 0.15	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
146	0.15 – 0.55	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718070 Northing: 8615390 Lot 145												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
147	0.00 – 0.15	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
147	0.15 – 0.50	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718073 Northing: 8615379 Between Lot 145 & 146												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
148	0.00 – 0.15	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
148	0.15 – 0.45	Dry	CI	Pale Yellow/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.45m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718075  
Northing: 8615368  
Lot 146

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
149	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
149	0.10 – 0.25	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.25m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Easting: 0718066 Northing: 8615370 Lot 147												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	27/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
150	0.00 – 0.10	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
150	0.10 – 0.30	Dry	GM	Dark Red/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
150	0.30 – 0.70	Dry	GM	Dark Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718057 Northing: 8615371 Between Lot 147 & 148												

Easting: 0718057  
 Northing: 8615371  
 Between Lot 147 & 148

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
151	0.00 – 0.10	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
151	0.10 – 0.35	Dry	SM	Dark Red/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
151	0.35 – 0.80	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718054 Northing: 8615372 Lot 148												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
152	0.00 – 0.25	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
152	0.25 – 0.75	Dry	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718041 Northing: 8615373 Lot 149												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 27/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
153	0.00 – 0.20	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
153	0.20 – 0.65	Dry	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718039 Northing: 8615375 Between Lot 149 & 150												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
154	0.00 – 0.25	Dry	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
154	0.25 – 0.50	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
154	0.50 – 0.85	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718023  
Northing: 8615373  
Lot 150

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
155	0.00 – 0.40	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	
155	0.40 – 0.45	Moist	SM	Pale Grey/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
155	0.45 – 1.20	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 1.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Easting: 0718039  
Northing: 8615402  
Lot 151

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
156	0.00 – 0.35	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
156	0.35 – 0.50	Moist	GM	Pale Grey/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
156	0.50 – 0.90	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.90m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718038  
Northing: 8615407  
Between Lot 151 & 152

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
157	0.00 – 0.35	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
157	0.35 – 0.60	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Organics present
157	0.60 – 0.75	Dry	CI	Pale Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718041 Northing: 8615410 Lot 152												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
158	0.00 – 0.30	Moist	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
158	0.30 – 0.70	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718039 Northing: 8615415 Lot 153												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
159	0.00 – 0.20	Moist	GM	Dark Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
159	0.20 – 0.80	Dry	SM	Pale Orange – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718038 Northing: 8615421 Between Lot 153 & 154												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
160	0.00 – 0.35	Moist	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
160	0.35 – 0.55	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
160	0.55 – 0.85	Dry	SM	Pale Orange – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718040 Northing: 8615434 Lot 154												

Easting: 0718040  
Northing: 8615434  
Lot 154

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
161	0.00 – 0.05	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
161	0.05 – 0.30	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718181 Northing: 8615349 Lot 180												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
162	0.00 – 0.05	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
162	0.05 – 0.60	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718189  
 Northing: 8615343  
 Between Lot 180 & 181

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
163	0.00 – 0.20	Dry	GM	Dark Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural
163	0.20 – 0.40	Dry	-	Pale Orange – Gravelly Sandy SILT	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.40m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718192  
 Northing: 8615333  
 Lot 181

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
164	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	20 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
164	0.25 – 0.85	Dry	SM	Dark Red/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718165 Northing: 8615332 Lot 179												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
165	0.00 – 0.20	Moist	SM	Pale Red/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
165	0.20 – 0.35	Moist	SM	Pale Grey/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
165	0.35 – 0.70	Dry	SM	Dark Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718155 Northing: 8615328 Between Lot 178 & 179												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
166	0.00 – 0.35	Dry	SM	Pale Red/Brown – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 35 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
166	0.35 – 0.50	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
166	0.50 – 1.00	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718143 Northing: 8615325 Lot 178												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
167	0.00 – 0.35	Dry	SM	Pale Red/Brown – Gravelly Silty SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 35 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
167	0.35 – 0.50	Dry	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
167	0.50 – 0.95	Dry	GM	Pale Orange/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0718138 Northing: 8615323 Lot 177												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
168	0.00 – 0.30	Dry	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
168	0.30 – 0.45	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
168	0.45 – 0.80	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718128  
Northing: 8615323  
Between Lot 176 & 177

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
169	0.00 – 0.35	Dry	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
169	0.35 – 0.55	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
169	0.55 – 0.95	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718120  
Northing: 8615321  
Lot 176

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
170	0.00 – 0.35	Dry	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
170	0.35 – 0.55	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
170	0.55 – 0.90	Dry	GM	Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.90m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718110 Northing: 8615319 Lot 175												

Easting: 0718110  
Northing: 8615319  
Lot 175

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
171	0.00 – 0.40	Dry	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
171	0.40 – 0.55	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 0 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
171	0.55 – 1.00	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718101 Northing: 8615319 Between Lot 174 & 175												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
172	0.00 – 0.40	Dry	CI	Pale Red/Brown – Sandy Gravelly CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
172	0.40 – 0.80	Dry	SM	Pale Yellow/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.80m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718092 Northing: 8615319 Lot 174												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
173	0.00 – 0.45	Dry	SM	Pale Red/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
173	0.45 – 0.90	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718083  
Northing: 8615321  
Lot 173

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
174	0.00 – 0.55	Dry	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
174	0.55 – 1.10	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 1.10m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718074 Northing: 8615320 Between Lot 172 & 173												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
175	0.00 – 0.55	Dry	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
175	0.55 – 0.95	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718062 Northing: 8615322 Lot 172												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
176	0.00 – 0.40	Dry	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
176	0.40 – 0.90	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.90m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718051 Northing: 8615325 Lot 171												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
177	0.00 – 0.25	Dry	GM	Dark Red/Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
177	0.25 – 0.50	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
177	0.50 – 0.75	Dry	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 5 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718022 Northing: 8615313 Lot 170												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	29/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
178	0.00 – 0.35	Dry	GM	Pale Red/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
178	0.35 – 0.60	Moist	SM	Pale Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Organics present
178	0.60 – 0.70	Dry	SM	Pale Orange – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 0.70m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0718022 Northing: 8615323 Between Lot 169 & 170												

Easting: 0718022  
Northing: 8615323  
Between Lot 169 & 170

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 29/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
179	0.00 – 0.25	Dry	SM	Dark Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
179	0.25 – 0.35	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.35m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0718027  
Northing: 8615336  
Lot 169

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	26/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
180	0.00 – 0.15	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
180	0.15 – 0.25	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Roots present
180	0.25 – 0.50	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	
180	0.50 – 1.20	Dry	CI	Pale Orange – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Refusal @ 1.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717987 Northing: 8615323 Lot 168												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	26/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
181	0.00 – 0.20	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
181	0.20 – 0.30	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Roots present
181	0.30 – 0.50	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
181	0.50 – 0.95	Dry	CI	Dark Orange – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717990 Northing: 8615331 Between Lot 167 & 168												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :	26/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
182	0.00 – 0.25	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
182	0.25 – 0.35	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
182	0.35 – 0.50	Dry	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural
182	0.50 – 0.85	Dry	CI	Pale Orange – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 45	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717993 Northing: 8615342 Lot 167												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	26/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
183	0.00 – 0.55	Moist	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
183	0.55 – 0.75	Dry	SM	Pale Orange/Brown – SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	2 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Refusal @ 0.75m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717991 Northing: 8615354 Loy 166												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
184	0.00 – 0.65	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 30 25	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
184	0.65 – 0.85	Dry	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717990 Northing: 8615364 Between Lot 165 & 166												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
185	0.00 – 0.70	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	15 20 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
185	0.70 – 1.15	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717993  
 Northing: 8615374  
 Lot 165

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
186	0.00 – 0.70	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
186	0.70 – 0.85	Dry	GM	Pale Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717993  
Northing: 8615387  
Lot 164

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
187	0.00 – 0.80	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
187	0.80 – 1.10	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.10m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717995  
Northing: 8615395  
Between Lot 163 & 164

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
188	0.00 – 0.85	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
188	0.85 – 1.15	Dry	GM	PALE Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Natural Refusal @ 1.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717995 Northing: 8615403 Lot 163												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date :	26/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
189	0.00 – 0.85	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
189	0.85 – 1.15	Dry	GM	Pale Orange/Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 15 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMLEY WEATHERD ROCK	Natural Refusal @ 1.15m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717995 Northing: 8615408 Lot 162												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
190	0.00 – 0.50	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
190	0.50 – 0.65	Dry	SM	Pale Orange/Brown – Gravelly SAND with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717995 Northing: 8615413 Between Lot 161 & 162												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
191	0.00 – 0.85	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
191	0.85 – 0.95	Dry	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 0.95m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717996  
Northing: 8615419  
Lot 161

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
192	0.00 – 0.85	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
192	0.85 – 1.00	Dry	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 1.0m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717992  
Northing: 8615434  
Lot 160

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
193	0.00 – 0.25	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
193	0.25 – 0.60	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.60m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717991  
Northing: 8615442  
Between Lot 159 & 160

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
194	0.00 – 0.75	Moist	CI	Pale Red/Brown – Gravelly Sandy CLAY	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 50 50	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
194	0.75 – 0.85	Dry	SM	Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.85m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717991  
Northing: 8615452  
Lot 159

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
195	0.00 – 0.50	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717979 Northing: 8615467 Lot 158 Refused on Cobble Layer												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
196	0.00 – 0.25	Moist	SM	Pale Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717976 Northing: 8615473 Between Lot 157 & 158												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
197	0.00 – 0.20	Moist	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.20m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717977 Northing: 8615480 Lot 157 Refused on Boulders & Cobbles												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date :		26/3/16		Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger			Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
198	0.00 – 0.30	Moist	SM	Dark Red/Brown – Silty Gravelly SAND	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 30 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	Refusal @ 0.30m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Easting: 0717970 Northing: 8615506 Lot 156 Refused on Boulders & Cobbles												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
199	0.00 – 0.60	Moist	GM	Dark Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
199	0.60 – 0.65	Dry	GM	Pale Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	5 20 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	Natural Refusal @ 0.65m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Easting: 0717967  
Northing: 8615515  
Between Lot 155 & 156

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

**DARWIN**

PHONE: (08) 8947 4802  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

**KATHERINE**

PHONE: (08) 8947 4802  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

**ALICE SPRINGS**

PHONE: (08) 8947 4802  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

Date : 26/3/16			Drill Rig/Excavator :		Pioneer Drill Rig 100mm Auger				Surface Elevation :		Finished Surface	
TP/BH (No.)	Depth (m)	Estimated Moisture Condition	USC	Colour & Visual Description	Estimated Consistency	Estimated Properties	-	Estimated Sand Grain Size	Estimated Gravel Grain Size	Estimated Gravel Shape	Estimated Material Origin	Comments
200	0.00 – 0.60	Moist	GM	Pale Brown – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 10 10	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	FILL	
200	0.60 – 0.75	Moist	GM	Dark Brown – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 20	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural Roots, Organics present
200	0.75 – 1.50	Moist	GM	Pale Orange – Silty Sandy GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 25 15	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	Refusal @ 1.50m
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
Easting: 0717969 Northing: 8615516 Lot 155												

\*\*Constituent Parts are logged: Second Least MOST, MPS = Maximum Particle Size, \*\*LL = Liquid Limit, Pass. 0.075 = Passing the 0.075mm Sieve\*\*

HIQA.COM.AU

#### DARWIN

PHONE: (08) 8947 4802  
 EMAIL: DARWIN@HIQA.COM.AU  
 OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
 POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
 EMAIL: KATHERINE@HIQA.COM.AU  
 OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
 POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
 EMAIL: ALICE@HIQA.COM.AU  
 OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
 POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

## APPENDIX C

### Laboratory Test Reports

[HIQA.COM.AU](http://HIQA.COM.AU)

#### DARWIN

PHONE: (08) 8947 4802  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 1		7069/ 2		7069/ 3		7069/ 4		7069/ 5		
Location:	Bore Hole 1		Bore Hole 2		Bore Hole 3		Bore Hole 4		Bore Hole 5		
Starting Depth (m):	0.0		0.00		0.00		0.00		0.00		
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs		
Moisture Condition:	Moist		Moist		Moist		Moist		Moist		
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A		
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	
0-100	11	9	15	7	11	9	10	10	14	7	
100-200	16	6	25	4	16	6	16	6	25	4	
200-300	25	4			15	7	25	4			
300-400					12	8					
400-500					5	20					
500-600					8	13					
600-700					12	8					
700-800					14	7					
800-900					25	4					
900-1000											
1000-1100											
1100-1200											
1200-1300											
1300-1400											
1400-1500											
1500-1600											
1600-1700											
1700-1800											
1800-1900											
1900-2000											
Remarks:	All test stopped at Refusal										



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo





## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 6		7069/ 7		7069/ 8		7069/ 9		7069/ 10		
Location:	Bore Hole 6		Bore Hole 7		Bore Hole 8		Bore Hole 9		Bore Hole 10		
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0		
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs		
Moisture Condition:	Moist		Moist		Moist		Moist		Moist		
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A		
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	
0-100	10	10	12	8	8	13	9	11	9	11	
100-200	11	9	9	11	5	20	4	25	20	5	
200-300	21	5	19	5	13	8	16	6	25	4	
300-400	25	4	10	10	10	10	10	10			
400-500			25	4	8	13	8	13			
500-600					9	11	10	10			
600-700					10	10	25	4			
700-800					19	5					
800-900					25	4					
900-1000											
1000-1100											
1100-1200											
1200-1300											
1300-1400											
1400-1500											
1500-1600											
1600-1700											
1700-1800											
1800-1900											
1900-2000											
Remarks:	All test stopped at Refusal										



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo

# DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : Ostojic Group Pty Ltd  
Contractor: -  
Project : Zuccoli 3 & 4 Stage 1B - Site Classifications  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 11		7069/ 12		7069/ 13		7069/ 14		7069/ 15	
Location:	Bore Hole 11		Bore Hole 12		Bore Hole 13		Bore Hole 14		Bore Hole 15	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	9	11	8	13	7	14	13	8	10	10
100-200	20	5	6	17	9	11	19	5	14	7
200-300	19	5	24	4	23	4	25	4	25	4
300-400	25	4	25	10	25	4				
400-500										
500-600										
600-700										
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:		7069/ 16		7069/ 17		7069/ 18		7069/ 19		7069/ 20	
Location:		Bore Hole 16		Bore Hole 17		Bore Hole 18		Bore Hole 19		Bore Hole 20	
Starting Depth (m):		0.0		0.0		0.0		0.0		0.0	
Soil Description:		Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:		Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:		N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)		Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100		15	7	11	9	11	9	18	6	19	5
100-200		25	4	16	6	19	5	23	4	24	4
200-300				25	4	25	4	25	4	25	4
300-400											
400-500											
500-600											
600-700											
700-800											
800-900											
900-1000											
1000-1100											
1100-1200											
1200-1300											
1300-1400											
1400-1500											
1500-1600											
1600-1700											
1700-1800											
1800-1900											
1900-2000											
<b>Remarks:</b>	All test stopped at Refusal										



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 21		7069/ 22		7069/ 23		7069/ 24		7069/ 25	
Location:	Bore Hole 21		Bore Hole 22		Bore Hole 23		Bore Hole 24		Bore Hole 25	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	16	6	19	5	24	4	25	4	25	4
100-200	25	4	25	4	25	4	25	4	25	4
200-300										
300-400										
400-500										
500-600										
600-700										
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo



GEOTECHNICAL

# DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 26		7069/ 27		7069/ 28		7069/ 29		7069/ 30	
Location:	Bore Hole 26		Bore Hole 27		Bore Hole 28		Bore Hole 29		Bore Hole 30	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	14	7	22	5	18	6	21	5	16	6
100-200	25	4	19	5	20	5	18	6	20	5
200-300			17	6	22	5	13	8	25	4
300-400			25	4	25	4	14	7		
400-500							14	7		
500-600							14	7		
600-700							9	11		
700-800							13	8		
800-900							25	4		
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 31		7069/ 32		7069/ 33		7069/ 34		7069/ 35	
Location:	Bore Hole 31		Bore Hole 32		Bore Hole 33		Bore Hole 34		Bore Hole 35	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	8	13	3	33	3	33	16	6	18	6
100-200	8	13	8	13	4	25	24	4	25	4
200-300	16	6	6	17	3	33	15	7		
300-400	25	4	4	4	6	17	12	8		
400-500			6	17	11	9	9	11		
500-600			7	14	11	9	9	11		
600-700			15	7	25	4	7	14		
700-800			25	4			12	8		
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	Test no. 31, 32, 33 & 35 stopped at Refusal									



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Bore Holes  
Job No.: D722 Sample No.: 7069  
Test Date: 17/03/2016 By: Client  
Check Date: 22/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7069/ 36		7069/ 37		7069/ 38		7069/ 39		7069/ 40	
Location:	Bore Hole 36		Bore Hole 37		Bore Hole 38		Bore Hole 39		Bore Hole 40	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	25	4	18	6	18	6	10	10	16	6
100-200	25	4	25	4	25	4	8	13	17	6
200-300							8	13	14	7
300-400							14	7	25	4
400-500							25	4		
500-600										
600-700										
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7069  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo





## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7101  
Test Date: 18/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7101/ 1		7101/ 2		7101/ 3		7101/ 4		7101/ 5	
Location:	Borehole 41		Borehole 42		Borehole 43		Borehole 44		Borehole 45	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	9	11	10	10	7	14	24	4	24	4
100-200	13	8	12	8	9	11	25	4	25	4
200-300	12	8	12	8	9	11				
300-400	19	5	18	6	14	7				
400-500	16	6	20	5	25	4				
500-600	25	4	25	4						
600-700										
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7101  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7101  
Test Date: 18/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7101/ 6		7101/ 7		7101/ 8		7101/ 9		7101/ 10	
Location:	Borehole 46		Borehole 47		Borehole 48		Borehole 49		Borehole 50	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	8	13	13	8	19	5	13	8	9	11
100-200	8	13	21	5	25	4	20	5	5	20
200-300	9	11	14	7			10	10	5	20
300-400	19	5	25	4			11	9	4	25
400-500	18	6					13	8	4	25
500-600	25	4					25	4	6	17
600-700									25	4
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7101  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A.Bravo*  
A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7102 / A  
Test Date: 22/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7102/ 1		7102/ 2		7102/ 3		7102/ 4		7102/ 5	
Location:	Borehole 51		Borehole 52		Borehole 53		Borehole 54		Borehole 55	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	20	5	25	4	6	17	9	11	13	8
100-200	25	4			5	20	9	11	8	13
200-300					6	17	25	4	4	25
300-400					5	20			5	20
400-500					25	4			25	4
500-600										
600-700										
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7102/A  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

*(Signature)*  
A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7102 / A  
Test Date: 22/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7102/ 6		7102/ 7		7102/ 8		7102/ 9		7102/ 10	
Location:	Borehole 56		Borehole 57		Borehole 58		Borehole 59		Borehole 60	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	5	20	6	17	25	4	7	14	7	14
100-200	9	11	6	17			7	14	6	17
200-300	25	4	25	4			6	17	6	17
300-400							5	20	5	20
400-500							5	20	25	4
500-600							4	25		
600-700							5	20		
700-800							6	17		
800-900							7	14		
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	Test 6,7,8 & 10 stopped at Refusal									



Accredited No. 13121  
Report No. D722 7102/A  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7102 / B  
Test Date: 22/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7102/ 11		7102/ 12		7102/ 13		7102/ 14		7102/ 15	
Location:	Borehole 61		Borehole 62		Borehole 63		Borehole 64		Borehole 65	
Starting Depth (m):	0.0		0.0		0.0		0.0		0.0	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:	N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	7	14	14	7	8	13	16	6	9	11
100-200	7	14	13	8	10	10	25	4	15	7
200-300	6	17	8	13	10	10			25	4
300-400	5	20	5	20	25	4				
400-500	25	4	4	25						
500-600			4	25						
600-700			25	4						
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7102/B  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

*(Signature)*  
A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7102 / B  
Test Date: 22/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:		7102/ 16		7102/ 17		7102/ 18		7102/ 19		7102/ 20	
Location:		Borehole 66		Borehole 67		Borehole 68		Borehole 69		Borehole 70	
Starting Depth (m):		0.0		0.0		0.0		0.0		0.0	
Soil Description:		Refer logs		Refer logs		Refer logs		Refer logs		Refer logs	
Moisture Condition:		Moist		Moist		Moist		Moist		Moist	
Ground Water Depth:		N/A		N/A		N/A		N/A		N/A	
Depth Below Start (mm)		Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100		10	10	7	14	16	6	16	6	19	5
100-200		25	4	17	6	16	6	15	7	19	5
200-300				12	8	25	4	8	13	25	4
300-400				16	6			9	11		
400-500				25	4			14	7		
500-600								14	7		
600-700								25	4		
700-800											
800-900											
900-1000											
1000-1100											
1100-1200											
1200-1300											
1300-1400											
1400-1500											
1500-1600											
1600-1700											
1700-1800											
1800-1900											
1900-2000											
Remarks:		All test stopped at Refusal									



Accredited No. 13121  
Report No. D722 7102/B  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*(Signature)*  
A.Bravo



## DYNAMIC CONE PENETROMETER REPORT

ACN: 130669493  
Shed 1 No. 6 Wedding Road Tivendale, NT 0822  
Postal Address : PO Box 35964 Winnellie,  
NT 0821  
Telephone : (08) 8947 4802  
Email: [darwin@hiqa.com.au](mailto:darwin@hiqa.com.au)

Client : **Ostojic Group Pty Ltd**  
Contractor: -  
Project : **Zuccoli 3 & 4 Stage 1B - Site Classifications**  
Location : Various Boreholes  
Job No.: D722 Sample No.: 7103  
Test Date: 29/03/2016 By: GC  
Check Date: 30/03/2016 By: A.Bravo  
Client Ref.: 53273

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	7103/ 1		7103/ 2		7103/ 3					
Location:	Borehole 111		Borehole 112		Borehole 113					
Starting Depth (m):	0.0		0.0		0.0					
Soil Description:	Refer Logs		Refer Logs		Refer Logs					
Moisture Condition:	Moist		Moist		Moist					
Ground Water Depth:	N/A		N/A		N/A					
Depth Below Start (mm)	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow	Blows per 100mm	mm per Blow
0-100	16	6	17	6	14	7				
100-200	25	4	25	4	15	7				
200-300					25	4				
300-400										
400-500										
500-600										
600-700										
700-800										
800-900										
900-1000										
1000-1100										
1100-1200										
1200-1300										
1300-1400										
1400-1500										
1500-1600										
1600-1700										
1700-1800										
1800-1900										
1900-2000										
Remarks:	All test stopped at Refusal. DCP hammer broke									



Accredited No. 13121  
Report No. D722 7103  
Date of Issue: 5/05/2016

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

*A.Bravo*  
A.Bravo



PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

## APPENDIX D

CSIRO Information Sheet BTF 18

[HIQA.COM.AU](http://HIQA.COM.AU)

### DARWIN

PHONE: (08) 8947 4802  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 1/6 WEDDING ROAD, TIVENDALE NT 0822  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

### KATHERINE

PHONE: (08) 8947 4802  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

### ALICE SPRINGS

PHONE: (08) 8947 4802  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/70 LOVEGROVE DRIVE, ARALUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

# Foundation Maintenance and Footing Performance: A Homeowner's Guide



CSIRO

BTF 18

replaces

Information

Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

## Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

## Causes of Movement

### Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

### Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

### Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

### Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

### Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

## GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

### Tree root growth

Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

### Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

### Effects of Uneven Soil Movement on Structures

#### Erosion and saturation

Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpend).

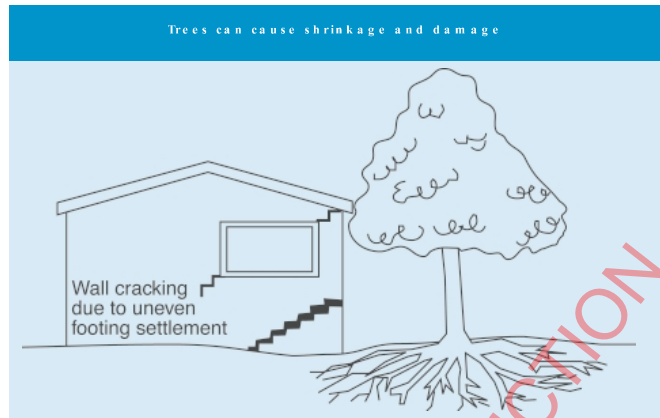
Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

#### Seasonal swelling/shrinkage in clay

Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.



As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

#### Movement caused by tree roots

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

#### Complications caused by the structure itself

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

#### Effects on full masonry structures

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.



The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

#### Effects on framed structures

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

#### Effects on brick veneer structures

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

#### Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.

Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.

- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

#### Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

#### Prevention / Cure

##### Plumbing

Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

##### Ground drainage

In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

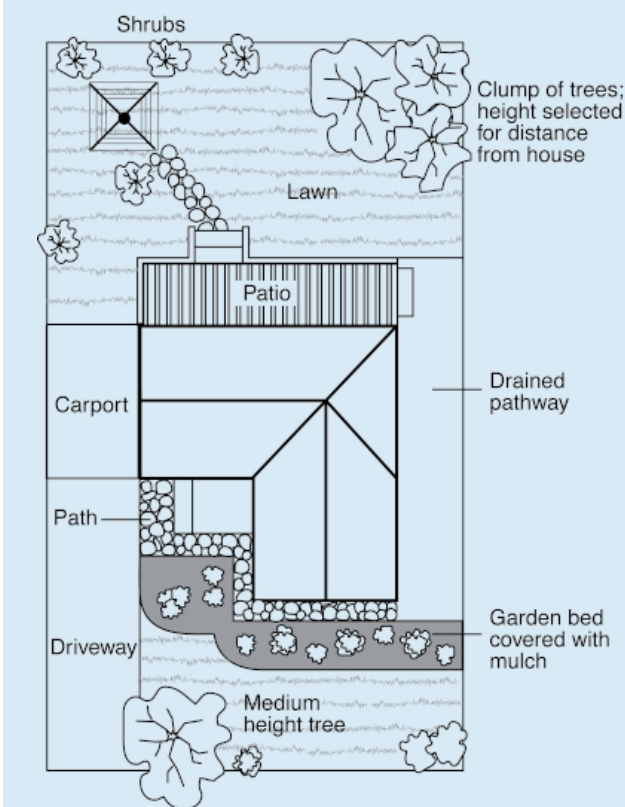
##### Protection of the building perimeter

It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15–25 mm but also depend on number of cracks	4



- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

#### The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

#### Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

#### Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

#### Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

#### Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

#### Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

**Warning:** Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

The information in this and other issues in the series was derived from various sources and was believed to be correct when published.

The information is advisory. It is provided in good faith and not claimed to be an exhaustive treatment of the relevant subject.

Further professional advice needs to be obtained before taking any action based on the information provided.

Distributed by

CSIRO PUBLISHING PO Box 1139, Collingwood 3066, Australia

Freecall 1800 645 051 Tel (03) 9662 7666 Fax (03) 9662 7555 www.publish.csiro.au

Email: publishing.sales@csiro.au

© CSIRO 2003. Unauthorised copying of this Building Technology file is prohibited



# LEVEL 1 STATEMENT OF COMPLIANCE

Zuccoli 3 & 4 Stage 1A

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

[HIQA.COM.AU](http://HIQA.COM.AU)

#### DARWIN

PHONE: (08) 8947 4802 OR 0458 726 111  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 3/8 SWAN CRESCENT, WINNELLIE NT 0820  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: 0427 299 536  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: 0409 305 943  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/7 GHAN ROAD, ALICE SPRINGS NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## Document Information

Client	Ostojic Group Pty Ltd
Project	Zuccoli 3 & 4 Stage 1A
Job/Report Number	D575 – 6699
Revision Number	1
Date	24/01/2016

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

[HIQA.COM.AU](http://HIQA.COM.AU)

### DARWIN

PHONE: (08) 8947 4802 OR 0458 726 111  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 3/8 SWAN CRESCENT, WINNELLIE NT 0820  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

### KATHERINE

PHONE: 0427 299 536  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

### ALICE SPRINGS

PHONE: 0409 305 943  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/7 GHAN ROAD, ALICE SPRINGS NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871



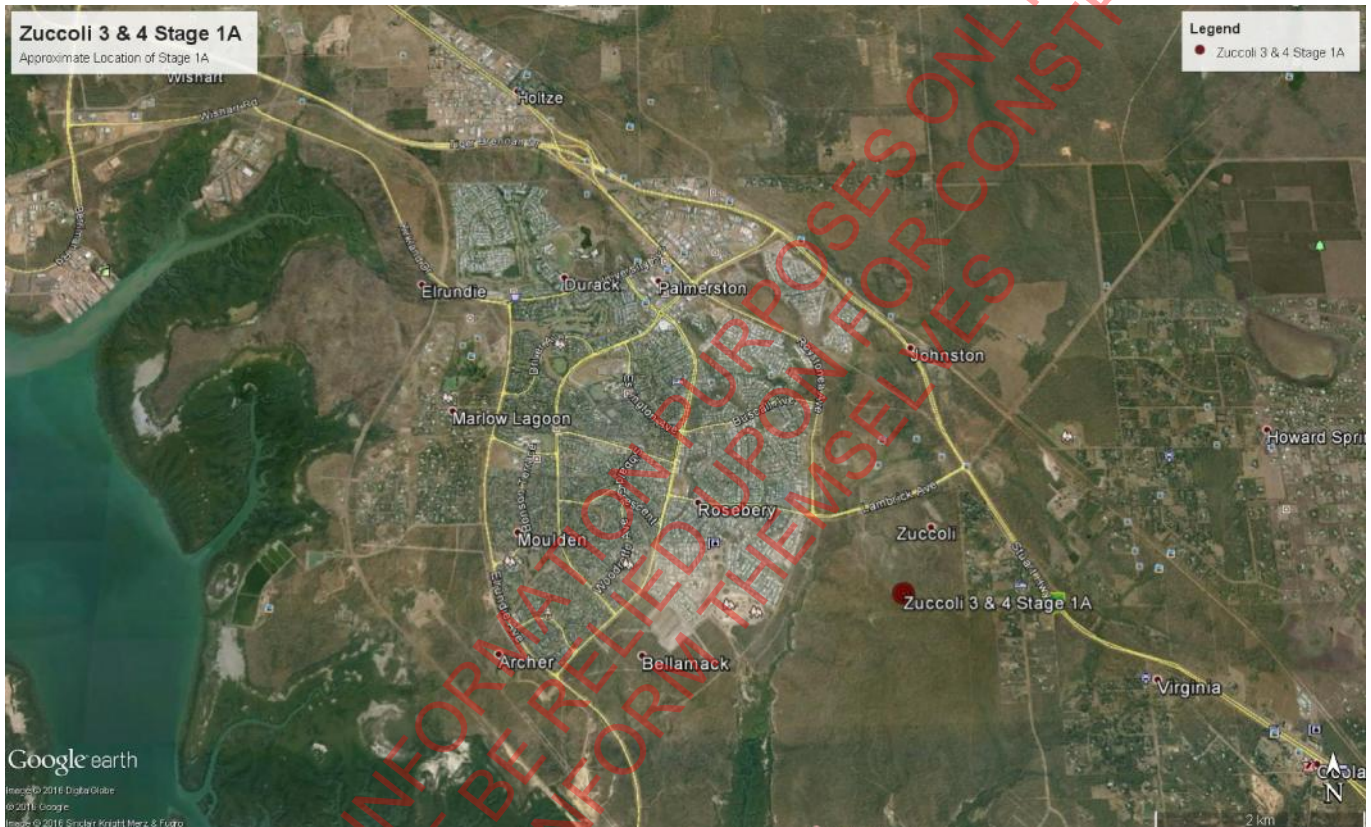
## Table of Contents

<b>1</b>	<b>Introduction</b>	<b>4</b>
1.1	Scope of Works	4
1.2	Project Specifications	5
<b>2</b>	<b>Site Works</b>	<b>6</b>
2.1	Fill Materials Used	6
2.2	Construction Techniques	6
<b>3</b>	<b>Geotechnical Inspection &amp; Testing</b>	<b>7</b>
3.1	Site Description & Stripping Undertaken	7
3.2	Ground Surface Treatment & Test Rolling	7
3.3	Compaction Control Testing	7
3.4	Finish Level Test Rolling	7
<b>4</b>	<b>Conclusion</b>	<b>8</b>
<b>5</b>	<b>General Clarifications &amp; Exclusions</b>	<b>8</b>
<b>Appendices</b>		
Appendix A	Site Plan	9
Appendix B	Laboratory Test Results	12

## 1. Introduction

HiQA Geotechnical (HiQA) were commissioned by Ostoic Group Pty Ltd (OST GRP) to undertake Level (1) supervision & certification of the fill placement for Zuccoli 3 & 4 Stage 1A. The fill areas covered during this phase of the works are highlighted in **Appendix A**. Please note this report does not address any other engineering issues associated with the project.

Zuccoli 3 & 4 Stage 1A is located in Palmerston, a satellite city of Darwin located approximately 21km south east of Darwin. (refer **Figure 1**) Stage 1A is centred approximately at; Zone 52 L, Easting 718 149m & Northing 8616 230m.



**Figure 1 – Approximate Location of Stage 1A**

### 1.1 Scope of Works

Level (1) supervision was conducted by HiQA from the 19<sup>th</sup> of June 2015 to the 13<sup>th</sup> of August 2015. This included & covered the following areas;

- Levels after stripping
- Materials exposed after stripping and the criteria upon which the decision to cease was made
- Levels after completion of filling
- Details of test rolling
- Types of fill material
- Sources of fill material
- Location & level of each compliance test & the test results
- Records of any remediation works that were required

HIQA.COM.AU

## 1.2 Project Specifications

At the start of the project OST GRP & SMEC Australia Pty Ltd (being the certifying engineers) (SMEC) agreed on the standards & specifications that were to be referenced during supervision. Level (1) supervision, laboratory testing & reporting was conducted with reference to the following publications & specifications;

- AS 1289 – Methods of Testing Soil for Engineering Purposes
- AS 3798-2007 – Guidelines on Earthworks for Commercial & Residential Developments
- NTTM & NTCP - Department of Infrastructure Materials Testing Manual
- SMEC Australia Pty Ltd – Zuccoli Aspire Stage Technical Specification
- City of Palmerston – Subdivision and Development Guidelines – Draft REV C.3

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

HIQA.COM.AU

### DARWIN

PHONE: (08) 8947 4802 OR 0458 726 111  
EMAIL: DARWIN@HIQA.COM.AU  
OFFICE: 3/8 SWAN CRESCENT, WINNELLIE NT 0820  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

### KATHERINE

PHONE: 0427 299 536  
EMAIL: KATHERINE@HIQA.COM.AU  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

### ALICE SPRINGS

PHONE: 0409 305 943  
EMAIL: ALICE@HIQA.COM.AU  
OFFICE: 2/7 GHAN ROAD, ALICE SPRINGS NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## 2. Site Works

The works undertaken would be considered a Type 1 Large Scale Operation according to the AS 3798-2007-Table 8.1-Frequency of Field Density Tests. Site works were conducted accordingly.

### 2.1 Fill Materials Used

As per the estimated volumes indicated on Drawing No. 30080027E-01-101, the approximate total volume of fill on Stage 1 is 23,556m<sup>3</sup>. A vast majority of this is contained within Stage 1A. All fill used was won locally from within Stage 1A & 1B. The fill material can be best described as a Silty Sandy GRAVEL or a Silty GRAVEL.

### 2.2 Construction Techniques

The OST GRP essentially followed a similar & uniform process for stripping & filling throughout the Level (1) Supervision. The process was as follows;

- Strip material using a scraper
- Scraper stockpiled material for moisture conditioning
- Material was moisture conditioned using a grader & water carts
- With a Scraper, the moisture conditioned material was then placed in uniform layers over the fill areas
- Loose fill was then further mixed with a Grader & compacted using a Pad Foot Roller

During this procedure the material being stripped was assessed for suitability. Any material stripped that was assessed to be unsuitable for use was removed from site.

HIQA.COM.AU



### 3. Geotechnical Inspection & Testing

The site was stripped, unsuitable material removed, proof rolled & compaction control testing was regularly undertaken during construction. This was completed in accordance with the recommendations & frequencies given in AS 3798-2007.

#### 3.1 Site Description & Stripping Undertaken

Stage 1A was originally medium to densely wooded throughout. Before construction started the general slop of the area was approximately in a South Westerly direction. OST GRP cleared & stockpiled all of the cleared flora off site for wood chipping.

An average depth of 100mm of topsoil was removed (where required) over the entire area. The areas requiring filling were assessed for unsuitable material. It was decided by HiQA, OST GRP & SMEC that a further 250mm of material be removed from Lots 004, 012, 013, 014, 015, 016, 017, 018 & 046. This material was stripped & mixed 50/50 with fill won from site.

#### 3.2 Ground Surface Treatment & Test Rolling

The exposed Ground Surface was treated according to AS 3798-2007 - *Table 5.1 – Minimum Relative Compaction Notes 7 & 8* and the treated surface was test rolled.

All areas of the ground surface exposed after stripping (requiring fill to be placed on top) was test rolled and was assessed to be compliant according to AS 3798-2007 – *Section 5 Compaction Criteria - 5.5 Test Rolling*.

#### 3.3 Compaction Control Testing

At the commencement of the project OST GRP & SMEC agreed the compaction criteria for the fill would be as per AS 3798-2007 - *Table 5.1 – Minimum Relative Compaction – Residential Lot Fill*. It was agreed the relative compaction minimum density ratio required would be 95% standard compactive effort.

Compaction control testing was carried out at regular intervals in accordance with the recommendation and frequencies in AS 3798-2007 – *Table 8.1 Frequency of Field Density Tests – Type 1*. All compaction test results are included in **Appendix B**.

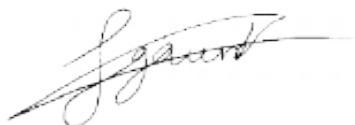
#### 3.4 Finish Level Test Rolling

The final level of the fill was completed, rolled off & compaction control tested. After completion the areas were test rolled and assessed to be compliant according to AS 3798-2007 – *Section 5 Compaction Criteria - 5.5 Test Rolling*.

## 4. Conclusion

As per outlined above, it is considered the fill was carried out in the spirit of AS 3798-2007 and all density tests conducted were not less than the minimum level required. It is therefore considered the fill material may be deemed **Controlled Fill** as per AS 3798-2007.

Approved By;



Daniel Gaunt

HiQA Geotechnical  
Darwin Branch Laboratory Manager  
P: (08) 8947 4802  
M: 0458 726 111  
E: d.gaunt@hiqa.com.au

## 5. General Clarifications & Exclusions

This report only covers the fill placed on the allotments outlined in **Appendix A**. This report does not cover the following items;

- Fill & Subgrade associated with the roads
- Verges where services have been excavated & backfilled
- Any fill areas that have been adversely affected by construction activity after the date of 13<sup>th</sup> of August 2015

HIQA.COM.AU

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

## APPENDIX A

### Site Plan

[HIQA.COM.AU](http://HIQA.COM.AU)

#### DARWIN

PHONE: (08) 8947 4802 OR 0458 726 111  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 3/8 SWAN CRESCENT, WINNELLIE NT 0820  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: 0427 299 536  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: 0409 305 943  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/7 GHAN ROAD, ALICE SPRINGS NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871







Principal  Costoicj Pty Ltd	

PERMISSION TO USE FOR CONSTRUCTION PURPOSES ROADWORKS AND STORMWATER DRAINAGE	
SIGNED .....	DATE .....
DIRECTOR OF TECHNICAL SERVICES CITY OF PALMERSTON	
This permission to use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or associated documents. This permission is valid for a period of two years from the date of signed approval	

Diagram of a circular plot with a shaded sector. The scale bar indicates a distance of 20 units. The scale is marked at 0, 5, 10, and 20. The text "Scale @ A1 1:500" is present.



**SMEC**

*Local People. Global Experience.*

**URBAN DEVELOPMENT**

Level 1, 48-50 Smith St, Darwin, NT 0800, Australia  
p +61 8 8981 4806 | f +61 8 8941 0848 | [www.smecc.com](http://www.smecc.com)

**Zuccoli 3 and 4**  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
**Drawing No. 30080027E-01-102**  
**Dev. App. No. DP15/0096**  
Sheet No. 2 of 3

**Rev 1**

Issued for Approval



PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION  
- BUILDER ARE TO INFORM THEMSELVES

## APPENDIX B

### Laboratory Test Results

[HIQA.COM.AU](http://HIQA.COM.AU)

#### DARWIN

PHONE: (08) 8947 4802 OR 0458 726 111  
EMAIL: [DARWIN@HIQA.COM.AU](mailto:DARWIN@HIQA.COM.AU)  
OFFICE: 3/8 SWAN CRESCENT, WINNELLIE NT 0820  
POSTAL: PO BOX 35964, WINNELLIE NT 0821

#### KATHERINE

PHONE: 0427 299 536  
EMAIL: [KATHERINE@HIQA.COM.AU](mailto:KATHERINE@HIQA.COM.AU)  
OFFICE: 5/7 CRAWFORD STREET, KATHERINE NT 0850  
POSTAL: PO BOX 712, KATHERINE NT 0851

#### ALICE SPRINGS

PHONE: 0409 305 943  
EMAIL: [ALICE@HIQA.COM.AU](mailto:ALICE@HIQA.COM.AU)  
OFFICE: 2/7 GHAN ROAD, ALICE SPRINGS NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**

Location : North Western End of Southern Loop Road  
Material Use: Fill  
Job No D575

Sample No.: 5308

Sample Date: 1/07/2015 By: P.Clark  
Test Date: 3/07/2015 By: J.Acton  
Check Date: 6/07/2015 By: A.Bravo

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	12°30'535 S	12°30'530 S	12°30'525 S		
Easting:	131°00'225 E	131°00'205 E	131°00'195 E		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	Lift 2	Lift 2	Lift 2		
Laboratory Sample No.	5308/ 1	5308/ 2	5308/ 3		
Oversize Dry Basis %	2	3	7		
Oversize Wet Basis %	2	3	6		
Field Dry Density t/m <sup>3</sup>	2.08	1.97	2.00		
Field Moisture Content %	10.5	9.5	10.5		
Maximum Dry Density t/m <sup>3</sup>	2.08	2.04	2.08		
Optimum Moist. Cont. %	9.0	11.0	10.0		
Adjusted MDD t/m <sup>3</sup>	2.09	2.05	2.10		
Adjusted OMC %	9.0	10.5	9.5		
Density Ratio %	100.0	96.5	95.5		
Moisture Ratio %	117.0	87.0	114.0		
Moisture Variation %	1.5 wet	1.5 dry	1.5 wet		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	-				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods:

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction:

No

Remarks:



Accredited No. 18573  
Report No. D575 5308  
Date of Issue: 6/07/2015

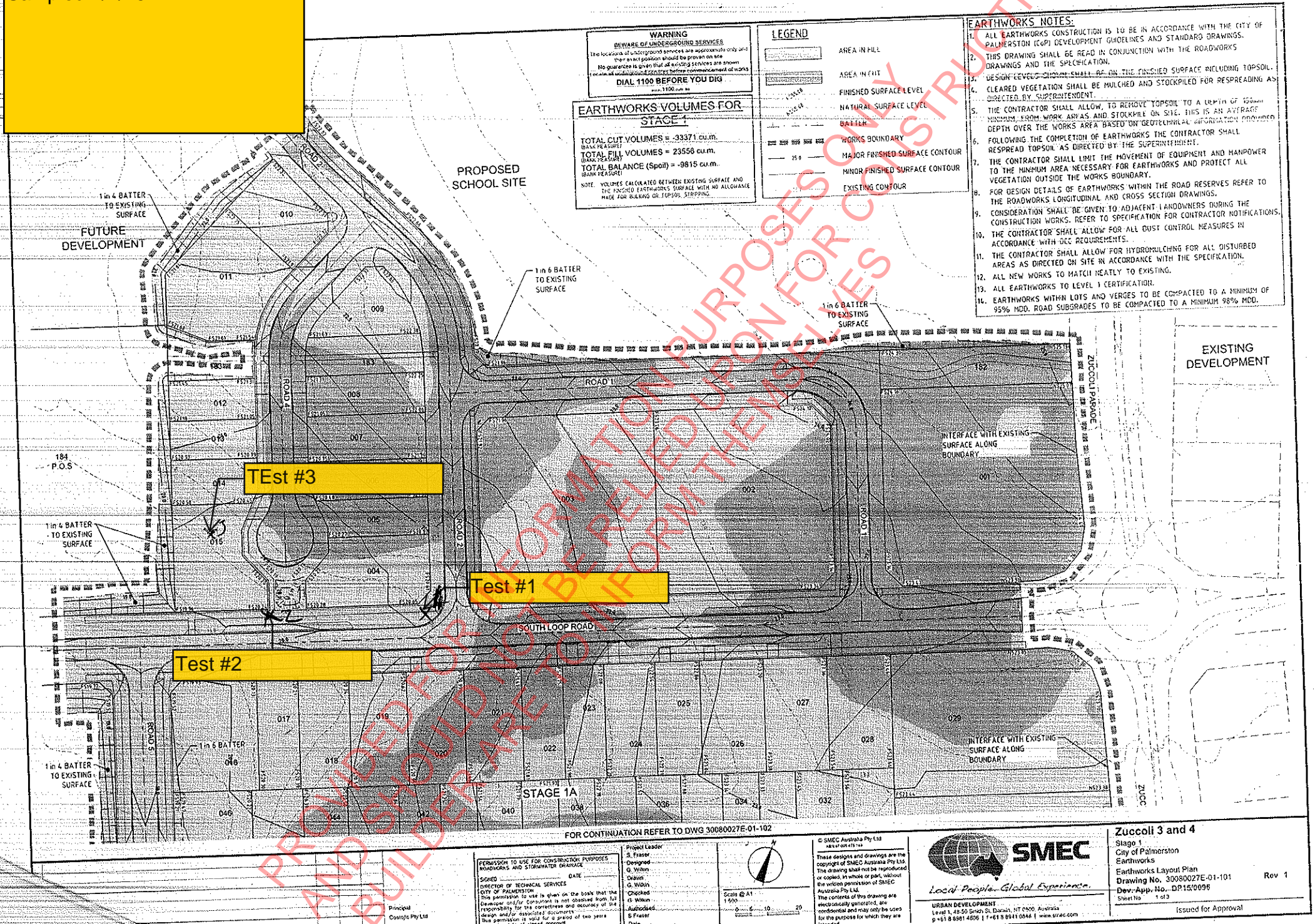
Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A. Bravo*  
A.Bravo



D575  
Sampled 1/7/15





# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : -  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : Stage 1A  
Material Use: Fill  
Job No D575

Sample No.: 5311

Sample Date: 2/07/2015 By: P.Clark  
Test Date: 8/07/2015 By: J.Acton  
Check Date: 9/07/2015 By: A.Bravo

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1602.141	1629.740	1592.210		
Easting:	3801.380	3769.471	3726.796		
Reduced Level:	20.113	20.670	19.100		
Test Depth (mm)	200	200	200		
Elevation	Lift 3	Lift 3	Lift 3		
Laboratory Sample No.	5311/ 1	5311/ 2	5311/ 3		
Oversize Dry Basis %	6	4	3		
Oversize Wet Basis %	6	4	3		
Field Dry Density t/m <sup>3</sup>	2.01	1.97	2.00		
Field Moisture Content %	7.5	9.0	9.0		
Maximum Dry Density t/m <sup>3</sup>	2.05	2.04	2.07		
Optimum Moist. Cont. %	10.0	11.0	10.5		
Adjusted MDD t/m <sup>3</sup>	2.07	2.05	2.08		
Adjusted OMC %	9.5	10.5	10.0		
Density Ratio %	<b>97.0</b>	<b>96.0</b>	<b>96.5</b>		
Moisture Ratio %	79.5	84.5	89.0		
Moisture Variation %	2.0 dry	1.5 dry	1.0 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	-				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTTM 216.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5311  
Date of Issue: 9/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A. Bravo*  
A.Bravo



D575  
Sampled 2/7/15

**WARNING**  
**Beware of Underground Services**  
The locations of underground services are approximate only and their exact position should be proven on site.  
No guarantee is given that all existing services are shown.  
Locate all underground services before commencement of works.  
**DIAL 1100 BEFORE YOU DIG**  
www.1100.org.au

### EARTHWORKS VOLUMES FOR STAGE 1

TOTAL CUT VOLUMES = 33371 cu.m.  
TOTAL FILL VOLUMES = 23555 cu.m.  
TOTAL BALANCE (CUT/FILL) = 9816 cu.m.  
(BANK MEASURE)

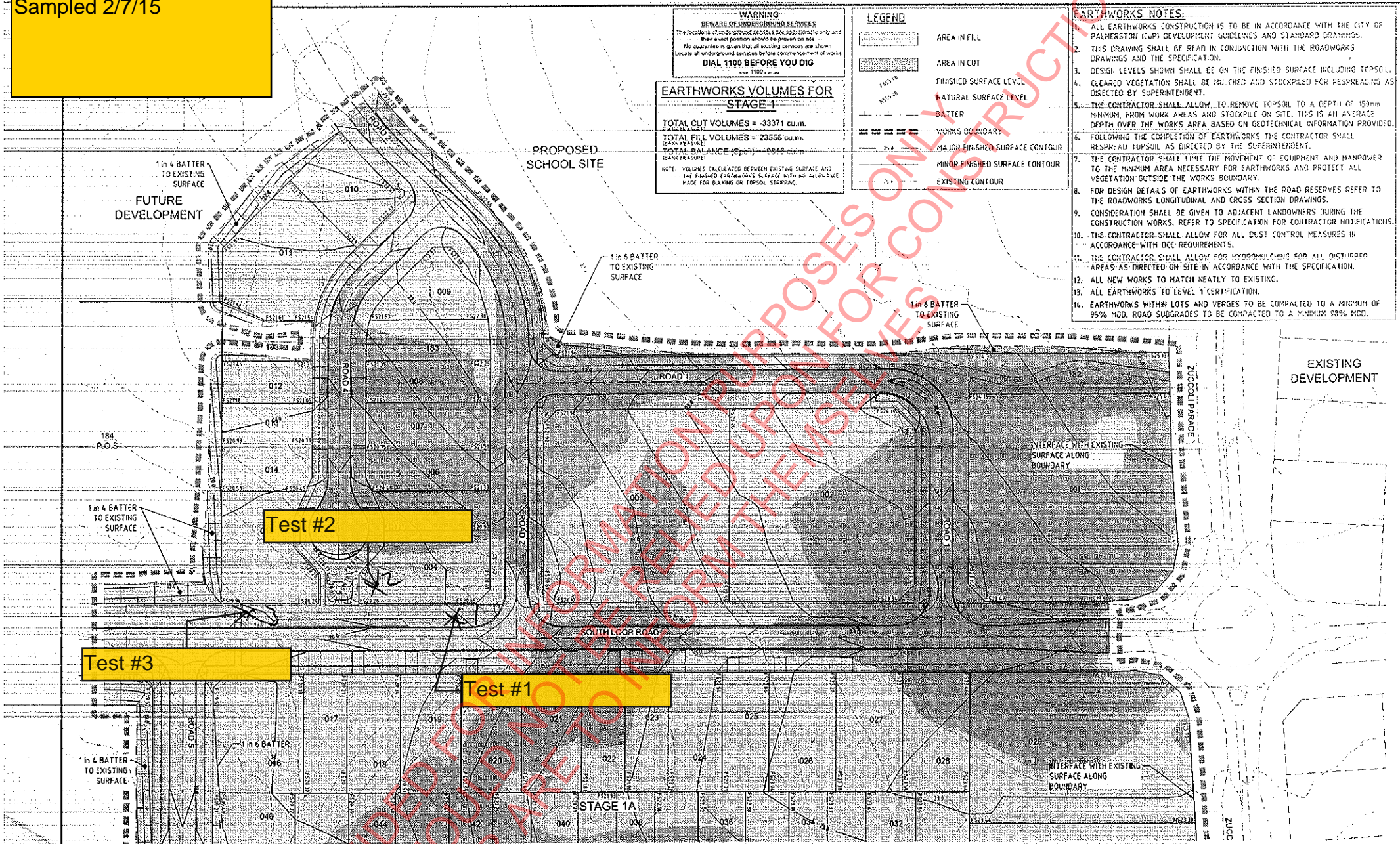
NOTE: VOLUMES CALCULATED BETWEEN EXISTING SURFACE AND THE PROPOSED EARTHWORKS SURFACE WITH NO ALLOWANCE MADE FOR BATTER OR TOPSOIL STORPING.

### LEGEND

[Symbol]	AREA IN FILL
[Symbol]	AREA IN CUT
[Symbol]	FINISHED SURFACE LEVEL
[Symbol]	NATURAL SURFACE LEVEL
[Symbol]	BATTER
[Symbol]	WORKS BOUNDARY
[Symbol]	MAJOR FINISHED SURFACE CONTOUR
[Symbol]	MINOR FINISHED SURFACE CONTOUR
[Symbol]	EXISTING CONTOUR

### EARTHWORKS NOTES:

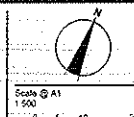
- ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CITY OF PALMERSTON (COP) DEVELOPMENT GUIDELINES AND STANDARD DRAWINGS.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ROADWORKS DRAWINGS AND THE SPECIFICATION.
- DESIGN LEVELS SHOWN SHALL BE ON THE FINISHED SURFACE INCLUDING TOPSOIL.
- CLEARED VEGETATION SHALL BE MULCHED AND STOCKPILED FOR RESPREADING AS DIRECTED BY SUPERINTENDENT.
- THE CONTRACTOR SHALL ALLOW... TO REMOVE TOPSOIL TO A DEPTH OF 150mm MINIMUM, FROM WORK AREAS AND STOCKPILE ON SITE. THIS IS AN AVERAGE DEPTH OVER THE WORKS AREA BASED ON GEOTECHNICAL INFORMATION PROVIDED.
- FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL RESPREAD TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE THE WORKS BOUNDARY.
- FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVES REFER TO THE ROADWORKS LONGITUDINAL AND CROSS SECTION DRAWINGS.
- CONSIDERATION SHALL BE GIVEN TO ADJACENT LANDOWNERS DURING THE CONSTRUCTION WORKS. REFER TO SPECIFICATION FOR CONTRACTOR NOTIFICATIONS.
- THE CONTRACTOR SHALL ALLOW FOR ALL DUST CONTROL MEASURES IN ACCORDANCE WITH OCC REQUIREMENTS.
- THE CONTRACTOR SHALL ALLOW FOR HYDROMULCHING FOR ALL DISTURBED AREAS AS DIRECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATION.
- ALL NEW WORKS TO MATCH NEATLY TO EXISTING.
- ALL EARTHWORKS TO LEVEL 1 CERTIFICATION.
- EARTHWORKS WITHIN LOTS AND VERGES TO BE COMPACTED TO A MINIMUM OF 95% MDD. ROAD SUBGRADES TO BE COMPACTED TO A MINIMUM 98% MDD.



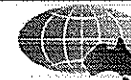
FOR CONTINUATION REFER TO DWG 30080027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
BONDED \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission to use is given on the basis that the  
Developer and/or Consultant is not absolved from full  
responsibility for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Wynn  
Drawn  
G. Wynn  
Checked  
G. Wynn  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
All rights reserved  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
This drawing shall not be reproduced  
or copied, in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purpose for which they are  
intended.



URBAN DEVELOPMENT  
Level 1, 40-50 Smith St, Darwin, NT 0800, Australia  
p+61 8 8881 4806 | f+61 8 8941 0846 | www.smecc.com

Zuccoli 3 and 4  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-101  
Dov. App. No. DP15/0096  
Sheet No. 1 of 3

Rev 1

Issued for Approval

# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5361**

Sample Date: **9/07/2015** By: **J.Acton**  
Test Date: **15/07/2015** By: **B.Pike**  
Check Date: **19/07/2015** By: **A.Bravo**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1670.578	1646.245	1611.490		
Easting:	3729.560	3731.266	3736.758		
Reduced Level:	20.815	20.400	19.707		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	Lift 4	Lift 4	Lift 4		
Laboratory Sample No.	5361/ 1	5361/ 2	5361/ 3		
Oversize Dry Basis %	8	8	3		
Oversize Wet Basis %	7	8	3		
Field Dry Density t/m <sup>3</sup>	2.05	2.06	2.03		
Field Moisture Content %	8.5	9.5	9.0		
Maximum Dry Density t/m <sup>3</sup>	2.09	2.13	2.07		
Optimum Moist. Cont. %	10.0	11.0	11.0		
Adjusted MDD t/m <sup>3</sup>	2.11	2.15	2.08		
Adjusted OMC %	9.0	10.0	10.5		
Density Ratio %	<b>96.9</b>	<b>95.5</b>	<b>97.7</b>		
Moisture Ratio %	93.0	92.0	84.0		
Moisture Variation %	0.5 dry	1.0 dry	1.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>96.7</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5361  
Date of Issue: 19/07/2015

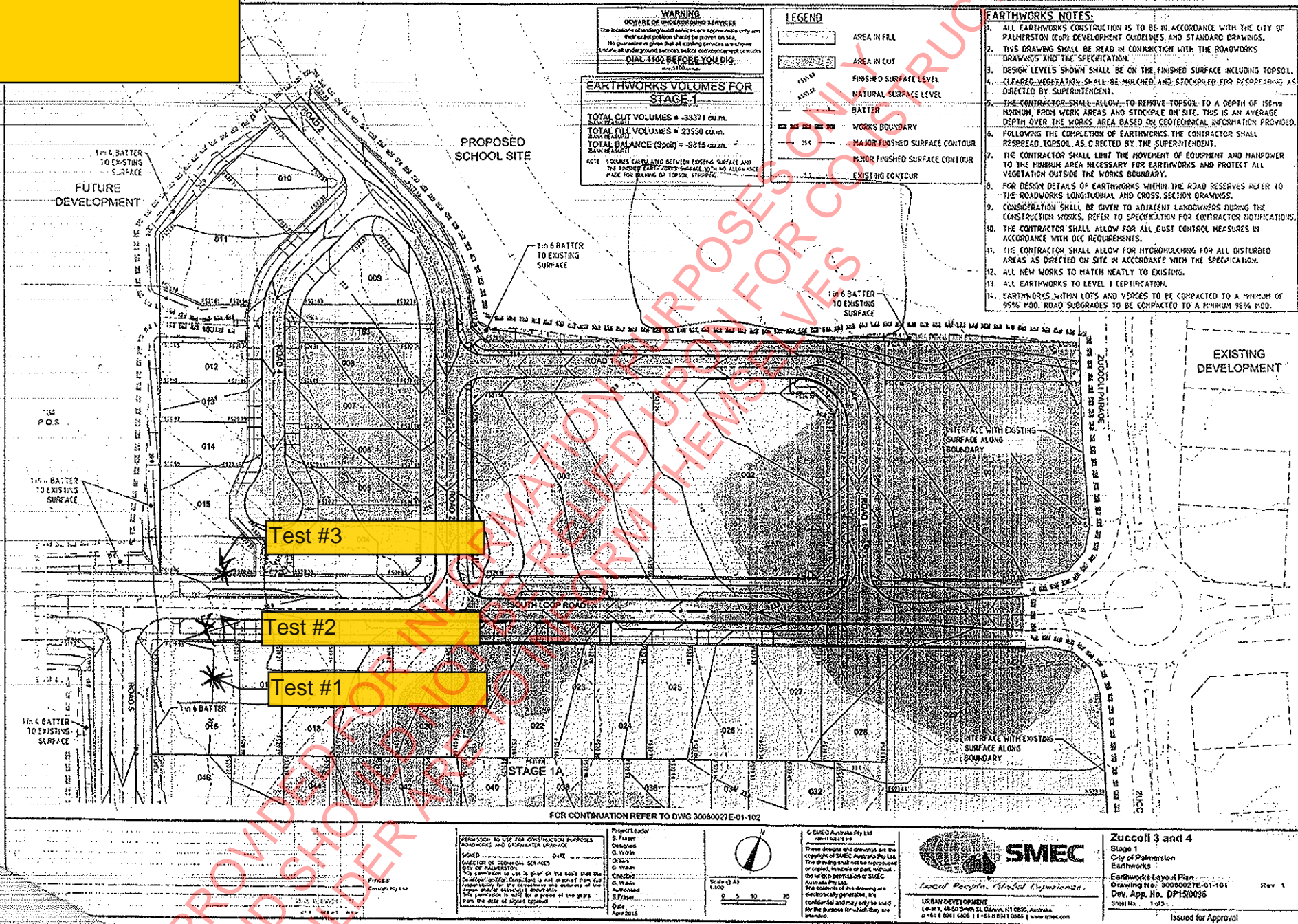
Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A.Bravo*  
A.Bravo



D575  
Sampled 9/7/15



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5371**

Sample Date: **10/07/2015** By: **J.Acton**  
Test Date: **15/07/2015** By: **T.Bradley**  
Check Date: **19/07/2015** By: **A.Bravo**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1671.212	1649.200	1623.391		
Easting:	3711.920	3724.988	3740.600		
Reduced Level:	20.88	20.64	20.02		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	Lift 5	Lift 5	Lift 5		
Laboratory Sample No.	5371/ 1	5371/ 2	5371/ 3		
Oversize Dry Basis %	5	0	0		
Oversize Wet Basis %	5	0	0		
Field Dry Density t/m <sup>3</sup>	2.02	1.99	1.98		
Field Moisture Content %	9.5	11.0	11.0		
Maximum Dry Density t/m <sup>3</sup>	2.11	2.05	2.00		
Optimum Moist. Cont. %	9.5	12.5	12.0		
Adjusted MDD t/m <sup>3</sup>	2.12	-	-		
Adjusted OMC %	9.0	-	-		
Density Ratio %	<b>95.0</b>	<b>97.1</b>	<b>99.1</b>		
Moisture Ratio %	107.5	87.5	91.0		
Moisture Variation %	0.5 wet	1.5 dry	1.0 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>97.1</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5371  
Date of Issue: 19/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A. Bravo*  
A.Bravo

# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5381 / A**  
Sample Date: **15/07/2015** By: **L.Beaven**  
Test Date: **17/07/2015** By: **J.Acton**  
Check Date: **19/07/2015** By: **A.Bravo**

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1714.450	1729.050	1706.264		
Easting:	3763.007	3727.942	3715.435		
Reduced Level:	22.230	21.983	21.650		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5381/ 1	5381/ 2	5381/ 3		
Oversize Dry Basis %	2	6	5		
Oversize Wet Basis %	2	6	4		
Field Dry Density t/m <sup>3</sup>	2.05	2.04	2.01		
Field Moisture Content %	9.0	10.0	11.0		
Maximum Dry Density t/m <sup>3</sup>	2.07	2.08	2.07		
Optimum Moist. Cont. %	11.0	10.5	10.5		
Adjusted MDD t/m <sup>3</sup>	2.08	2.10	2.08		
Adjusted OMC %	10.5	10.0	10.0		
Density Ratio %	<b>98.7</b>	<b>97.5</b>	<b>96.4</b>		
Moisture Ratio %	84.5	101.5	111.5		
Moisture Variation %	1.5 dry	0.0	1.0 wet		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>97.5</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1  
Test Methods: NTCP 102.1  
Over Size Sieve: 19.0mm Stabilising Agent Used: No  
Sampled prior to field compaction: No  
Remarks:



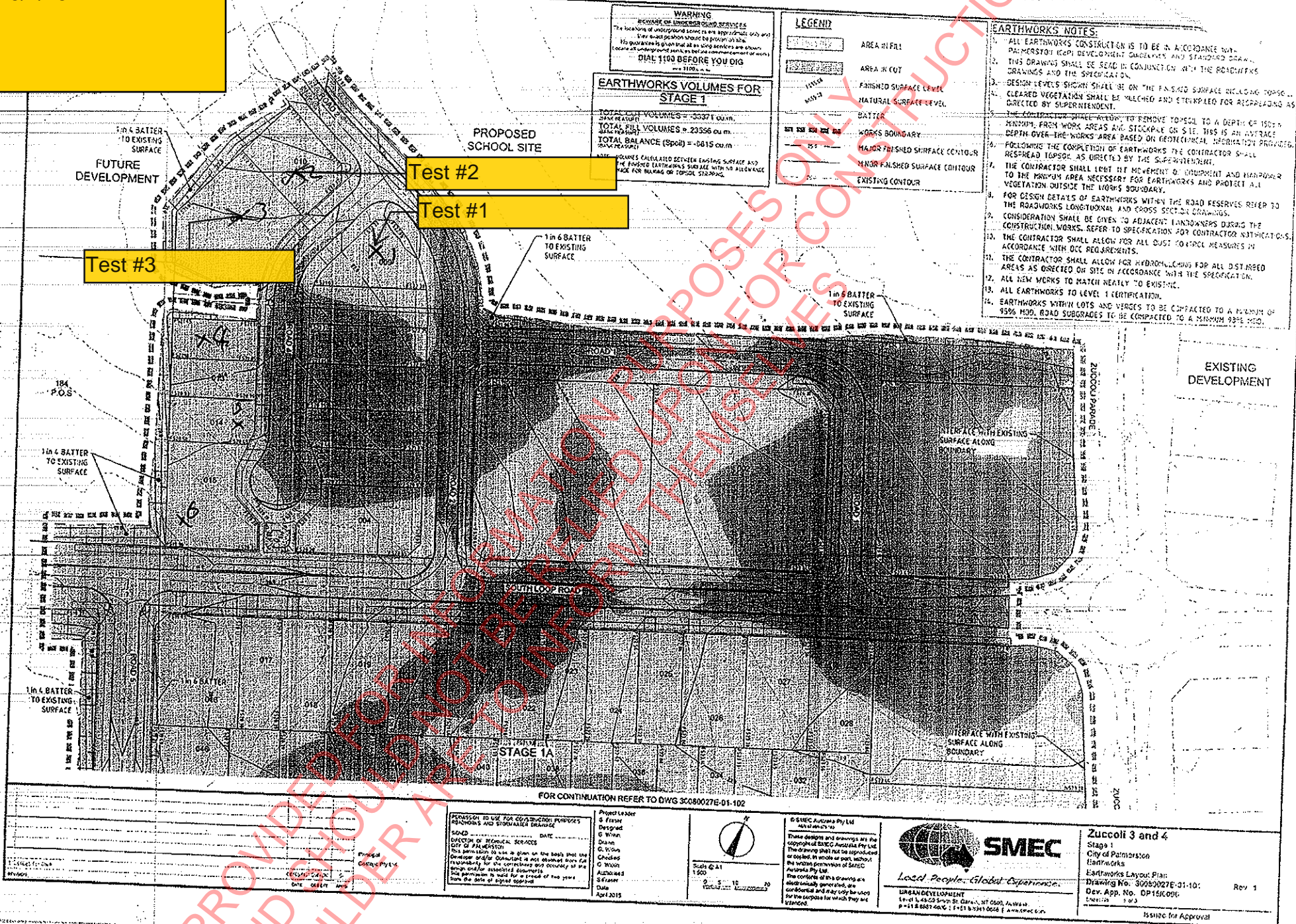
Accredited No. 18573  
Report No. D575 5381/A  
Date of Issue: 19/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....  
A.Bravo



D575  
Sampled 15/7/15





# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5381 / B**  
Sample Date: **15/07/2015** By: **L.Beaven**  
Test Date: **17/07/2015** By: **J.Acton**  
Check Date: **19/07/2015** By: **A.Bravo**

Client Ref.: #53273

Test Number	4	5	6		
Time of Test	am	am	am		
Northing:	1667.158	1640.549	1619.677		
Easting:	3715.435	3732.540	3731.850		
Reduced Level:	21.163	20.606	20.246		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5381/ 4	5381/ 5	5381/ 6		
Oversize Dry Basis %	5	3	4		
Oversize Wet Basis %	5	2	4		
Field Dry Density t/m <sup>3</sup>	2.03	2.05	2.01		
Field Moisture Content %	10.0	9.5	9.5		
Maximum Dry Density t/m <sup>3</sup>	2.05	2.05	2.07		
Optimum Moist. Cont. %	11.0	10.5	11.0		
Adjusted MDD t/m <sup>3</sup>	2.07	2.06	2.08		
Adjusted OMC %	10.5	10.0	10.5		
Density Ratio %	<b>98.1</b>	<b>99.5</b>	<b>96.5</b>		
Moisture Ratio %	98.0	92.0	88.0		
Moisture Variation %	0.0	1.0 dry	1.0 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>98.0</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



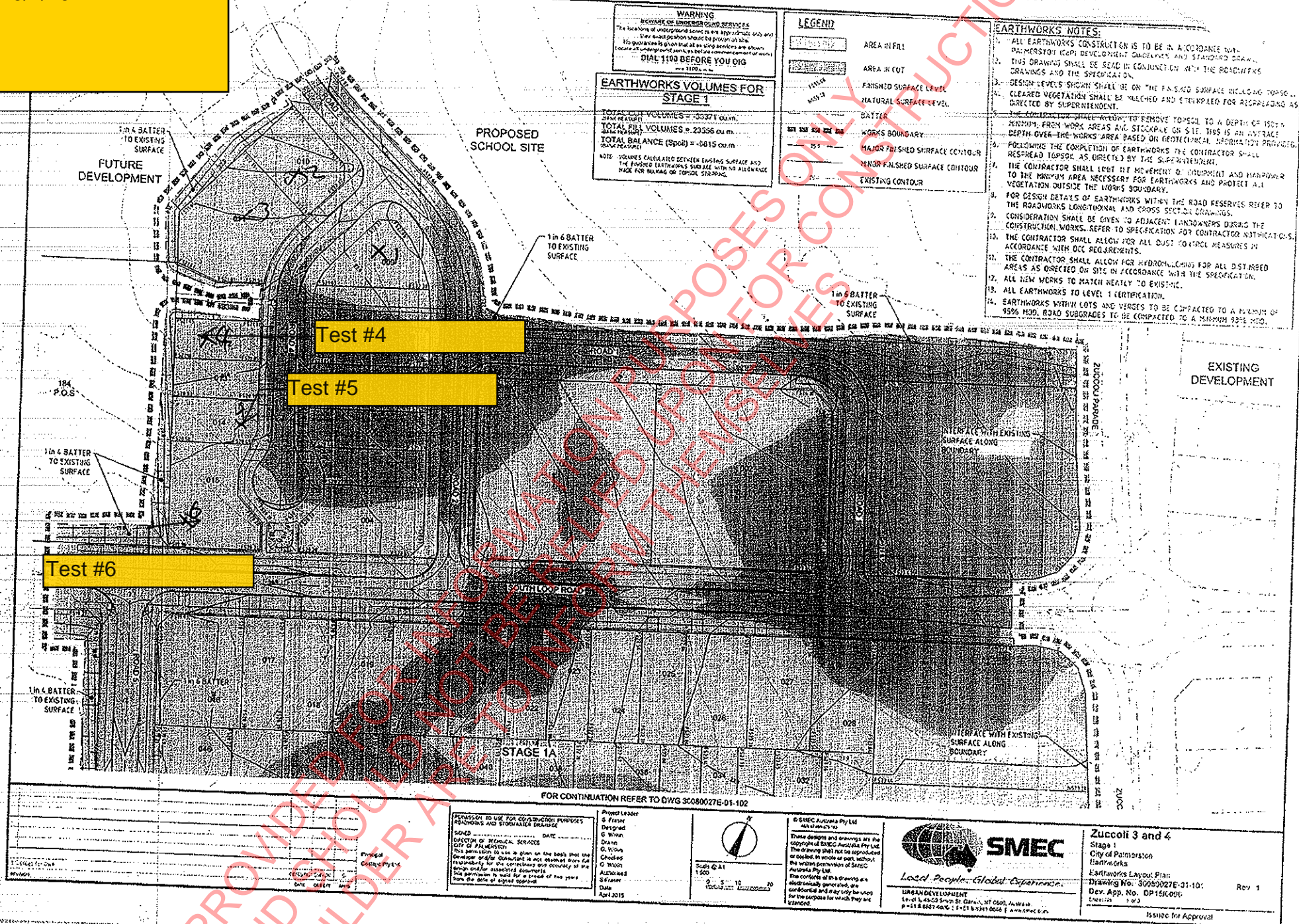
Accredited No. 18573  
Report No. D575 5381/B  
Date of Issue: 19/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A.Bravo*  
A.Bravo

D575  
Sampled 15/7/15



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5394**

Sample Date: **16/07/2015** By: **L.Beaven**  
Test Date: **17/07/2015** By: **J.Acton**  
Check Date: **19/07/2015** By: **A.Bravo**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1715.780	1729.775	1704.980		
Easting:	3759.649	3729.013	3709.938		
Reduced Level:	22.360	22.172	21.730		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5394/ 1	5394/ 2	5394/ 3		
Oversize Dry Basis %	5	2	7		
Oversize Wet Basis %	5	2	6		
Field Dry Density t/m <sup>3</sup>	2.01	2.01	2.00		
Field Moisture Content %	10.0	11.0	9.0		
Maximum Dry Density t/m <sup>3</sup>	2.06	2.05	2.08		
Optimum Moist. Cont. %	11.0	11.5	10.5		
Adjusted MDD t/m <sup>3</sup>	2.08	2.06	2.10		
Adjusted OMC %	10.5	11.0	10.0		
Density Ratio %	<b>96.9</b>	<b>97.8</b>	<b>95.0</b>		
Moisture Ratio %	95.5	99.0	93.5		
Moisture Variation %	0.5 dry	0.0	0.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>96.6</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. **18573**  
Report No. **D575 5394**  
Date of Issue: **19/07/2015**

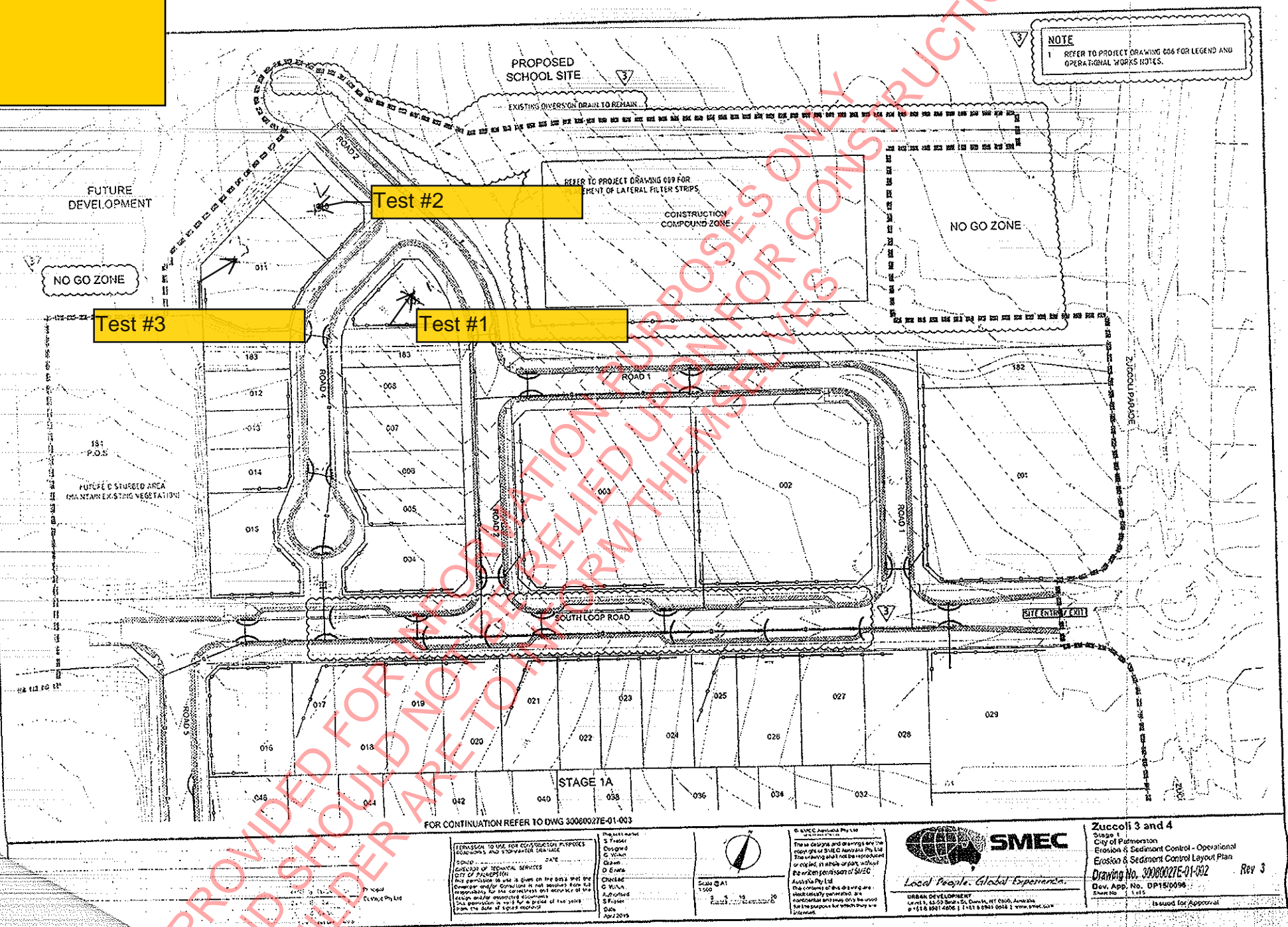
Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

*A. Bravo*  
**A.Bravo**



D575  
Sampled 16/7/15



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5401**

Sample Date: **17/07/2015** By: **L.Myall**  
Test Date: **20/07/2015** By: **J.Acton**  
Check Date: **21/07/2015** By: **A.Bravo**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1717.430	1730.427	1713.954		
Easting:	3764.740	3729.141	3714.342		
Reduced Level:	27.420	27.130	22.003		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5401/ 1	5401/ 2	5401/ 3		
Oversize Dry Basis %	3	3	3		
Oversize Wet Basis %	2	3	3		
Field Dry Density t/m <sup>3</sup>	2.08	2.03	2.05		
Field Moisture Content %	10.0	10.5	9.5		
Maximum Dry Density t/m <sup>3</sup>	2.06	2.06	2.06		
Optimum Moist. Cont. %	11.5	11.5	10.5		
Adjusted MDD t/m <sup>3</sup>	2.07	2.07	2.07		
Adjusted OMC %	11.0	11.0	10.0		
Density Ratio %	<b>100.5</b>	<b>98.2</b>	<b>99.2</b>		
Moisture Ratio %	90.5	94.5	95.0		
Moisture Variation %	1.0 dry	0.5 dry	0.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>99.3</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5401  
Date of Issue: 21/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A.Bravo*  
A.Bravo

# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5435**

Sample Date: **23/07/2015** By: **J.Acton**  
Test Date: **23/07/2015** By: **J.Acton**  
Check Date: **28/07/2015** By: **A.Bravo**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1572.640	1545.840	1570.125		
Easting:	3784.444	3764.288	3735.295		
Reduced Level:	19.490	18.868	18.888		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5435/ 1	5435/ 2	5435/ 3		
Oversize Dry Basis %	6	6	8		
Oversize Wet Basis %	6	6	8		
Field Dry Density t/m <sup>3</sup>	1.97	2.04	2.01		
Field Moisture Content %	11.0	9.0	9.5		
Maximum Dry Density t/m <sup>3</sup>	2.04	2.07	2.04		
Optimum Moist. Cont. %	11.5	9.5	10.5		
Adjusted MDD t/m <sup>3</sup>	2.06	2.09	2.07		
Adjusted OMC %	11.0	9.0	9.5		
Density Ratio %	<b>95.5</b>	<b>97.7</b>	<b>97.2</b>		
Moisture Ratio %	101.0	103.0	96.0		
Moisture Variation %	0.0	0.5 wet	0.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>96.8</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. **18573**  
Report No. **D575 5435**  
Date of Issue: **28/07/2015**

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*A. Bravo*  
A.Bravo



D575  
Sampled 23/7/15

**WARNING**  
**BEWARE OF UNDERGROUND SERVICES**  
The locations of underground services are approximate only and the contractor shall be responsible for locating and verifying the location of all underground services before commencing work.  
**DIAL 1100 BEFORE YOU DIG**  
www.1100.gov.au

**EARTHWORKS VOLUMES FOR STAGE 1**  
TOTAL CUT VOLUMES = 3,137.1 cu.m.  
TOTAL FILL VOLUMES = 23,156 cu.m.  
TOTAL BALANCE (Spoil) = 1,815 cu.m.  
NOTE: VOLUMES CALCULATED BETWEEN EXISTING SURFACE AND THE FINISHED EARTHWORKS SURFACE WITH NO ALLOWANCE MADE FOR DRAINAGE OR TOPSOIL STRIPPING.

**LEGEND**

AREA TO FILL  
AREA TO CUT  
FINISHED SURFACE LEVEL  
NATURAL SURFACE LEVEL  
BATTER  
WORKS BOUNDARY  
MAJOR FINISHED SURFACE CONTOUR  
MINOR FINISHED SURFACE CONTOUR  
EXISTING CONTOUR

**EARTHWORKS NOTES**

1. ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE PALMERSTON NORTH DEVELOPMENT EARTHWORKS SPECIFICATIONS.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE EARTHWORKS DRAWINGS AND THE SPECIFICATIONS.
3. DESIGN LEVELS SHOWN SPACES ON THE DRAWING SHALL BE USED TO CLEAR VEGETATION SHALL BE REMOVED AND THE SURFACE SHALL BE DIRECTED BY SUPERINTENDENT.
4. THE CONTRACTOR SHALL ALLOW TO REMAIN A MINIMUM OF 100mm OF FINISH FILL OVER THE WORKS AREA, BASED ON A MINIMUM OF 100mm DEPTH OVER THE WORKS AREA, BASED ON A MINIMUM OF 100mm DEPTH.
5. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL RESURFACE TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL UPLIFT THE FINISHED SURFACE TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND SHALL MAINTAIN VEGETATION OUTSIDE THE WORKS BOUNDARY.
7. FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVE, REFER TO THE ROADWORKS LONGITUDINAL AND CROSS SECTION DRAWINGS.
8. CONSIDERATION SHALL BE GIVEN TO ADJACENT LANDS, ADJACENT CONSTRUCTION WORKS, REFER TO SPECIFICATIONS FOR CONSTRUCTION WORKS.
9. THE CONTRACTOR SHALL ALLOW FOR ALL CUTS TO BE MADE IN ACCORDANCE WITH DCC REQUIREMENTS.
10. THE CONTRACTOR SHALL ALLOW FOR 10% TOPSOIL CUTS FOR ALL CUTS AREAS AS DIRECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATIONS.
11. ALL NEW WORKS TO MATCH NEXT TO EXISTING.
12. ALL EARTHWORKS TO LEVEL 1 CERTIFICATION.
13. EARTHWORKS WITHIN LOTS AND ROADS TO BE COMPLETED TO 95% MOD. ROAD SUBGRADE TO 1% COMPACTED TO 95% MOD. ROAD SUBGRADE TO 1% COMPACTED.

PROPOSED  
SCHOOL SITE

FUTURE  
DEVELOPMENT

EXISTING  
DEVELOPMENT

Test #1

Test #3

STAGE 1A

FOR CONTINUATION REFER TO DWG 300-0027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
SIGNED: DATE: 14/07/2015  
PROJECT: COLLEGE PHYSICS  
DESIGNED: G. WILSON  
DRAWN: G. WILSON  
CHECKED: G. WILSON  
AUTORISED: S. FRATER  
DATE: 14/07/2015

Project Leader  
S. FRATER  
Designed  
G. WILSON  
Drawn  
G. WILSON  
Checked  
G. WILSON  
Authorised  
S. FRATER  
Date  
14/07/2015

Scale 1:1000  
0 5 10 20  
METRES

© SMEC Australia Pty Ltd  
These designs and drawings are the copyright of SMEC Australia Pty Ltd. The drawing shall not be reproduced or copied, in whole or part, without the written permission of SMEC Australia Pty Ltd. The contents of this drawing are confidential and may only be used for the purpose for which they are intended.

**SMEC**  
Local People. Global Experience.  
URBAN DEVELOPMENT  
Level 1, 10/20 Street, St Albans, Victoria  
p +61 8 8961 4000 f +61 8 8961 0818

Zuccoli 3 and 4  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 300-0027E-01-102  
Dev. App. No. DP18/00-6  
Date: 14/07/2015  
Revision: 1



FOR CONTINUATION REFER TO DWG 30080027E-01-101

STAGE 1A

Test #2

ROAD 6

ROAD 6

ROAD 7

STAGE 1B

ROAD 10

FUTURE DEVELOPMENT

TRANSITION SLOPE FROM 4.7% TO 21.3%

SECTION A

TRANSITION SLOPE FROM 4.7% TO 21.3%

NOTES

1. REFER TO PROJECT DRAWING 101 FOR EARTHWORKS LEGEND AND NOTES

**WARNING**  
VIEWERS OF UNDEVELOPED GRADES & EARTHWORKS SHOULD BE AWARE THAT THESE ARE PRELIMINARY AND NOT TO BE USED FOR CONSTRUCTION WITHOUT THE WRITTEN PERMISSION OF SMEC AUSTRALIA PTY LTD. DIAL 11001 BEFORE YOU DIG

FOR CONTINUATION REFER TO DWG 30080027E-01-103

PERMISSION TO USE FOR CONSTRUCTION PURPOSES (ROADWORKS AND SITE MASTER PLAN) GRANTED BY THE DIRECTOR OF TECHNICAL SERVICES CITY OF MELBOURNE  
This permission is given on the basis that the user acknowledges and accepts that the user is responsible for the correctness and accuracy of the design and/or construction documents. This permission is valid for a period of two years from the date of issue of this permit.

Project Leader  
S. Fraser  
Designed  
G. Wilson  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
April 2015

Scale @ A1  
1:500  
3 5 10 20  
METRES

© SMEC Australia Pty Ltd  
All rights reserved.  
These designs and drawings are the copyright of SMEC Australia Pty Ltd. The drawing shall not be reproduced or copied in whole or part, without the written permission of SMEC Australia Pty Ltd.  
The contents of this drawing are electronically generated, are confidential and may only be used for the purpose for which they are intended.

**SMEC**  
Local People. Global Experience.  
URBAN DEVELOPMENT  
Level 1, 40-50 Little Lane, Docklands, VIC 3008  
p +61 3 9861 4135 f +61 3 9861 4142 e [info@smec.com.au](mailto:info@smec.com.au)

Zucconi 3 and 4  
Stage 1  
CITY OF MELBOURNE  
Earthworks  
Drawing No. 30080027E-01-102  
Rev. App. No. DP15/006  
Rev. 01/15



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5436**

Sample Date: **23/07/2015** By: **J.Acton**  
Test Date: **27/07/2015** By: **J.Acton**  
Check Date: **28/07/2015** By: **A.Bravo**

Client Ref.: **#53273**

Test Number	4	5	6		
Time of Test	am	am	am		
Northing:	1614.300	1641.795	1609.606		
Test Location Offset :	3875.729	3926.400	3898.792		
Reduced Level:	21.834	22.966	22.222		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5436/ 4	5436/ 5	5436/ 6		
Oversize Dry Basis %	5	3	8		
Oversize Wet Basis %	5	3	8		
Field Dry Density t/m <sup>3</sup>	1.99	1.96	2.00		
Field Moisture Content %	7.5	7.5	7.0		
Maximum Dry Density t/m <sup>3</sup>	2.06	2.05	2.08		
Optimum Moist. Cont. %	9.5	11.0	10.0		
Adjusted MDD t/m <sup>3</sup>	2.08	2.06	2.11		
Adjusted OMC %	9.0	10.5	9.0		
Density Ratio %	<b>96.1</b>	<b>95.3</b>	<b>95.0</b>		
Moisture Ratio %	82.5	68.5	75.0		
Moisture Variation %	1.5 dry	3.5 dry	2.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>95.5</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. **18573**  
Report No. **D575 5436**  
Date of Issue: **28/07/2015**

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

A.Bravo



D575  
Sampled 23/7/15

EARTHWORKS VOLUMES FOR  
STAGE 1

TOTAL CUT VOLUMES = 31,371 cu.in.  
BANK & FILL

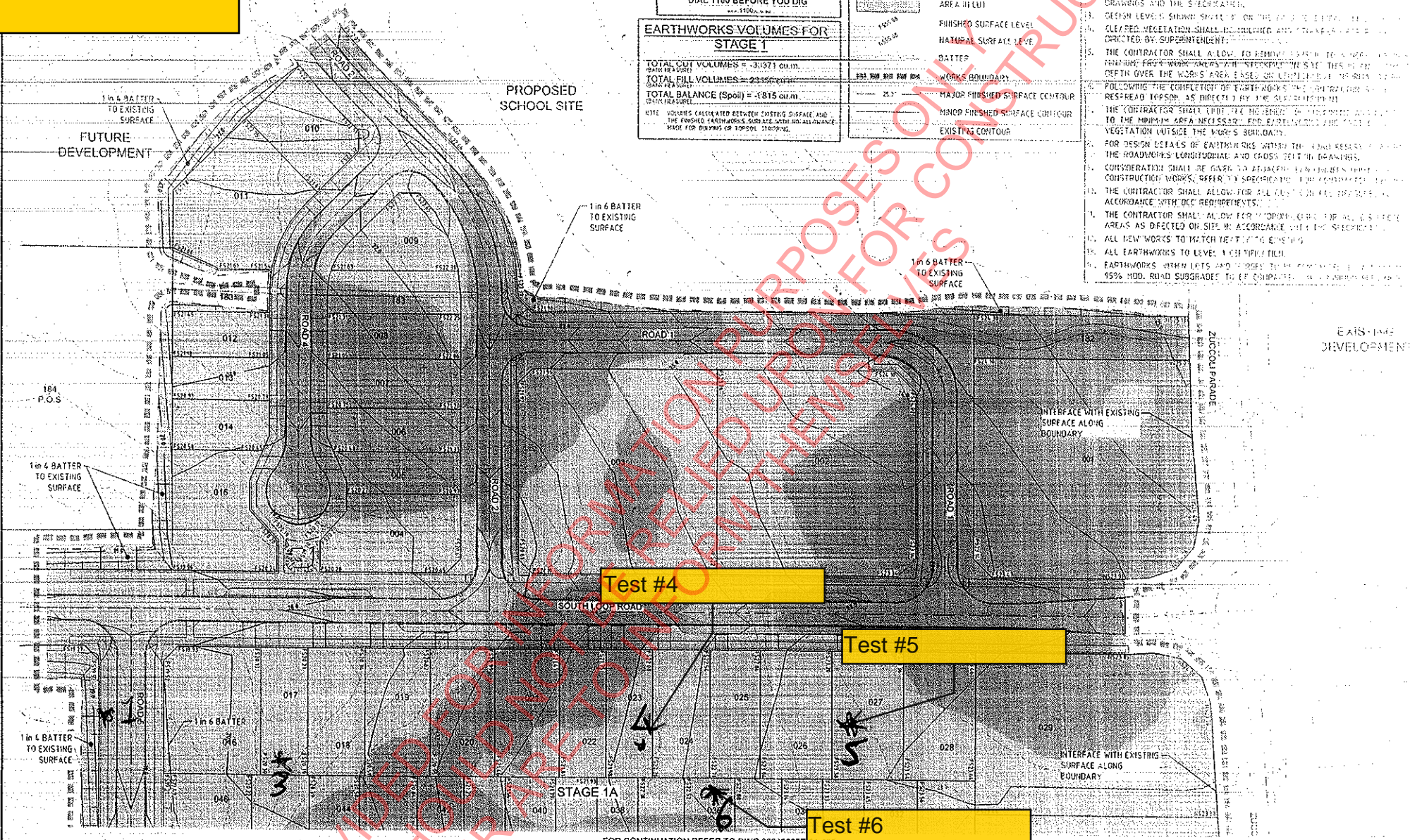
TOTAL FILL VOLUMES = 23,550 cu.in.  
BANK & FILL

TOTAL BALANCE (Spoil) = 7,815 cu.in.  
BANK FILL SPOIL

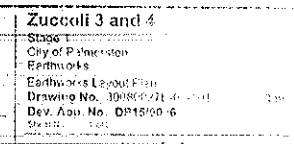
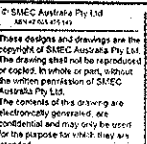
NOTE: VOLUMES CALCULATED BETWEEN EXISTING SURFACE AND THE PROPOSED EARTHWORKS SURFACE WITH NO ALLOWANCE MADE FOR BURNING OR TOPSOIL STRIPPING.

### EARTHWORKS NOTES:

1. ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE PALMERSTON NORTH DEVELOPMENT CONSTRUCTION AND MAINTENANCE SPECIFICATIONS.
2. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATIONS, DRAWINGS AND THE SCHEDULES.
3. DESIGN LEVELS SHOWN SPECIFICALLY ON THE DRAWINGS SHALL BE MAINTAINED.
4. CLEARED VEGETATION SHALL BE REMOVED AND THE AREA TO BE RESEED OR REGRASS DIRECTED BY SUPERINTENDENT.
5. THE CONTRACTOR SHALL ALLOW FOR REMOVAL OF EXISTING TOPOGRAPHY AND REFINISHING FROM WORK AREAS AND RESEEDING TO THE SAME DEPTH OVER THE WORKS AREA BASED ON UNDISTURBED ORIGINAL GRADE.
6. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL RESEED TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
7. THE CONTRACTOR SHALL LIMIT THE HEIGHT OF ANY EXISTING VEGETATION TO THE MINIMUM AREA NECESSARY FOR ESTABLISHMENT OF THE EXISTING VEGETATION OUTSIDE THE WORKS BOUNDARY.
8. FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVE AND THE ROADWAYS LONGITUDINAL AND CROSS SECTION DRAWINGS.
9. CONSIDERATION SHALL BE GIVEN TO ATTACHMENT OF EXISTING TREES TO CONSTRUCTION WORKS, REFER TO SPECIFICATION 1.1 FOR CONSTRUCTION DETAILS.
10. THE CONTRACTOR SHALL ALLOW FOR THE EXISTING TOPOGRAPHY TO BE IN ACCORDANCE WITH THE REQUIREMENTS.
11. THE CONTRACTOR SHALL ALLOW FOR TOPPOGRAPHY TO BE IN ACCORDANCE AREAS AS DETECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATIONS.
12. ALL NEW WORKS TO MATCH NEXT TO THE EXISTING.
13. ALL EARTHWORKS TO LEVEL 1% SLOPE TYPICAL.
14. EARTHWORKS WITHIN LOTS AND WORKS TO BE MAINTAINED TO A MINIMUM OF 95% MOD. ROAD SUBGRADE TO BE COMPACTED TO A MINIMUM OF 95% MOD.



Project Leader  
S Fraser  
Designed  
G Wain  
Drawn  
G Wain  
Checked  
G Wain  
Authorised  
S Fraser  
Date  
Amd 2015



# PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS REPORT

ACN: 130 669 493 Shed 3 No. 8  
Swan Crescent, PO Box 35964  
Winnellie NT 0821

CLIENT: Ostoic Group Pty Ltd  
PROJECT: Zuccoli 3 & 4 Stage 1A

JOB NO: D575  
SAMPLED BY: A.Bravo

SAMPLE NO: 5522/2  
DATE: 10/8/15

LOCATION: N: 1640.455, E: 3913.777, RL: 23.162

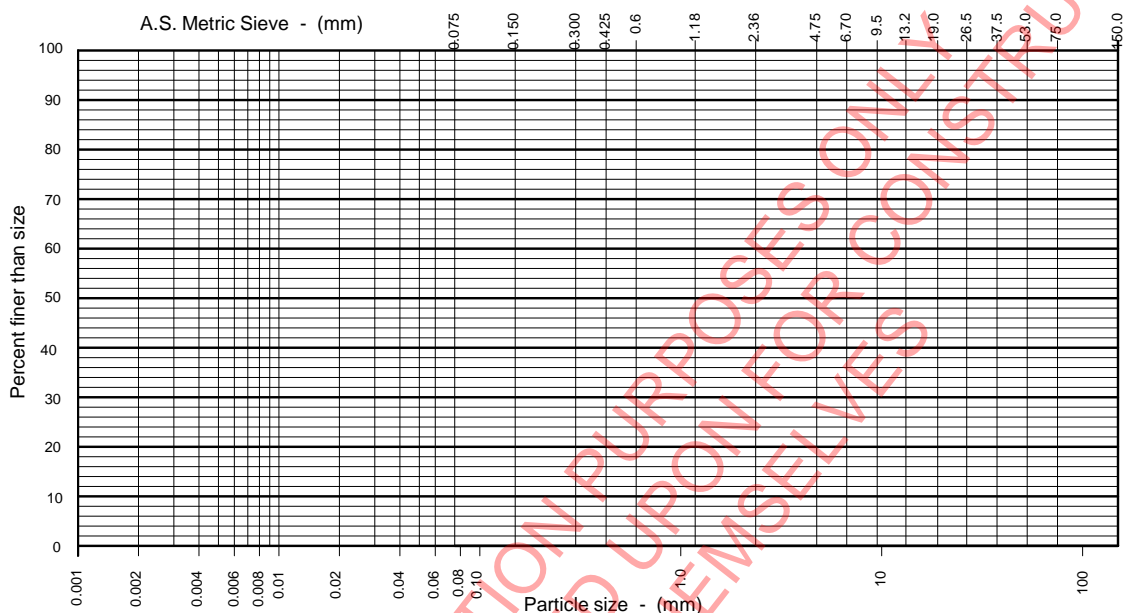
TESTED BY: B.Pike DATE: 15/8/15

MATERIAL: Fill

CHECKED BY: J.Hollebone DATE: 17/8/15

TEST PROCEDURES: AS 1289 3.1.1, 3.2.1, 3.3.1, 3.4.1

CLIENT REF: #53273



clay	silt			sand			gravel			cobbles
	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	

Particle Size (mm)	Percent Passing (%)	Spec. Min Passing (%)	Spec. Max Passing (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Linear Shrinkage (%)	Specific Gravity (g/cm <sup>3</sup> )	
150.0				21	16	5	2.5		
75.0				Classification:					
37.5									
26.5									
19.0				Sampled in accordance with AS 1289 1.2.1 clause 6.4(b)					
9.5									
4.75				Preparation History of Atterberg Limits					
2.36				Sample : Air Dried					
1.18				Sieved: Wet					
0.600				Linear Shrinkage Data					
0.425				Length of Mould (mm) : 250					
0.300				Sample					
0.150				Curled/Crumbled/Cracked: No					
0.075									



Accredited No. 18573  
Report No. D575 5522/2  
Date of Issue 17/08/15

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

J.Hollebone



## COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : -  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : North Western Fill Area  
Material Use: Fill  
Job No D575

Sample No.: 5299

Sample Date: 30/06/2015 By: P.Clark  
Test Date: 1/07/2015 By: J.Acton  
Check Date: 2/07/2015 By: J.Hollebone

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	AM	AM	AM		
Northing	1644.588	1629.299	1607.067		
Easting	3813.119	3790.955	3755.889		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5299/ 1	5299/ 2	5299/ 3		
Oversize Dry Basis %	0	0	0		
Oversize Wet Basis %	0	0	0		
Field Dry Density t/m <sup>3</sup>	2.00	2.04	2.11		
Field Moisture Content %	10.0	10.0	9.5		
Maximum Dry Density t/m <sup>3</sup>	2.06	2.05	2.08		
Optimum Moist. Cont. %	11.5	11.0	10.0		
Adjusted MDD t/m <sup>3</sup>	-	-	-		
Adjusted OMC %	-	-	-		
Density Ratio %	97.0	99.5	101.5		
Moisture Ratio %	88.0	93.0	94.5		
Moisture Variation %	1.5 dry	1.0 dry	0.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	-				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods:

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction:

No

Remarks:



Accredited No. 18573  
Report No. D575 5299  
Date of Issue: 2/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

J.Hollebone



D575  
Sampled 30/6/15

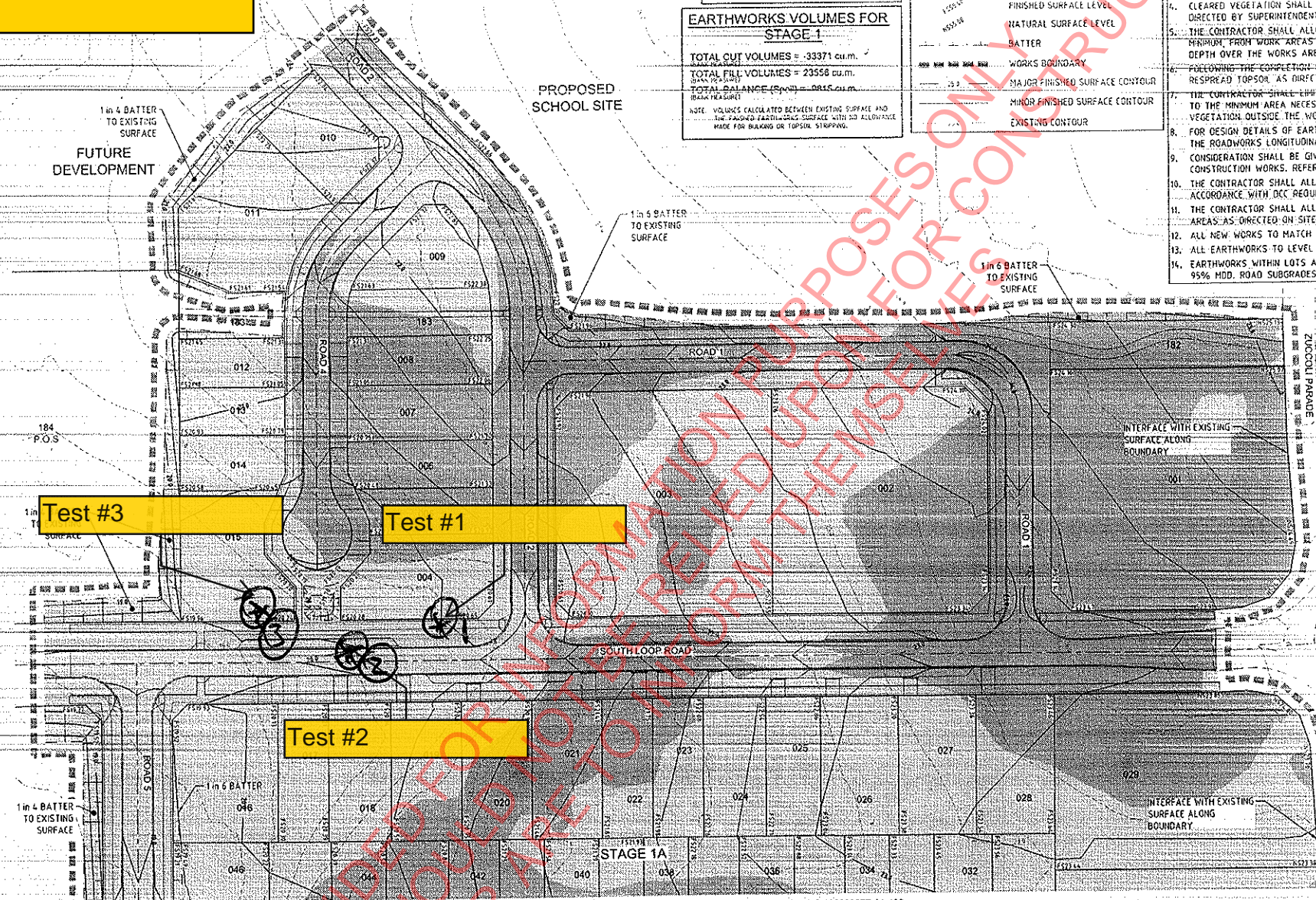
30/6/15

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
The locations of underground services are approximate only and their exact position should be proved on site.  
No guarantee is given that all existing services are shown.  
Locate all underground services before commencement of works.  
**DIAL 1100 BEFORE YOU DIG**  
© 1100 00 00

**EARTHWORKS VOLUMES FOR STAGE 1**  
TOTAL CUT VOLUMES = -33371 cu.m.  
TOTAL FILL VOLUMES = 23558 cu.m.  
TOTAL BALANCE (SPILL) = -9813 cu.m.  
(BANK REPAIR)  
NOTE: VOLUMES CALCULATED BETWEEN EXISTING SURFACE AND THE PAVED FATHOM SURFACE WITH NO ALLOWANCE MADE FOR BLANK OR TOPSOIL STRIPPING.

- LEGEND**
- AREA IN FILL
  - AREA IN CUT
  - FINISHED SURFACE LEVEL
  - NATURAL SURFACE LEVEL
  - BATTER
  - WORKS BOUNDARY
  - MAJOR FINISHED SURFACE CONTOUR
  - MINOR FINISHED SURFACE CONTOUR
  - EXISTING CONTOUR

- EARTHWORKS NOTES:**
1. ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CITY OF PALMERSTON (COP) DEVELOPMENT GUIDELINES AND STANDARD DRAWINGS.
  2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ROADWORKS DRAWINGS AND THE SPECIFICATION.
  3. DESIGN LEVELS SHOWN SHALL BE ON THE FINISHED SURFACE INCLUDING TOPSOIL.
  4. CLEARED VEGETATION SHALL BE MULCHED AND STOCKPILED FOR RESEEDING AS DIRECTED BY SUPERINTENDENT.
  5. THE CONTRACTOR SHALL ALLOW TO REMOVE TOPSOIL TO A DEPTH OF 150mm MINIMUM FROM WORK AREAS AND STOCKPILE ON SITE. THIS IS AN AVERAGE DEPTH OVER THE WORKS AREA BASED ON GEOTECHNICAL INFORMATION PROVIDED.
  6. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL RESEED TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
  7. THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF EQUIPMENT AND MATERIAL TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE THE WORKS BOUNDARY.
  8. FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVES REFER TO THE ROADWORKS LONGITUDINAL AND CROSS SECTION DRAWINGS.
  9. CONSIDERATION SHALL BE GIVEN TO ADJACENT LANDOWNERS DURING THE CONSTRUCTION WORKS. REFER TO SPECIFICATION FOR CONTRACTOR NOTIFICATIONS.
  10. THE CONTRACTOR SHALL ALLOW FOR ALL DUST CONTROL MEASURES IN ACCORDANCE WITH DEC REQUIREMENTS.
  11. THE CONTRACTOR SHALL ALLOW FOR HYDROMULCHING FOR ALL DISTURBED AREAS AS DIRECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATION.
  12. ALL NEW WORKS TO MATCH NEATLY TO EXISTING.
  13. ALL EARTHWORKS TO LEVEL 1 CERTIFICATION.
  14. EARTHWORKS WITHIN LOTS AND VERGES TO BE COMPACTED TO A MINIMUM OF 95% MDD. ROAD SUBGRADES TO BE COMPACTED TO A MINIMUM 98% MDD.



Test #3

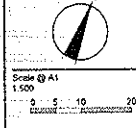
Test #1

Test #2

FOR CONTINUATION REFER TO DWG 30080027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
SIGNED \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission is given on the basis that the  
Developer and/or Consultant is not absolved from full  
responsibility for the correctness and accuracy of the  
design and/or classified documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Wilson  
Drawn  
G. Wilson  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
or copied, in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, and  
conditions and may only be used  
for the purpose for which they are  
intended.

**SMEC**  
Local People. Global Experience.  
URBAN DEVELOPMENT  
Level 1, 48-50 Smith St, Darwin, NT 0800, Australia  
p +61 8 8981 4806 | f +61 8 8941 0818 | www.smec.com

**Zuccoli 3 and 4**  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-101  
Dev. App. No. DP15/0096  
Sheet No. 1 of 3  
Issued for Approval

Rev 1



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**

Location : Western Lots between South Loop Rd & Rd 6  
Material Use: Fill  
Job No D575

Sample No.: 5416  
Sample Date: 21/07/2015 By: D.Gaunt  
Test Date: 22/07/2015 By: J.Acton  
Check Date: 27/07/2015 By: J.Hollebone

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1586.436	1565.676	1545.106		
Easting:	3787.884	3763.064	3754.010		
Reduced Level:	19.432	18.600	18.205		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5416/ 1	5416/ 2	5416/ 3		
Oversize Dry Basis %	6	5	3		
Oversize Wet Basis %	5	4	3		
Field Dry Density t/m <sup>3</sup>	1.98	1.94	2.00		
Field Moisture Content %	9.0	9.0	9.5		
Maximum Dry Density t/m <sup>3</sup>	2.05	2.05	2.08		
Optimum Moist. Cont. %	11.0	10.5	10.5		
Adjusted MDD t/m <sup>3</sup>	2.07	2.06	2.09		
Adjusted OMC %	10.5	10.0	10.0		
Density Ratio %	95.9	94.0	95.6		
Moisture Ratio %	85.5	89.0	92.5		
Moisture Variation %	1.5 dry	1.0 dry	1.0 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	95.2				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1  
Test Methods: NTCP 102.1  
Over Size Sieve: 19.0mm  
Stabilising Agent Used: No  
Sampled prior to field compaction: No  
Remarks:



Accredited No. 18573  
Report No. D575 5416  
Date of Issue: 27/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*J. Hollebone*  
J. Hollebone

D575  
Sampled 21/7/15

FOR CONTINUATION REFER TO DWG 30080027E-01-002

Test #1

FUTURE DISTURBED AREA (MAINTAIN  
EXISTING VEGETATION)  
185  
P.O.S.

NO GO ZONE

STAGE 1B

EXISTING DIVERSION DRAIN TO REMAIN

NO GO ZONE

NOTE

1. REFER TO PROJECT DRAWING 006 FOR LEGEND AND  
OPERATIONAL WORKS NOTES.

FOR CONTINUATION REFER TO DWG 30080027E-01-004

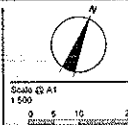
FOR CONTINUATION REFER TO DWG 30080027E-01-004

1	DESIGNED FOR APPROVAL	DATE	15/07/15
2	CHECKED FOR APPROVAL	DATE	15/07/15
3	APPROVED FOR CONSTRUCTION	DATE	15/07/15

Principal  
Cassidy Pty Ltd

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
SIGNED \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission to use is given on the basis that the  
Developer and/or Consultant is not absolved from full  
responsibility for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Wilson  
Drawn  
D. Evans  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
15/07/2015



© SMEC Australia Pty Ltd  
All rights reserved.  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
or copied, in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purpose for which they are  
intended.



URBAN DEVELOPMENT  
Level 1, 45-50 Smith St, Darwin, NT 0800, Australia  
p +61 8 8981 4806 | f +61 8 8941 0848 | www.smecc.com

Zuccoli 3 and 4

Stage 1  
City of Palmerston  
Erosion & Sediment Control - Operational  
Drawing No. 30080027E-01-003  
Dev. App. No. DP15/0096  
Sheet No. 2 of 5

Issued for Approval

Rev 3





# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**

Location : Western Lots between South Loop Rd & Rd 6  
Material Use: Fill  
Job No D575

Sample No.: 5419  
Sample Date: 22/07/2015 By: D.Gaunt  
Test Date: 22/07/2015 By: J.Acton  
Check Date: 23/07/2015 By: J.Hollebone

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1589.060	1589.725	1553.842		
Easting:	3786.171	3762.450	3745.353		
Reduced Level:	19.493	19.155	18.644		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5419/ 1	5419/ 2	5419/ 3		
Oversize Dry Basis %	6	7	6		
Oversize Wet Basis %	5	6	6		
Field Dry Density t/m <sup>3</sup>	1.99	1.93	2.03		
Field Moisture Content %	10.5	10.0	10.0		
Maximum Dry Density t/m <sup>3</sup>	2.04	2.05	2.05		
Optimum Moist. Cont. %	10.5	10.0	10.5		
Adjusted MDD t/m <sup>3</sup>	2.06	2.07	2.07		
Adjusted OMC %	10.0	9.5	10.0		
Density Ratio %	96.5	93.3	98.1		
Moisture Ratio %	107.5	105.5	103.0		
Moisture Variation %	0.5 wet	0.5 wet	0.5 wet		
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	96.0				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5419  
Date of Issue: 27/07/2015

Accredited for compliance with ISO/IEC 17025

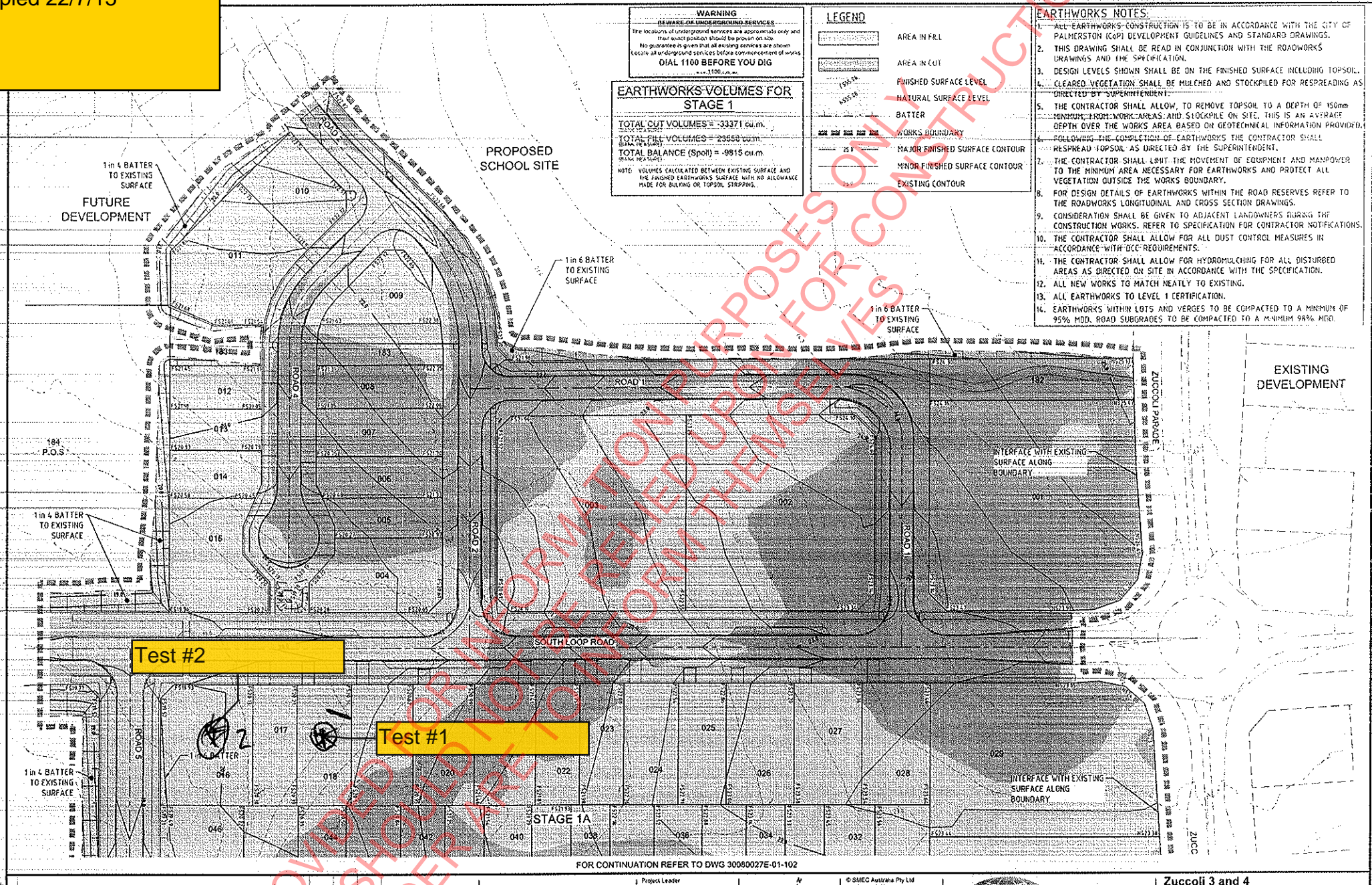
Authorised Signatory

*J. Hollebone*

J.Hollebone



D575  
Sampled 22/7/15



FOR CONTINUATION REFER TO DWG 30080027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWAYS AND STORMWATER DRAINAGE

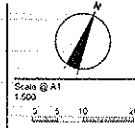
SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMISTON

This permission to use is given on the basis that the Employer and/or Consultant is not released from responsibility for the correctness and accuracy of the design and/or associated documents.

This permission is valid for a period of two years from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Wilkin  
Drawn  
G. Wilkin  
Checked  
G. Wilkin  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
AD24 07 095 472 140

These designs and drawings are the copyright of SMEC Australia Pty Ltd. The drawing shall not be reproduced or copied, in whole or part, without the written permission of SMEC Australia Pty Ltd. The contents of this drawing are electronically generated, are confidential and may only be used for the purpose for which they are intended.



**Zuccoli 3 and 4**  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-101  
Dev. App. No. DP15/0095

Rev 1

· Issued for Approval



FOR CONTINUATION REFER TO DWG 30080027E-01-101

STAGE 1A

Test #3

ROAD 6

ROAD 6

ROAD 6

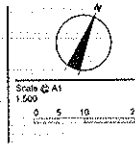
ROAD 6

ROAD 6

FOR CONTINUATION REFER TO DWG 30080027E-01-103

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
 THIS DRAWING IS THE PROPERTY OF SMEC AUSTRALIA PTY LTD  
 IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED  
 IT IS NOT TO BE REPRODUCED OR COPIED IN WHOLE OR PART WITHOUT THE WRITTEN PERMISSION OF SMEC AUSTRALIA PTY LTD  
 THE CONTENTS OF THIS DRAWING ARE ELECTRONICALLY GENERATED, ARE CONDITIONAL AND MAY ONLY BE USED FOR THE PURPOSE FOR WHICH THEY ARE INTENDED

Project Leader  
 S. Fraser  
 Designed  
 G. Wilson  
 Drawn  
 G. Wilson  
 Checked  
 G. Wilson  
 Approved  
 S. Fraser  
 Date  
 April 2015



© SMEC Australia Pty Ltd  
 15000  
 These designs and drawings are the copyright of SMEC Australia Pty Ltd. The drawing shall not be reproduced or copied in whole or part without the written permission of SMEC Australia Pty Ltd. The contents of this drawing are electronically generated, are conditional and may only be used for the purpose for which they are intended.



Zuccoli 3 and 4  
 Stage 1  
 City of Palmerston  
 Earthworks  
 Earthworks Layout Plan  
 Drawing No. 30080027E-01-102  
 Dev. App. No. DP15/0098  
 Sheet No. 2 of 3  
 Issued for Approval

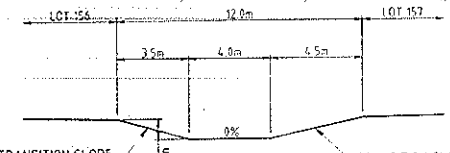
Rev 1

**NOTES**  
 1. REFER TO PROJECT DRAWING 101 FOR EARTHWORKS LEGEND AND NOTES.

**WARNING**  
 BEWARE OF UNDERGROUND SERVICES  
 The locations of underground services are approximate only and their exact position should be proven on site.  
 No guarantee is given that all existing services are shown.  
 Locate all underground services before commencement of works.  
**DIAL 1100 BEFORE YOU DIG**  
 www.1100.com.au

TRANSITION SLOPE FROM 4.7% TO 21.3%  
 VARIES 0.14m - 0.15m  
 SECTION A RL1  
 TRANSITION SLOPE FROM 3.2% TO 15.9%

INTERFACE WITH EXISTING SURFACE ALONG BOUNDARY  
 FUTURE DEVELOPMENT



INTERFACE WITH EXISTING SURFACE ALONG BOUNDARY

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE

1 in 4 BATTER TO EXISTING SURFACE



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5458**

Sample Date: **29/07/2015** By: **A.Bravo**  
Test Date: **30/07/2015** By: **J.Acton**  
Check Date: **31/07/2015** By: **J.Hollebone**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1552.888	1578.185	1602.606		
Test Location Offset :	3768.523	3771.075	3796.087		
Reduced Level:	19.345	19.565	20.045		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5458/ 1	5458/ 2	5458/ 3		
Oversize Dry Basis %	8	6	6		
Oversize Wet Basis %	8	5	6		
Field Dry Density t/m <sup>3</sup>	1.96	1.99	2.04		
Field Moisture Content %	11.0	11.0	8.5		
Maximum Dry Density t/m <sup>3</sup>	2.06	2.05	2.06		
Optimum Moist. Cont. %	10.5	10.5	10.0		
Adjusted MDD t/m <sup>3</sup>	2.09	2.06	2.08		
Adjusted OMC %	9.5	10.0	9.5		
Density Ratio %	<b>94.0</b>	<b>96.3</b>	<b>98.4</b>		
Moisture Ratio %	114.0	112.0	93.5		
Moisture Variation %	1.5 wet	1.0 wet	0.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	<b>96.3</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5458  
Date of Issue: 31/07/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

J.Hollebone



D575  
Sampled 29/7/15

**WARNING**  
**BEWARE OF UNDERGROUND SERVICES**  
The location of underground services is approximately only and  
their actual position should be confirmed by the owner.  
It is guaranteed that all existing services are shown.  
Locate all underground services before commencement of works.  
**DIAL 1100 BEFORE YOU DIG**  
- 1100 -

### EARTHWORKS VOLUMES FOR STAGE 1

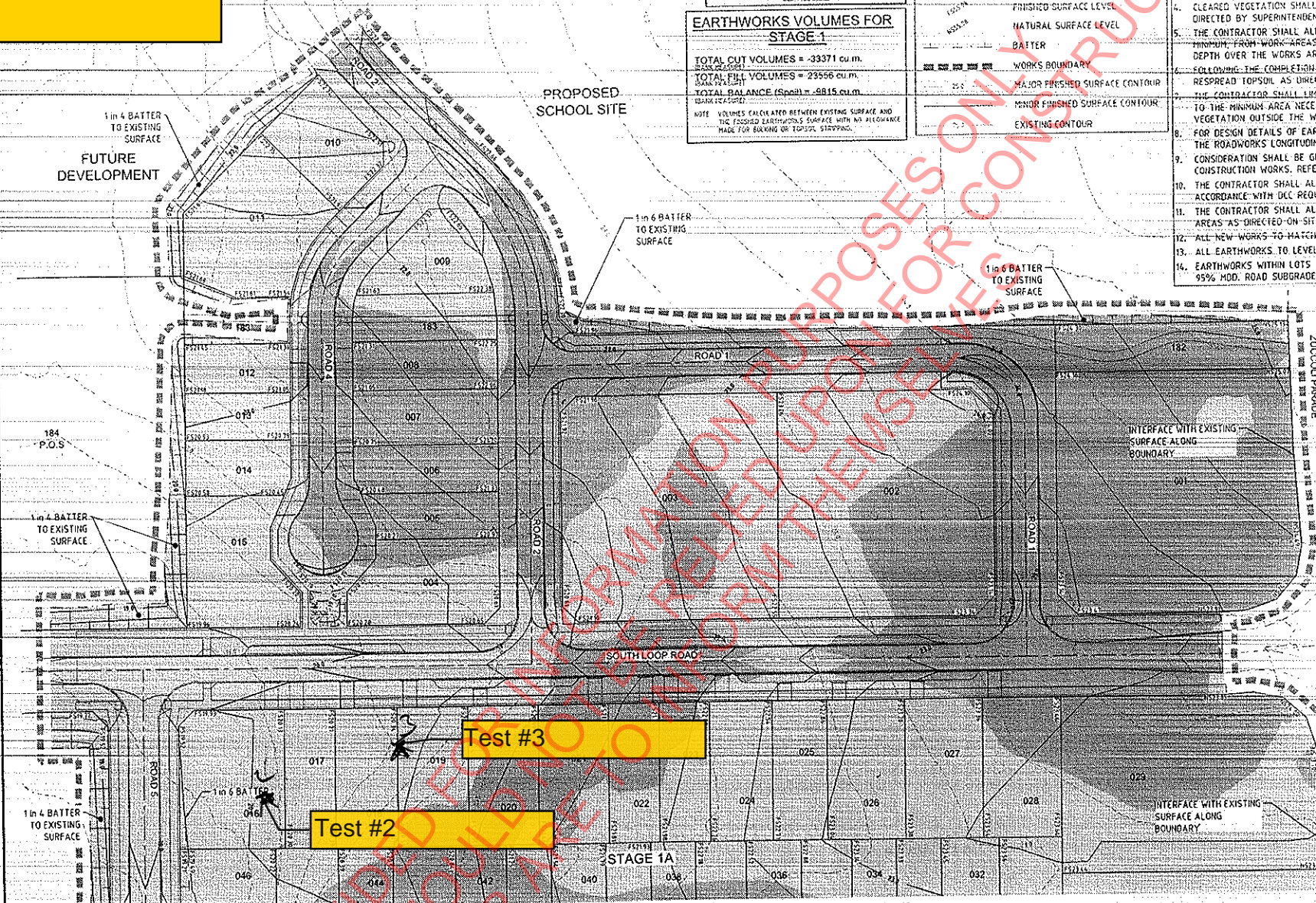
TOTAL CUT VOLUMES = -33371 cu.m.  
TOTAL FILL VOLUMES = 23556 cu.m.  
TOTAL BALANCE (Spill) = -9815 cu.m.  
NOTE: VOLUMES CALCULATED BETWEEN EXISTING SURFACE AND  
THE PROPOSED EARTHWORKS SURFACE WITH AN ALLOWANCE  
MADE FOR BULKING OR TOSPOIL STRIPPING.

### LEGEND

AREA IN FILL  
AREA IN CUT  
FINISHED SURFACE LEVEL  
NATURAL SURFACE LEVEL  
BATTER  
WORKS BOUNDARY  
MAJOR FINISHED SURFACE CONTOUR  
MINOR FINISHED SURFACE CONTOUR  
EXISTING CONTOUR

### EARTHWORKS NOTES:

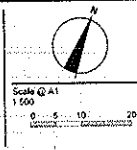
1. ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CITY OF PALMERSTON (COP) DEVELOPMENT GUIDELINES AND STANDARD DRAWINGS.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ROADWORKS DRAWINGS AND THE SPECIFICATION.
3. DESIGN LEVELS SHOWN SHALL BE ON THE FINISHED SURFACE INCLUDING TOPSOIL.
4. CLEARED VEGETATION SHALL BE MULCHED AND STOCKPILED FOR RESPREADING AS DIRECTED BY SUPERINTENDENT.
5. THE CONTRACTOR SHALL ALLOW TO REMOVE TOPSOIL TO A DEPTH OF 150mm MINIMUM FROM WORK AREAS AND STOCKPILE ON SITE. THIS IS AN AVERAGE DEPTH OVER THE WORKS AREA BASED ON GEOTECHNICAL INFORMATION PROVIDED.
6. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL RESPREAD TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
7. THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE THE WORKS BOUNDARY.
8. FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVES REFER TO THE ROADWORKS LONGITUDINAL AND CROSS SECTION DRAWINGS.
9. CONSIDERATION SHALL BE GIVEN TO ADJACENT LANDOWNERS DURING THE CONSTRUCTION WORKS. REFER TO SPECIFICATION FOR CONTRACTOR NOTIFICATIONS.
10. THE CONTRACTOR SHALL ALLOW FOR ALL DUST CONTROL MEASURES IN ACCORDANCE WITH DCC REQUIREMENTS.
11. THE CONTRACTOR SHALL ALLOW FOR HYDROMULCHING FOR ALL DISTURBED AREAS AS DIRECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATION.
12. ALL NEW WORKS TO MATCH HEAVY TO EXISTING.
13. ALL EARTHWORKS TO LEVEL 1 CERTIFICATION.
14. EARTHWORKS WITHIN LOTS AND VERGES TO BE COMPACTED TO A MINIMUM OF 95% MDD. ROAD SUBGRADES TO BE COMPACTED TO A MINIMUM 98% MDD.



FOR CONTINUATION REFER TO DWG 30080027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
SIGNED \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission to use is given on the basis that the  
Developer and/or Consultant is not absolved from his  
design and/or construction obligations.  
This permission is valid for a period of two years  
from the date of issue.

Project Leader  
S. Fraser  
Designed  
G. Wilson  
Drawn  
G. Wilson  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
All rights reserved.  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
or copied, in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purpose for which they are  
intended.



Zuccoli 3 and 4  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-101  
Dev. App. No. DP15/0096  
Sheet No. 1 of 2

Rev 1

Issued for Approval



FOR CONTINUATION REFER TO DWG 30080027E-01-101

STAGE 1A

Test #1

185  
P.O.S.

1 in 4 BATTER  
TO EXISTING  
SURFACE

ROAD 6

ROAD 6

ROAD 7

INTERFACE WITH EXISTING  
SURFACE ALONG  
BOUNDARY

STAGE 1B

FUTURE  
DEVELOPMENT

TRANSITION SLOPE  
FROM 4.1% TO 21.3%

SECTION A  
R.L.S.

TRANSITION SLOPE  
FROM 3.2% TO 15.9%

#### NOTES

1. REFER TO PROJECT DRAWING 101 FOR EARTHWORKS  
LEGEND AND NOTES.

#### WARNING

**BEWARE OF UNDERGROUND SERVICES**  
The locations of underground services are approximate only and  
their exact position should be proven on site.  
No guarantee is given that all existing services are shown.  
Locate all underground services before commencement of works.  
**DIAL 1100 BEFORE YOU DIG**  
See 1100/01-01

FOR CONTINUATION REFER TO DWG 30080027E-01-103

Principal  
Geotech Pty Ltd

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission is given on the basis that the  
Developer and/or Consultant is not absolved from full  
responsibility for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of digital signature.

Project Leader  
S. Fraser  
Designed  
S. Fraser  
Drawn  
S. Fraser  
Checked  
S. Fraser  
Authorised  
S. Fraser  
Date  
April 2015

Scale @ A1  
1:500  
0 5 10 20

© SMEC Australia Pty Ltd  
All rights reserved.  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
or copied, in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purpose for which they are  
intended.

**SMEC**  
Local People. Global Experience.  
URBAN DEVELOPMENT  
Level 1, 48-50 Smith St, Porters NT (Opp. A. Smith)  
p +61 8 6881 4600 f +61 8 6881 4604 e [info@smec.com.au](mailto:info@smec.com.au)

**Zuccoli 3 and 4**  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-102  
Dev. App. No. DP15/0096  
Sheet No. 2 of 3

Rev 1

Issued for Approval



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5465**

Sample Date: **30/07/2015** By: **L.Beaven**  
Test Date: **31/07/2015** By: **J.Acton**  
Check Date: **4/08/2015** By: **J.Hollebone**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1667.505	1649.999	1650.800		
Test Location Offset :	3896.086	3922.540	3974.930		
Reduced Level:	22.135	23.130	23.210		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5465/ 1	5465/ 2	5465/ 3		
Oversize Dry Basis %	7	3	4		
Oversize Wet Basis %	6	3	4		
Field Dry Density t/m <sup>3</sup>	2.02	2.02	2.01		
Field Moisture Content %	10.5	8.5	9.0		
Maximum Dry Density t/m <sup>3</sup>	2.04	2.07	2.07		
Optimum Moist. Cont. %	11.5	11.0	11.0		
Adjusted MDD t/m <sup>3</sup>	2.07	2.08	2.09		
Adjusted OMC %	10.5	10.5	10.5		
Density Ratio %	<b>97.5</b>	<b>96.9</b>	<b>96.4</b>		
Moisture Ratio %	97.5	81.5	87.0		
Moisture Variation %	0.5 dry	2.0 dry	1.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	<b>96.9</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5465  
Date of Issue: 4/08/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

J.Hollebone

D575  
Sampled 30/7/15

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
The locations of underground services are approximate only and  
their exact positions should be ascertained on site.  
No guarantee is given that all existing services are shown.  
Locate all underground services before commencement of works.  
**DIAL 1100 BEFORE YOU DIG**  
1100 1100

**EARTHWORKS VOLUMES FOR  
STAGE 1**

TOTAL CUT VOLUMES = -33371 cu.m.  
(GRAIN TO SURF)

TOTAL FILL VOLUMES = 23556 cu.m.  
(GRAIN TO SURF)

TOTAL BALANCE (Spool) = -9815 cu.m.  
(GRAIN TO SURF)

NOTE: VOLUMES CALCULATED BETWEEN EXISTING SURFACE AND  
THE FINISHED EARTHWORKS SURFACE WITH NO ALLOWANCE  
MADE FOR BURNING OR TOPSOIL STRIPPING.

**LEGEND**

	AREA IN FILL
	AREA IN CUT
	FINISHED SURFACE LEVEL
	NATURAL SURFACE LEVEL
	BATTER
	WORKS BOUNDARY
	MAJOR FINISHED SURFACE CONTOUR
	MINOR FINISHED SURFACE CONTOUR
	EXISTING CONTOUR

**EARTHWORKS NOTES:**

1. ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CITY OF PALMERSTON (COP) DEVELOPMENT GUIDELINES AND STANDARD DRAWINGS.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ROADWORKS DRAWINGS AND THE SPECIFICATION.
3. DESIGN LEVELS SHOWN SHALL BE ON THE FINISHED SURFACE INCLUDING TOPSOIL.
4. CLEARED VEGETATION SHALL BE MULCHED AND STOCKPILED FOR RESPEERING AS DIRECTED BY SUPERINTENDENT.
5. THE CONTRACTOR SHALL ALLOW, TO REMOVE TOPSOIL TO A DEPTH OF 150mm MINIMUM, FROM WORK AREAS AND STOCKPILE ON SITE. THIS IS AN AVERAGE DEPTH OVER THE WORKS AREA BASED ON GEOTECHNICAL INFORMATION PROVIDED.
6. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL RESPAER TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
7. THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE THE WORKS BOUNDARY.
8. FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVES REFER TO THE ROADWORKS LONGITUDINAL AND CROSS SECTION DRAWINGS.
9. CONSIDERATION SHALL BE GIVEN TO ADJACENT LANDOWNERS DURING THE CONSTRUCTION WORKS. REFER TO SPECIFICATION FOR CONTRACTOR NOTIFICATIONS.
10. THE CONTRACTOR SHALL ALLOW FOR ALL DUST CONTROL MEASURES IN ACCORDANCE WITH DCC REQUIREMENTS.
11. THE CONTRACTOR SHALL ALLOW FOR HYDROMULCHING FOR ALL DISTURBED AREAS AS DIRECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATION.
12. ALL NEW WORKS TO MATCH NEATLY TO EXISTING.
13. ALL EARTHWORKS TO LEVEL 1 CERTIFICATION.
14. EARTHWORKS WITHIN LOTS AND VERGES TO BE COMPACTED TO A MINIMUM OF 95% MDD. ROAD SUBGRADES TO BE COMPACTED TO A MINIMUM 98% MDD.

PROPOSED  
SCHOOL SITE

FUTURE  
DEVELOPMENT

EXISTING  
DEVELOPMENT

Test #2

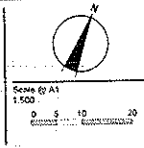
Test #1

Test #3

FOR CONTINUATION REFER TO DWG 30080027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
PERMISSION OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission is given on the basis that the  
designer and/or consultant is not, and will not be,  
responsible for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Wilson  
Drawn  
G. Wilson  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
All rights reserved  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
or copied in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purposes for which they are  
intended.



Zuccoli 3 and 4  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-101  
Dev. App. No. DP15/0096  
Sheet No. 1 of 3

Rev 1

Issued for Approval



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5470 / A**  
Sample Date: **31/07/2015** By: **L.Beaven**  
Test Date: **5/08/2015** By: **J.Acton**  
Check Date: **6/08/2015** By: **J.Hollebone**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1589.626	1578.444	1588.520		
Test Location Offset :	3800.533	3786.215	3775.217		
Reduced Level:	20.180	20.100	19.580		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5470/ 1	5470/ 2	5470/ 3		
Oversize Dry Basis %	3	4	4		
Oversize Wet Basis %	3	4	4		
Field Dry Density t/m <sup>3</sup>	2.03	2.04	1.94		
Field Moisture Content %	11.0	9.5	12.0		
Maximum Dry Density t/m <sup>3</sup>	2.07	2.07	2.05		
Optimum Moist. Cont. %	11.5	12.5	11.0		
Adjusted MDD t/m <sup>3</sup>	2.09	2.09	2.07		
Adjusted OMC %	11.0	12.0	10.5		
Density Ratio %	<b>97.1</b>	<b>97.8</b>	<b>93.9</b>		
Moisture Ratio %	100.0	80.5	115.0		
Moisture Variation %	0.0	2.5 dry	1.5 wet		
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	<b>96.3</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5470/A  
Date of Issue: 6/08/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

*J. Hollebone*

J.Hollebone

D575  
Ostojic Group  
Zuccoli Stage 3 & 4  
Sampled 31/7/15

**EARTHWORKS VOLUMES FOR  
STAGE 1**

TOTAL CUT VOLUMES = -33371 cu.m.  
BANK REA SURF

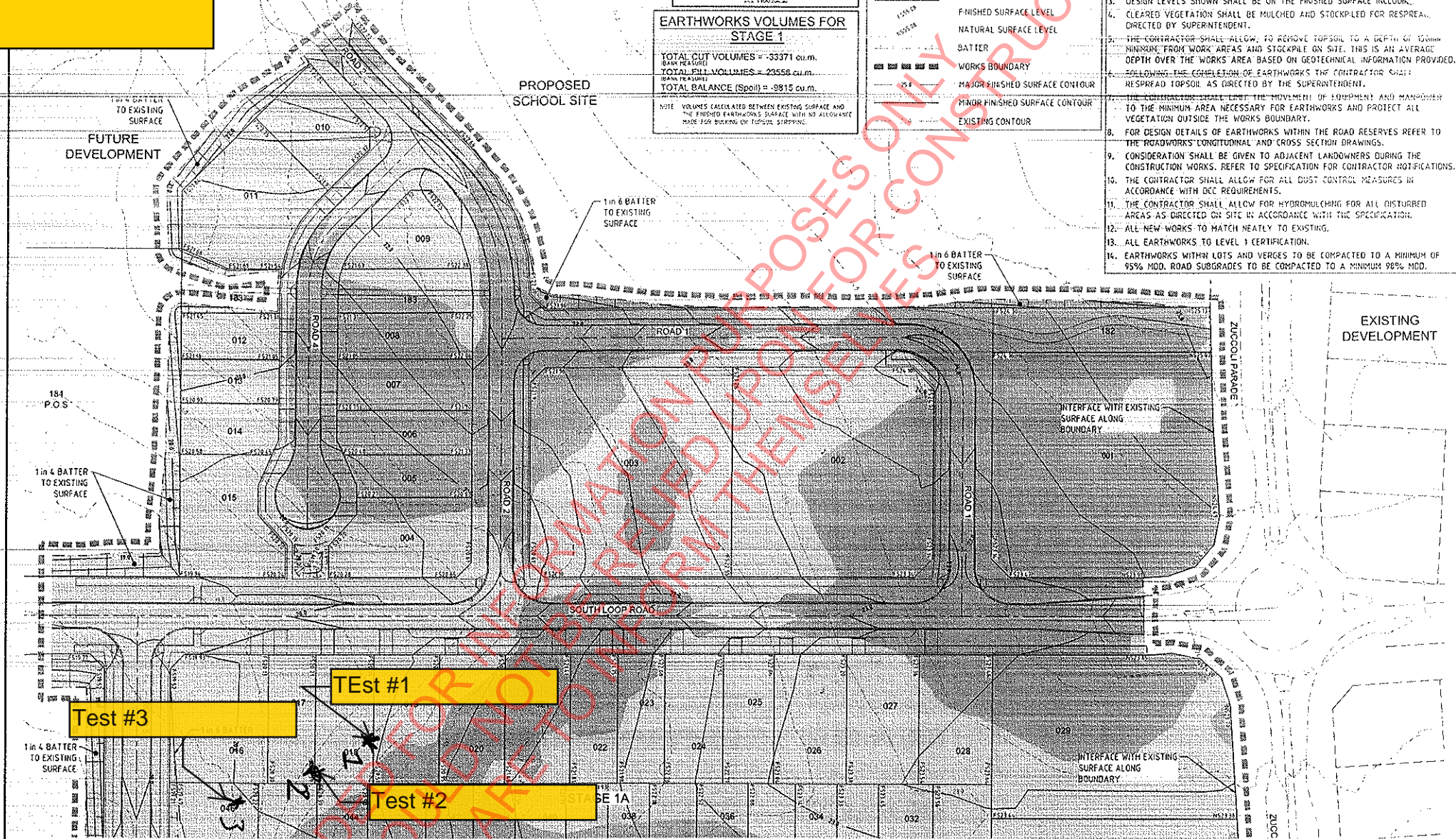
TOTAL FILL VOLUMES = 23556 cu.m.  
BANK FILL SURF

TOTAL BALANCE (Spoil) = -9815 cu.m.

NOTE VOLUMES CALCULATED FROM EXISTING SURFACE AND  
THE FINISHED EARTHWORKS SURFACE WITH NO ALLOWANCE  
MADE FOR BUILDING OR TOPSOIL SETTING.

Figure 10.1 is a technical drawing of a site plan. It features a north arrow pointing towards the top right. The drawing includes several labels: 'AREA IN FILL' (hatched area), 'AREA IN CUT' (dashed area), 'FINISHED SURFACE LEVEL', 'NATURAL SURFACE LEVEL', 'GATTER', 'WORKS BOUNDARY', 'MAJOR FINISHED SURFACE CONTOUR', 'MAJOR FINISHED SURFACE CONTOUR', and 'EXISTING CONTOUR'. A scale bar at the bottom indicates distances in meters (0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100). A legend at the top left explains the symbols for 'AREA IN FILL' (hatched area) and 'AREA IN CUT' (dashed area). A note at the bottom left states '1:2500' and '1/2500'.

1. ALL EARTHWORKS CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE PALMERSTON (C&P) DEVELOPMENT GUIDELINES AND STANDARDS.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ROADWORKS DRAWINGS AND THE SPECIFICATION.
3. DESIGN LEVELS SHOWN SHALL BE ON THE FINISHED SURFACE INCLUDING:
  - a. CLEARED VEGETATION SHALL BE MULCHED AND STOCKPILED FOR REUSE, AS DIRECTED BY SUPERINTENDENT.
4. THE CONTRACTOR SHALL ALLOW, TO REMOVE TOPSOIL TO A DEPTH OF 150mm MINIMUM, FROM WORK AREAS AND STOCKPILE ON SITE. THIS IS AN AVERAGE DEPTH OVER THE WORKS AREA BASED ON GEOTECHNICAL INFORMATION PROVIDED.
5. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR SHALL:
  - a. RESEED TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
  - b. THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF TOPSOIL AND MANURE TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE THE WORKS BOUNDARY.
6. FOR DESIGN DETAILS OF EARTHWORKS WITHIN THE ROAD RESERVES REFER TO THE ROADWORKS LONGITUDINAL AND CROSS SECTION DRAWINGS.
7. CONSIDERATION SHALL BE GIVEN TO ADJACENT LANDOWNERS DURING THE CONSTRUCTION WORKS. REFER TO SPECIFICATION FOR CONTRACTOR NOTIFICATIONS.
8. THE CONTRACTOR SHALL ALLOW FOR ALL DUST CONTROL MEASURES IN ACCORDANCE WITH OCC REQUIREMENTS.
9. THE CONTRACTOR SHALL ALLOW FOR HYDROMULCHING FOR ALL DISTURBED AREAS AS DIRECTED ON SITE IN ACCORDANCE WITH THE SPECIFICATION.
10. ALL NEW WORKS TO MATCH NEATLY TO EXISTING.
11. ALL EARTHWORKS TO LEVEL 1 CERTIFICATION.
12. EARTHWORKS WITHIN LOTS AND VERGES TO BE COMPACTED TO A MINIMUM OF 95% MOD. ROAD SUBGRADE TO BE COMPACTED TO A MINIMUM 98% MOD.



FOR CONTINUATION REFER TO DWG 30080027E-01-102

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWAYS AND STORMWATER DRAINAGE

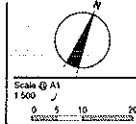
SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON

This permission to use is given on the basis that the Developer and/or Consultant is not absolved from his responsibility for the correctness and accuracy of the design and/or associated documents.

This permission is valid for a period of two years from the date of signed consent.

Project Leader  
S Fraser  
Designed  
G Wilson  
Drawn  
G Wilson  
Checked  
G Wilson  
Authorised  
S Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
 08 947 305 475 fax  
 These designs and drawings are the  
 copyright of SMEC Australia Pty Ltd.  
 The drawing shall not be reproduced  
 or copied, in whole or part, without  
 the written permission of SMEC  
 Australia Pty Ltd.  
 The contents of this drawing are  
 electronically generated, are  
 confidential and may only be used  
 for the purpose for which they are  
 submitted.



**Zuccoli 3 and 4**  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-101  
Dev. App. No. DP15/0096

Rev 1

Issued for Approval



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5470 / B**  
Sample Date: **31/07/2015** By: **L.Beaven**  
Test Date: **5/08/2015** By: **A.Bravo**  
Check Date: **6/08/2015** By: **J.Hollebone**

Client Ref.: #53273

Test Number	4	5	6		
Time of Test	am	am	am		
Northing:	1644.654	1627.296	1618.584		
Test Location Offset :	3964.852	3922.157	3895.255		
Reduced Level:	23.260	23.000	22.422		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	-	-	-		
Laboratory Sample No.	5470/ 4	5470/ 5	5470/ 6		
Oversize Dry Basis %	5	3	2		
Oversize Wet Basis %	4	3	2		
Field Dry Density t/m <sup>3</sup>	2.02	1.99	2.03		
Field Moisture Content %	11.5	10.5	10.0		
Maximum Dry Density t/m <sup>3</sup>	2.05	2.07	2.05		
Optimum Moist. Cont. %	11.5	11.0	10.5		
Adjusted MDD t/m <sup>3</sup>	2.07	2.08	2.06		
Adjusted OMC %	11.0	10.5	10.5		
Density Ratio %	<b>97.6</b>	<b>95.8</b>	<b>98.8</b>		
Moisture Ratio %	104.0	98.5	96.5		
Moisture Variation %	0.5 wet	0.0	0.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	<b>97.4</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5470/B  
Date of Issue: 6/08/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

J.Hollebone



D575  
Ostojic Group  
Zuccoli Stage 3 & 4  
Sampled 31/7/15

FOR CONTINUATION REFER TO DWG 30080927E-01-101

STAGE 1A

## Test #5

## Test #6

## TEst #4

P.O.S

1 in 4 BATTER  
TO EXISTING  
SURFACE

FOR CONTINUATION REFER TO DWG 30080027E-01-103

**1 in 4 BATTER  
TO EXISTING  
SIDEWALK**

DETENTION BAS  
BASE RI 15 30

STAGE 1B

## FUTURE DEVELOPMENT

TRANSITION SLOPE  
FROM 4.7% TO 213%

## WARNING

**BWARE OF UNDERGROUND SERVICES**  
The locations of underground services are approximate only and their exact position should be proven on site.  
No guarantee is given that all existing services are known.  
Locate all underground services before commencement of work.

**DIAL 1100 BEFORE YOU DIG**

NOTES

1. REFER TO PROJECT DRAWING 151 FOR EARTHWORKS  
LEGEND AND NOTES.

FOR CONTINUATION REFER TO DWG 30080027E-01-103

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORK AND STORMWATER DRAINAGE

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR OF TECHNICAL SERVICES  
CITY OF WASHINGTON

This permission to use is given on the basis that the  
Developer and/or Consultant is not absolved from all  
responsibility for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Foster  
Designed  
G. Wilson  
Drawn  
G. Wilson  
Checked  
G. Wilson  
Authorised  
S. Foster  
Date  
April 2015



Scale @ A1			
1:500	0	5	10

© SMEC Australia Pty Ltd  
All rights reserved.  
These designs and drawings  
copyright © SMEC Australia  
The drawing shall not be re-  
produced, copied, or in whole or part,  
without the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing  
are confidential and may only be  
used for the purpose for which it  
was intended.



# SMEC

**URBAN DEVELOPMENT**  
Level 1, 48-50 Smith St, Darwin, NT 0800, Australia  
p +61 8 8961 4800 f +61 8 8961 0638 | www.smec.com

**Zuccoli 3 and 4**  
Stage 1  
City of Palmerston  
Earthworks  
Earthworks Layout Plan  
Drawing No. 30080027E-01-102  
Dev. App. No. DP15/0096  
Sheet No. 2 of 3

Rev 1

Issued for Approval



# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1A**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5522 / A**  
Sample Date: **10/08/2015** By: **L.Beaven**  
Test Date: **11/08/2015** By: **J.Acton**  
Check Date: **13/08/2015** By: **J.Hollebone**

Client Ref.: **#53273**

Test Number	1	2	3	4	
Time of Test	am	am	am	am	
Northing:	1642.325	1640.455	1605.155	1580.507	
Easting	3964.777	3913.777	3817.835	3799.755	
Reduced Level:	23.530	23.162	20.814	20.362	
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200	200	
Elevation	-	-	-	-	
Laboratory Sample No.	5522/ 1	5522/ 2	5522/ 3	5522/ 4	
Oversize Dry Basis %	7	1	3	4	
Oversize Wet Basis %	7	1	3	3	
Field Dry Density t/m <sup>3</sup>	2.00	1.98	2.00	2.04	
Field Moisture Content %	7.0	6.0	5.5	7.5	
Maximum Dry Density t/m <sup>3</sup>	2.07	2.03	2.04	2.06	
Optimum Moist. Cont. %	9.5	9.0	8.5	9.0	
Adjusted MDD t/m <sup>3</sup>	2.09	2.03	2.05	2.07	
Adjusted OMC %	9.0	9.0	8.5	8.5	
Density Ratio %	<b>95.9</b>	<b>97.6</b>	<b>97.4</b>	<b>98.5</b>	
Moisture Ratio %	78.5	69.5	69.0	86.0	
Moisture Variation %	2.0 dry	2.5 dry	2.5 dry	1.0 dry	
Characteristic Mean (R <sub>c</sub> ) or Mean (R <sub>s</sub> ) (%)	<b>97.3</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm

Stabilising Agent Used: No

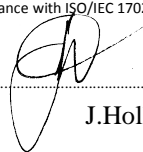
Sampled prior to field compaction: No

Remarks:

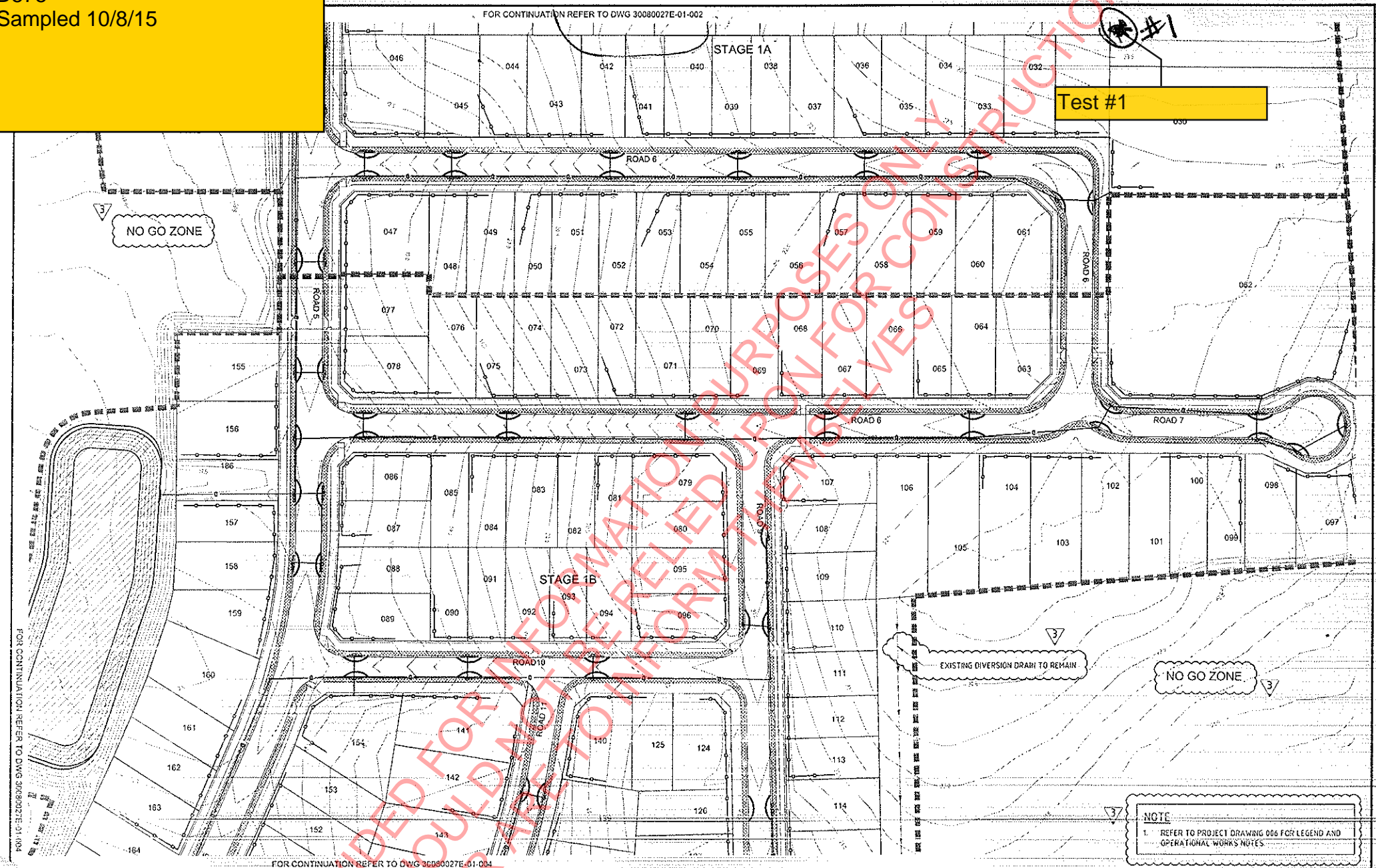


Accredited No. 18573  
Report No. D575 5522/A  
Date of Issue: 13/08/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory   
J.Hollebone

D575  
Sampled 10/8/15

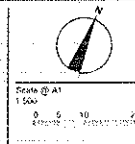


PROVIDED FOR INFORMATION PURPOSES ONLY

FOR CONTINUATION REFER TO DWG 30080027E-01-004

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER CONTROL  
ISSUED: 10/08/15  
DATE: 10/08/15  
DESIGNER: S. FRASER  
CHECKED: G. WOODS  
DRAWN: D. EVANS  
PROJECT: Zuccoli 3 and 4  
SHEET: 2 OF 2

Design Leader  
S. Fraser  
Design  
G. Woods  
Drawn  
D. Evans  
Checked  
G. Woods  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
All rights reserved  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd  
The drawing shall not be reproduced  
or copied in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd  
The contents of this drawing are  
confidential and may only be used  
for the purpose for which they are  
intended



Zuccoli 3 and 4  
Stage 1  
City of Palmerston  
Erosion & Sediment Control - Operational  
Drawing No. 30080027E-01-003  
Rev 3  
Dav. App. No. DP15/0096  
Sheet No. 2 of 2  
Issued for Approval

PROPOSED  
SCHOOL SITE

EXISTING DIVERSION DRAIN TO REMAIN

REFER TO PROJECT DRAWING 009 FOR  
PLACEMENT OF LATERAL FILTER STRIPS

CONSTRUCTION  
COMPOUND ZONE

NO GO ZONE

FUTURE  
DEVELOPMENT

NO GO ZONE

184  
P.O.S

FUTURE DISTURBED AREA  
(MAINTAIN EXISTING VEGETATION)

ZUCCOLI PARADE

SITE ENTRY / EXIT

STAGE 1A

FOR CONTINUATION REFER TO DWG 30080027E-01-003

Test #4

Test #3

Test #2

NOTE

1 REFER TO PROJECT DRAWING 006 FOR LEGEND AND  
OPERATIONAL WORKS NOTES

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWORKS AND STORMWATER DRAINAGE  
CITY OF PALMERSTON  
DIRECTOR OF TECHNICAL SERVICES  
This permission to use is given on the basis that the  
designer and/or consultant is not deemed from this  
responsibility for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Villan  
Drawn  
D. Evans  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
April 2015

Scale @ A1  
1:500  
0 5 10 20

© SMEC Australia Pty Ltd  
ADEL 17 001 475 141  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purpose for which they are  
intended.



URBAN DEVELOPMENT  
Level 1, 40-52 Smith St, Darwin, NT 0800, Australia  
p +61 8 8941 4206 | f +61 8 8941 0818 | www.smec.com

Zuccoli 3 and 4

Stage 1  
City of Palmerston  
Erosion & Sediment Control - Operational  
Erosion & Sediment Control Layout Plan  
Drawing No. 30080027E-01-002  
Dev. App. No. DP15/0096  
Sheet No. 1 of 5

Rev 3

Issued for Approval



## COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Stage 1B**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5533**

Sample Date: **12/08/2015** By: **K.Jordaan**  
Test Date: **13/08/2015** By: **K.Jordaan**  
Check Date: **14/08/2015** By: **D.Gaunt**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1452.015	1421.710	1442.349		
Easting:	3755.505	3764.362	3763.333		
Reduced Level:	16.870	16.865	17.014		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	Lift 1	Lift 1	Lift 1		
Laboratory Sample No.	5533/ 1	5533/ 2	5533/ 3		
Oversize Dry Basis %	0	0	0		
Oversize Wet Basis %	0	0	0		
Field Dry Density t/m <sup>3</sup>	1.96	1.98	1.97		
Field Moisture Content %	9.5	10.0	10.0		
Maximum Dry Density t/m <sup>3</sup>	2.03	2.02	2.02		
Optimum Moist. Cont. %	10.5	11.0	10.0		
Adjusted MDD t/m <sup>3</sup>	-	-	-		
Adjusted OMC %	-	-	-		
Density Ratio %	<b>96.6</b>	<b>98.1</b>	<b>97.4</b>		
Moisture Ratio %	91.0	93.0	102.5		
Moisture Variation %	1.0 dry	1.0 dry	0.0		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>97.3</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. **18573**  
Report No. **D575 5533**  
Date of Issue: **14/08/2015**

Accredited for compliance with ISO/IEC 17025

Authorised Signatory **D. Gaunt**



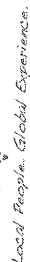
FOR CONTINUATION REFER TO DWG 30080027E-01-002



REFER TO PROJECT DRAWING 006 FOR LEGEND AND OPERATIONAL WORKS NOTES.

Stage 1

Issued for Approval



Level 1, 48-50 Smith St, Darwin, NT 0800, Australia  
p +61 8 8931 4206 | f +61 8 8941 0848 | [www.smec.com](http://www.smec.com)

These designs and drawings are the copyright of SMEC Australia Pty Ltd. The drawing shall not be reproduced or copied, in whole or part, without the written permission of SMEC.



Scale @ A1

PERMISSION TO USE FOR CONSTRUCTION PURPOSES  
ROADWAYS AND STORMWATER DRAINAGE

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMER

Developer and/or Consultant is given on the basis that the  
information provided is true and correct and that the  
Developer and/or Consultant is not absolved from all  
responsibility for the correctness and accuracy of the  
design and/or associated documents.

This permission is valid for a period of two years  
from the date of signed approval

85	MD	81-10-11
86	MD/BS	91-50-12

FOR CONTINUATION REFER TO DWG 30080027E-01-004

## COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli 3 & 4 Stage 1A**  
Location : **Lots 155-163**  
Material Use: **Fill**  
Job No **D575**

Sample No.: **5545**

Sample Date: **13/08/2015** By: **K.Jordaan**  
Test Date: **14/08/2015** By: **K.Jordaan**  
Check Date: **17/08/2015** By: **P.Clark**

Client Ref.: **#53273**

Test Number	1	2	3		
Time of Test	AM	AM	AM		
Northing:	1441.788	1404.144	1323.975		
Easting:	3759.909	3779.835	3775.655		
Reduced Level:	17.12	17.28	16.175		
Pavement Layer Thickness:					
Test Depth (mm)	200	200	200		
Elevation	Lift 2	Lift 2	Lift 2		
Laboratory Sample No.	5545/ 1	5545/ 2	5545/ 3		
Oversize Dry Basis %	0	0	0		
Oversize Wet Basis %	0	0	0		
Field Dry Density t/m <sup>3</sup>	2.00	1.96	1.96		
Field Moisture Content %	10.0	10.5	8.0		
Maximum Dry Density t/m <sup>3</sup>	2.05	2.05	2.03		
Optimum Moist. Cont. %	11.0	9.5	10.5		
Adjusted MDD t/m <sup>3</sup>	-	-	-		
Adjusted OMC %	-	-	-		
Density Ratio %	<b>97.8</b>	<b>95.7</b>	<b>96.5</b>		
Moisture Ratio %	91.0	110.0	76.5		
Moisture Variation %	1.0 dry	1.0 wet	2.5 dry		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	<b>96.6</b>				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

Sampled prior to field compaction: No

Remarks:



Accredited No. **18573**  
Report No. **D575 5545**  
Date of Issue: **17/08/2015**

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

**P.Clark**



Field Density

13-8-15

FOR CONTINUATION REFER TO DWG 30080027E-01-002

D575 5545 - Sampled 13/8/15

FUTURE DISTURBED AREA (MAINTAIN EXISTING VEGETATION)  
185  
P.O.S

NO GO ZONE

2

STAGE 1B

EXISTING DIVERSION DRAIN TO REMAIN

NO GO ZONE

NOTE

1 REFER TO PROJECT DRAWING 006 FOR LEGEND AND OPERATIONAL WORKS NOTES.

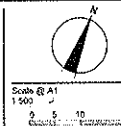
FOR CONTINUATION REFER TO DWG 30080027E-01-004

FOR CONTINUATION REFER TO DWG 30080027E-01-004

1. PROJECT APPROVAL	2. PROJECT APPROVAL	3. PROJECT APPROVAL	4. PROJECT APPROVAL
5. PROJECT APPROVAL	6. PROJECT APPROVAL	7. PROJECT APPROVAL	8. PROJECT APPROVAL
9. PROJECT APPROVAL	10. PROJECT APPROVAL	11. PROJECT APPROVAL	12. PROJECT APPROVAL
13. PROJECT APPROVAL	14. PROJECT APPROVAL	15. PROJECT APPROVAL	16. PROJECT APPROVAL
17. PROJECT APPROVAL	18. PROJECT APPROVAL	19. PROJECT APPROVAL	20. PROJECT APPROVAL
21. PROJECT APPROVAL	22. PROJECT APPROVAL	23. PROJECT APPROVAL	24. PROJECT APPROVAL
25. PROJECT APPROVAL	26. PROJECT APPROVAL	27. PROJECT APPROVAL	28. PROJECT APPROVAL
29. PROJECT APPROVAL	30. PROJECT APPROVAL	31. PROJECT APPROVAL	32. PROJECT APPROVAL
33. PROJECT APPROVAL	34. PROJECT APPROVAL	35. PROJECT APPROVAL	36. PROJECT APPROVAL
37. PROJECT APPROVAL	38. PROJECT APPROVAL	39. PROJECT APPROVAL	40. PROJECT APPROVAL
41. PROJECT APPROVAL	42. PROJECT APPROVAL	43. PROJECT APPROVAL	44. PROJECT APPROVAL
45. PROJECT APPROVAL	46. PROJECT APPROVAL	47. PROJECT APPROVAL	48. PROJECT APPROVAL
49. PROJECT APPROVAL	50. PROJECT APPROVAL	51. PROJECT APPROVAL	52. PROJECT APPROVAL
53. PROJECT APPROVAL	54. PROJECT APPROVAL	55. PROJECT APPROVAL	56. PROJECT APPROVAL
57. PROJECT APPROVAL	58. PROJECT APPROVAL	59. PROJECT APPROVAL	60. PROJECT APPROVAL
61. PROJECT APPROVAL	62. PROJECT APPROVAL	63. PROJECT APPROVAL	64. PROJECT APPROVAL
65. PROJECT APPROVAL	66. PROJECT APPROVAL	67. PROJECT APPROVAL	68. PROJECT APPROVAL
69. PROJECT APPROVAL	70. PROJECT APPROVAL	71. PROJECT APPROVAL	72. PROJECT APPROVAL
73. PROJECT APPROVAL	74. PROJECT APPROVAL	75. PROJECT APPROVAL	76. PROJECT APPROVAL
77. PROJECT APPROVAL	78. PROJECT APPROVAL	79. PROJECT APPROVAL	80. PROJECT APPROVAL
81. PROJECT APPROVAL	82. PROJECT APPROVAL	83. PROJECT APPROVAL	84. PROJECT APPROVAL
85. PROJECT APPROVAL	86. PROJECT APPROVAL	87. PROJECT APPROVAL	88. PROJECT APPROVAL
89. PROJECT APPROVAL	90. PROJECT APPROVAL	91. PROJECT APPROVAL	92. PROJECT APPROVAL
93. PROJECT APPROVAL	94. PROJECT APPROVAL	95. PROJECT APPROVAL	96. PROJECT APPROVAL
97. PROJECT APPROVAL	98. PROJECT APPROVAL	99. PROJECT APPROVAL	100. PROJECT APPROVAL
101. PROJECT APPROVAL	102. PROJECT APPROVAL	103. PROJECT APPROVAL	104. PROJECT APPROVAL
105. PROJECT APPROVAL	106. PROJECT APPROVAL	107. PROJECT APPROVAL	108. PROJECT APPROVAL
109. PROJECT APPROVAL	110. PROJECT APPROVAL	111. PROJECT APPROVAL	112. PROJECT APPROVAL
113. PROJECT APPROVAL	114. PROJECT APPROVAL	115. PROJECT APPROVAL	116. PROJECT APPROVAL
117. PROJECT APPROVAL	118. PROJECT APPROVAL	119. PROJECT APPROVAL	120. PROJECT APPROVAL
121. PROJECT APPROVAL	122. PROJECT APPROVAL	123. PROJECT APPROVAL	124. PROJECT APPROVAL
125. PROJECT APPROVAL	126. PROJECT APPROVAL	127. PROJECT APPROVAL	128. PROJECT APPROVAL
129. PROJECT APPROVAL	130. PROJECT APPROVAL	131. PROJECT APPROVAL	132. PROJECT APPROVAL
133. PROJECT APPROVAL	134. PROJECT APPROVAL	135. PROJECT APPROVAL	136. PROJECT APPROVAL
137. PROJECT APPROVAL	138. PROJECT APPROVAL	139. PROJECT APPROVAL	140. PROJECT APPROVAL
141. PROJECT APPROVAL	142. PROJECT APPROVAL	143. PROJECT APPROVAL	144. PROJECT APPROVAL
145. PROJECT APPROVAL	146. PROJECT APPROVAL	147. PROJECT APPROVAL	148. PROJECT APPROVAL
149. PROJECT APPROVAL	150. PROJECT APPROVAL	151. PROJECT APPROVAL	152. PROJECT APPROVAL
153. PROJECT APPROVAL	154. PROJECT APPROVAL	155. PROJECT APPROVAL	156. PROJECT APPROVAL
157. PROJECT APPROVAL	158. PROJECT APPROVAL	159. PROJECT APPROVAL	160. PROJECT APPROVAL
161. PROJECT APPROVAL	162. PROJECT APPROVAL	163. PROJECT APPROVAL	164. PROJECT APPROVAL
165. PROJECT APPROVAL	166. PROJECT APPROVAL	167. PROJECT APPROVAL	168. PROJECT APPROVAL
169. PROJECT APPROVAL	170. PROJECT APPROVAL	171. PROJECT APPROVAL	172. PROJECT APPROVAL
173. PROJECT APPROVAL	174. PROJECT APPROVAL	175. PROJECT APPROVAL	176. PROJECT APPROVAL
177. PROJECT APPROVAL	178. PROJECT APPROVAL	179. PROJECT APPROVAL	180. PROJECT APPROVAL
181. PROJECT APPROVAL	182. PROJECT APPROVAL	183. PROJECT APPROVAL	184. PROJECT APPROVAL
185. PROJECT APPROVAL	186. PROJECT APPROVAL	187. PROJECT APPROVAL	188. PROJECT APPROVAL
189. PROJECT APPROVAL	190. PROJECT APPROVAL	191. PROJECT APPROVAL	192. PROJECT APPROVAL
193. PROJECT APPROVAL	194. PROJECT APPROVAL	195. PROJECT APPROVAL	196. PROJECT APPROVAL
197. PROJECT APPROVAL	198. PROJECT APPROVAL	199. PROJECT APPROVAL	200. PROJECT APPROVAL

PERMITTED TO USE FOR CONSTRUCTION PURPOSES  
ROADWAYS AND STORMWATER DRAINAGE  
SIGNED: DATE: 13/08/15  
DIRECTOR OF TECHNICAL SERVICES  
CITY OF PALMERSTON  
This permission is given on the basis that the  
Engineer and/or Consultant is not absolved from full  
responsibility for the correctness and accuracy of the  
design and/or associated documents.  
This permission is valid for a period of two years  
from the date of signed approval.

Project Leader  
S. Fraser  
Designed  
G. Wilson  
Drawn  
G. Evans  
Checked  
G. Wilson  
Authorised  
S. Fraser  
Date  
April 2015



© SMEC Australia Pty Ltd  
454/454-1111  
These designs and drawings are the  
copyright of SMEC Australia Pty Ltd.  
The drawing shall not be reproduced  
or copied, in whole or part, without  
the written permission of SMEC  
Australia Pty Ltd.  
The contents of this drawing are  
electronically generated, are  
confidential and may only be used  
for the purpose for which they are  
intended.



Zuccoli 3 and 4  
Stage 1  
City of Palmerston  
Erosion & Sediment Control - Operational  
Drawing No. 30080027E-01-003  
Dav. App. No. DP15/0096  
Sheet No. 2 of 5  
Issued for Approval

Rev 3

# COMPACTION CONTROL REPORT

ACN: 130 669 493  
Shed 3 No. 8 Swan Crescent Winnellie, NT 0820  
Postal Address : PO Box 35964 Winnellie, NT 0821  
Telephone : (08) 8947 4802  
Mobile Phone : 0458 726 111

Client : **Ostojic Group Pty Ltd**  
Contractor : **-**  
Project : **Zuccoli Aspire Stage 1**  
Location : Lot 002 & Lot 003  
Material Use: Fill  
Job No D575

Sample No.: 5210

Sample Date: 19/06/2015 By: D.Gaunt  
Test Date: 22/06/2015 By: J.Acton  
Check Date: 23/06/2015 By: A.Bravo

Client Ref.: #53273

Test Number	1	2	3		
Time of Test	am	am	am		
Northing:	1725.099	1692.182	1684.957		
Easting:	3891.297	3854.378	3892.655		
Reduced Level:	23.768	22.654	23.106		
Pavement Layer Thickness:					
Test Depth (mm)	300	300	300		
Elevation	Final Lift	Final Lift	Final Lift		
Laboratory Sample No.	5210/ 1	5210/ 2	5210/ 3		
Oversize Dry Basis %	3	2	3		
Oversize Wet Basis %	3	2	3		
Field Dry Density t/m <sup>3</sup>	2.08	2.02	2.00		
Field Moisture Content %	9.5	8.5	10.0		
Maximum Dry Density t/m <sup>3</sup>	2.08	2.10	2.09		
Optimum Moist. Cont. %	11.0	10.5	10.5		
Adjusted MDD t/m <sup>3</sup>	2.09	2.11	2.10		
Adjusted OMC %	10.5	10.5	10.0		
Density Ratio %	99.6	95.8	95.4		
Moisture Ratio %	89.5	85.5	99.5		
Moisture Variation %	1.0 dry	1.5 dry	0.0		
Characteristic Mean (R <sub>c</sub> ) or Mean (R) (%)	96.9				

Test Methods: AS 1289 2.1.1, 5.1.1, 5.4.1, 5.8.1

Test Methods: NTCP 102.1

Over Size Sieve: 19.0mm Stabilising Agent Used: No

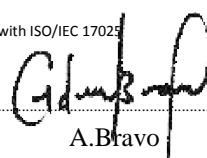
Sampled prior to field compaction: No

Remarks:



Accredited No. 18573  
Report No. D575 5210  
Date of Issue: 23/06/2015

Accredited for compliance with ISO/IEC 17025

Authorised Signatory   
A.Bravo