

Our Ref: 4493  
L-MR0007

17/11/2017

Department of Infrastructure, Planning & Logistics  
PO Box 2520  
Darwin NT 0801

**Attention: Mr. Victor Oecker**

Dear Victor,

**ZUCCOLI ASPIRE (STAGE 3/4) – SUBSTAGE 2B EARTHWORKS CERTIFICATION**

As required under the Zuccoli Stage 3/4 Development Agreement between Costojic Pty Ltd and The Northern Territory of Australia, care of Department of Infrastructure, Planning and Logistics, Flanagan Consulting Group (FCG) provides the site classification report prepared by HIQA (attached) and certified by WANT Geotechnics. FCG also certifies that earthworks undertaken in Stage 2B of Zuccoli Aspire have been tested by HiQA Geotechnical and the results of the field and laboratory testing and inspections during the earthworks indicate compliance with Schedule 4, Special Condition 8.2 of the said agreement, and in accordance with the approved plans and specifications.

Please note that whilst the report provides reference to Stage 2C, its content and scope align with the requirements to satisfy the conditions of the permit DP16/0033A for stage 2B. For further reference, please see attached endorsed drawing 2015/0713/01A indicating the associated sub-staging.

Furthermore, we provide the following information to demonstrate compliance with Special Condition 8.2:

1. Earthworks (also comprising lot filling) within Stage 2B have been regularly inspected by FCG, with density testing carried out on each layer by HIQA Geotechnical. FCG have also witnessed proof rolling of fill layers to ensure that controlled filling was undertaken;
2. Appropriate field tests have been carried out by HiQA in accordance with AS3798, and the earthworks documentation (Level 2 Sampling and Testing) including test locations and results

**CAIRNS** +61 7 4031 3199 | cairns@flanaganconsulting.com.au | 138 Spence Street PO Box 5820 CAIRNS QLD 4870

**DARWIN** +61 8 8911 0046 | darwin@flanaganconsulting.com.au | 8 Shepherd Street GPO Box 4299 DARWIN NT 0800

**MACKAY** +61 7 4944 1200 | mackay@flanaganconsulting.com.au | 56 Gordon Street PO Box 45 MACKAY QLD 4740

**TOWNSVILLE** +61 7 4724 5737 | townsville@flanaganconsulting.com.au | 370 Flinders Street PO Box 891 TOWNSVILLE QLD 4810

*Flanagan Consulting Group is a registered business name of South Pacificsands Pty Ltd A.C.N. 052 933 687*

provided by HiQA demonstrate compliance with the approved design and Special Condition 8.2 (a);

3. The Geotechnical Report prepared by HiQA Geotechnical includes the required lot classifications, investigation details, testing and documentation that satisfy the requirements of AS2870-2011. This report has been approved by an independent geotechnical engineer – WANT Geotechnics – due to the presence of controlled filling within Stage 2B and states:

*“The results of the fieldwork indicate the near surface foundation strata of the lots within the assessed boundaries of Stage 2C should provide an allowable bearing capacity of at least 100 kPa and, that the lots within the stage are suitable for construction of double story masonry buildings.”*

4. Clearing, grubbing and stripping of topsoil at commencement of earthworks was undertaken in accordance with the contractor’s inspection and test plan register that has been signed off by FCG; was witnessed and inspected by FCG,

In consideration of this additional information, we trust that all requirements related to this matter have been satisfactorily demonstrated and we look forward to receipt of advice of clearance for the respective Development Permit.

Note that this correspondence is to be read in conjunction with the reports to which it refers.

Yours faithfully

**FLANAGAN CONSULTING GROUP**

**MIGUEL ROCHA**  
BEng (Civil) MIEAust  
SUPERINTENDENT



GEOTECHNICAL

# SITE CLASSIFICATION REPORT

Zuccoli Aspire Stage 2C

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE USED FOR CONSTRUCTION  
- BUILDERS/BUYERS 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, ARLUEN NT 0870  
POSTAL: PO BOX 3569, ALICE SPRINGS NT 0871

## Document Information

Client	Ostojic Group Pty Ltd
Project	Zuccoli Aspire Stage 2C– Site Classifications
Job/Report Number	D1041
Revision Number	3
Date	04/10/2017

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE USED FOR CONSTRUCTION  
- BUILDERS/BUYERS 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, ARA LUEN 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>5</b>
2.1	Regional Geological Description	5
2.2	Site Description	5
2.3	Subsurface Conditions	5
<b>3</b>	<b>Site Classification</b>	<b>5</b>
3.1	Allowable Bearing Capacity	6
3.2	Site Classification	6
3.3	Moisture Control	7
<b>4</b>	<b>Comments</b>	<b>7</b>
<b>5</b>	<b>Important Information about your Site Investigation &amp; Classification Report</b>	<b>8</b>
<b>6</b>	<b>General Notes &amp; Limitations of Geotechnical Site Investigation</b>	<b>10</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

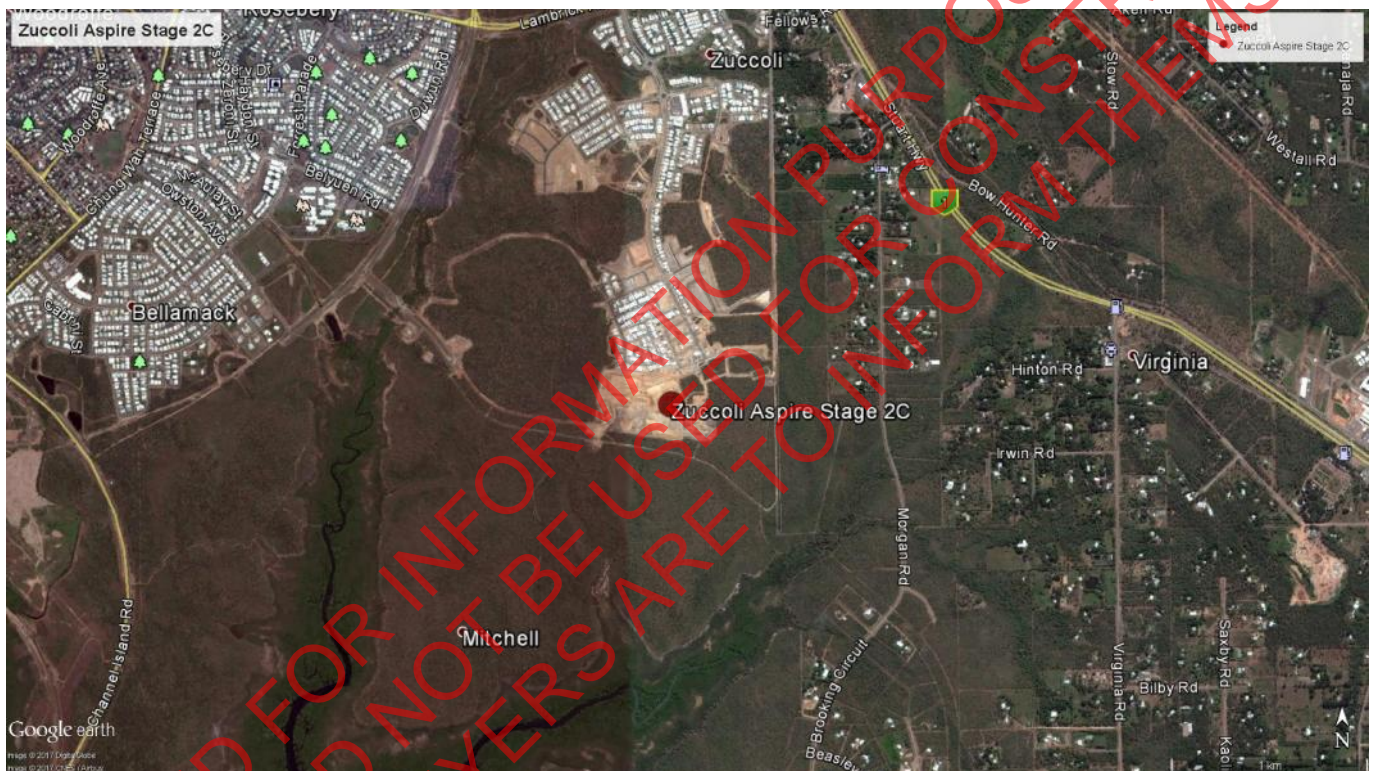
Table 3.1	Classification Based off Site Reactivity	6
Table 3.2	Summary of Site Classifications	6

## 1. Introduction

HiQA Geotechnical (HiQA) have been commissioned by the Ostoic Group Pty Ltd (OST GRP) to undertake the site classification report for Zuccoli Aspire Stage 2C. An investigation was undertaken on Stage 2C to ascertain the site classifications for each of the lots.

### 1.1 Background

Zuccoli Aspire Stage 2C is located in Palmerston, a satellite city of Darwin located approximately 21km south east of Darwin. (refer **Figure 1**) Stage 2C is centred approximately at; Zone 52 L, Easting 718244m & Northing 8615144m.



**Figure 1 – Approximate Location of Stage 2A.**

### 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 the project specification. The test pits undertaken are presented in **Appendix A**.

The scope of works were as follows;

- Undertake test pits in general accordance with AS2870-2011
- Log each test pit to AS1726

HIQA.COM.AU

- DCP testing was undertaken adjacent to each test pit
- 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
- Northern Territory Geological Survey, Geological Map Series

## 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 2C. The area has a general slope from the northwest 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 test pits (TP1 – TP71) with a 1.6tonne excavator. Detailed descriptive visual & tactile observations are presented in **Appendix B**.

The material encountered on site can be predominately described as a 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 most of the test pits and follows a typical pattern. In areas of fill, the material encountered was very dense leading to shallow test pit refusal.

## 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**.

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

**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 lots within the assessed boundaries of Stage 2C **should** provide an allowable bearing capacity of at least 100 kPa and, that the lots within the stage are suitable for construction of double story masonry buildings.

### 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**

Stage 2A Lot Numbers (Cadastral Lot No.)	Site Classification
232 (14723), 233 (14722), 234 (14721), 235 (14720), 236 (14719), 237 (14718), 238 (14717), 239 (14716), 240 (14715), 241 (14714), 242 (14713), 243 (14712), 244 (14711), 245 (14710), 246 (14709), 247 (14708), 248 (14707), 249 (14706), 250 (14705), 252 (14703), 265 (14665), 271 (14659), 273 (14684), 275 (14686), 276 (14687), 277 (14688), 278 (14689), 279 (14690), 280 (14691), 281 (14692), 283 (14694), 285 (14697), 286 (14696), 287 (14673), 288 (14674), 289 (14675), 290 (14676), 291 (14677), 292 (14678), 293 (14679),	<b>Class A – Non-reactive</b>
226 (14729), 227 (14728), 228 (14727), 229 (14726), 230 (14725), 231 (14724), 232 (14723), 251 (14704), 266 (14664), 270 (14660), 272 (14683), 274 (14685), 282 (14693), 284 (14695), 294 (14680), 295 (14681), 296 (14682)	<b>Class S – Slightly Reactive</b>
253 (14702)*, 254 (14701)*, 255 (14700)*, 256 (14699), 257 (14698), 258 (14672), 259 (14671), 260 (14670)*, 261 (14699), 262 (14668), 263 (14667)*, 264 (14666)*, 267 (14663)*, 268 (14662)*, 269 (14661)*	<b>Class P = S - Reclassified due to Controlled Fill on the site. Slightly Reactive</b>



-	<b>Class M</b> – Moderately Reactive
-	<b>Class P = M</b> - Reclassified due to <b>Controlled Fill</b> on the site. Moderately Reactive

Note: Number appearing in brackets refers to the cadastral lot number. Eg. Lot 111(14544) = Cadastral lot 14544. Lots with \* identified as fill sites by surveyed levels and have been reclassified from the reported test pit logs.

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.

Prepared By;

Approved By



Matthew Dunkley

HiQA Geotechnical  
Darwin Laboratory Branch Manager  
P: (08) 8947 4802  
E: m.dunkley@higa.com.au



Stephen Flux

WANT Geotechnics  
Partner BSc MSc CGeol  
M: 0499 996 659  
E: steve@ntgeotechnics.com

HIQA.COM.AU

## 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; It's size and configuration; location of the structure on the site and it's 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, ARALUEN 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 / BOREPIT LOGGING

The information on the Logs (Boreholes, 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 pit logs are the levels of free water or seepage in the test pit 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 pit 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 pit 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 pit 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 test pits or borepits 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 borepit 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 borepit investigation; however, such methods are limited by depth and site disturbance restrictions. In borepit 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

## APPENDIX A

### Site Plan

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE USED FOR CONSTRUCTION  
- BUILDERS/BUYERS 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

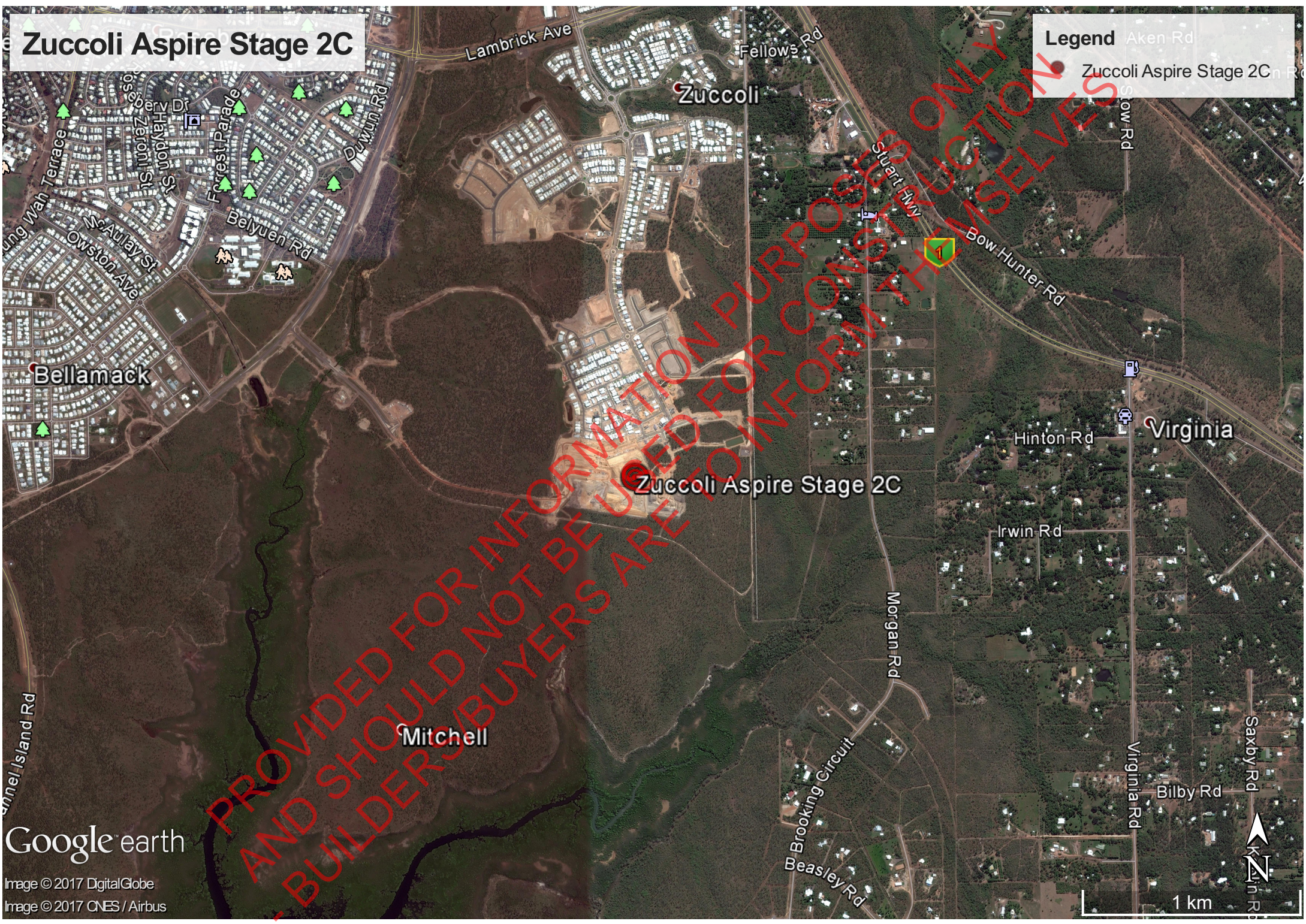


# Zuccoli Aspire Stage 2C

Legend

Zuccoli Aspire Stage 2C

Aken Rd



Google earth

Image © 2017 DigitalGlobe  
Image © 2017 CNES / Airbus





**PRELIMINARY**

<div><div>Keith Leslie Schulz</div><div>hereby certify that the survey represented on this plan was carried out by me or under my supervision and was completed on 8.11.16 and that this survey has been executed in accordance with the Licensed Surveyors Act and the Directions thereunder.</div><div>Licensed Surveyor</div><div>Date</div></div>		<div><div>Note</div><div>Area to be surrendered from Lot 12432 (CLT 2508) is Reference marks are at one metre unless otherwise shown Public Roads are vested in the City of Palmerston Electricity Supply Easements are in favour of the Power and Corporation and are to be created by the registration of this plan</div><div>Version 1 - survey plan as lodged</div></div>		<div><div>Field Book</div><div>EJA REF: 9512</div><div>Drawn</div><div>Earl James &amp; Associates</div><div>Examined</div><div>Earl James &amp; Associates</div><div>Map Reference</div></div>		<div><div><div><div><div></div><div>N</div></div></div><div>Grid (Palmerston Datum)</div><div>Bearings</div></div><div><div><div>AZIMUTH</div><div>S2016/131</div></div><div>Assumed from</div><div>Observed at</div></div></div>		<div><div><div>LEGEND</div><div>Concrete Post</div><div>Concrete Block</div><div>Peg or Wooden Post</div><div>Reference Mark</div><div>Locksplit</div><div>Fence Post</div></div></div> <div><div><div>LOTS 14659 TO 14729</div><div>SUBDIVISION OF LOT 12432</div><div>TOWN OF PALMERSTON</div></div><div><div>SCALE 1:500(A1)</div><div>10 0 10 20 30</div><div>metres</div></div><div><div>S2016/132</div></div></div>
---	--	---	--	---	--	---	--	---

## APPENDIX B

### Visual & Tactile Classification – Test Pits

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE USED FOR CONSTRUCTION  
- BUILDERS/BUYERS 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



Date :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 1	0.00 – 0.20	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 1	0.20 – 0.40	Dry	GP	Pale White/Grey – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 1	0.40 – 0.55	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	40 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 226 / 14729  
GPS: UTM 52L E0718128, N8615218  
Refusal at 0.55m – considered as Rock

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 2	0.00 – 0.20	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 2	0.20 – 0.55	Dry	GP	Pale White/Grey – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 2	0.55 – 0.65	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	40 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 227 / 14728  
GPS: UTM 52L E0718139 N8615220  
Refusal at 0.65m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 3	0.00 – 0.30	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 3	0.30 – 0.60	Dry	GP	Pale White/Grey – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 3	0.60 – 0.70	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	40 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 228 / 14727

GPS: UTM 52L E0718157 N8615225

Refusal at 0.70m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 4	0.00 – 0.25	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	45 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 4	0.25 – 0.35	Moist	SP	Dark Grey – Gravelly Sand with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	10 NP 5	Fine to Course	Fine to Medium	Sub Angular-Sub Rounded	-	Natural
TP 4	0.35 – 0.60	Dry	GP	Pale White/Grey – Sandy Gravel with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	
TP 4	0.60 – 0.75	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 229 / 14726  
GPS: UTM 52L E0718170 N8615231  
Refusal at 0.75m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 5	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 5	0.10 – 0.40	Dry	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	37 15 10	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 5	0.40 – 0.70	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 230/ 14725  
GPS: UTM 52L E0718185 N8615234  
Refusal at 0.70m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 6	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 6	0.10 – 0.30	Dry	GP	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	40 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 6	0.30 – 0.75	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	40 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 231/ 14724  
GPS: UTM 52L E0718195 N8615237  
Refusal at 0.75m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 7	0.00 – 0.10	Dry	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	37 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 7	0.10 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	37 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	

Lot 232 / 14723  
GPS UTM: 52L E0718194 N8615240

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 8	0.00 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	

Lot 233 / 14722

GPS: UTM 52L E0718204 N8615241

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 9	0.00 – 0.20	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 234 / 14721 GPS: UTM 52L E0718227 N8615247 Refusal at 0.20m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 10	0.00 – 0.20	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 235 / 14720 GPS: UTM 52L E0718237 N8615251 Refusal at 0.20m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 11	0.00 – 0.40	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	200 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 236 / 14719  
GPS: UTM 52L E0718255 N8615253

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 12	0.00 – 0.20	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 237 / 14718 GPS: UTM 52L E0718270 N8615234 Refusal at 0.20m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 13	0.00 – 0.20	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 238 / 14717 GPS: UTM 52L E0718274 N8615221 Refusal at 0.20m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator			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
TP 14	0.00 – 0.20	Dry	GM	Pale Yellow Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 14	0.20 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	200 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 239 / 14716 GPS: UTM 52L E0718283 N8615202 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 15	0.00 – 0.15	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	200 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)		-	-	-	-	
Lot 240 / 14715 GPS: UTM 52L E0718287 N8615188 Refusal at 0.15m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 16	0.00 – 0.10	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 241 / 14714 GPS: UTM 52L E0718281 N8615179 Refusal at 0.10m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 17	0.00 – 0.10	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 242 / 14713 GPS: UTM 52L E0718292 N8615176 Refusal at 0.10m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 18	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 243 / 14712 GPS: UTM 52L E0718297 N8615165 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 19	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 244 / 14711 GPS: UTM 52L E0718297 N8615146 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 20	0.00 – 0.10	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 245 / 14710 GPS: UTM 52L E0718296 N8615128 Refusal at 0.10m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 21	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 246 / 14709 GPS: UTM 52L E0718295 N8615112 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 22	0.00 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 247 / 14708 GPS: UTM 52LE0718297 N 8615098 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 23	0.00 - 0.15	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 23	0.15 – 0.20	Dry	GP	Dark Blue/Black – GRAVEL	-	MPS (mm) LL (%) Pass. 0.075 (%)	30 NP 0	Fine to Course	Fine to Course	Sub Angular-Sub Rounded	-	Aggregate
TP 23	0.20 – 0.35	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	- - -	-	-	-	-	

Lot 248 / 14707  
GPS: UTM 52L E0718294 N8615084  
Refusal at 0.35m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 24	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 24	0.10 – 0.40	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 249 / 14706 GPS: UTM 52L E0718291 N8615068 Refusal at 0.40m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 25	0.00 – 0.15	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 250 / 14705 GPS: UTM 52L E0718292 N8615055 Refusal at 0.15m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 26	0.00 – 0.95	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 251 / 14704 GPS: UTM 52L E0718290 N8615042												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 27	0.00 – 0.15	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 252 / 14703 GPS: UTM 52L E0718289 N8615026 Refusal at 0.15m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 28	0.00 – 0.10	Dry	GP	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 285 / 14697 GPS: UTM E0718235 N8615030 Refusal at 0.10m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 29	0.00 – 0.15	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 286 / 14696 GPS: UTM 52L E0718219 N8615034												

\*\*Constituent Parts are logged: Least Second 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 :	15/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 30	0.00 – 0.10	Dry	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP30	0010 – 0.40	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 287 / 14673 GPS: UTM 52L E0718207 N8615037 Refusal at 0.40m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 31	0.00 – 0.12	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 288 / 14674 GPS: UTM 52L E0718201 N8615056 Refusal at 0.12m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP32	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	200 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 289 / 14675 GPS: UTM 52L E0718199 N8615068 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 33	0.00 – 0.35	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	200 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 290 / 14676 GPS: UTM 52L E0718199 N8615083 Refusal at 0.35m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 34	0.00 – 0.40	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	200 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 291 / 14677 GPS: UTM 52L E0718200 N8615096 Refusal at 0.40m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 : 15/09/2017			Drill Rig/Excavator :		1.6t Excavator				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
TP 35	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	150 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 292 / 14678 GPS: UTM 52L E0718200 N8615108 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 36	0.00 – 0.15	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 36	0.15 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 293 / 14679 GPS: UTM 52L E0718201 N8615124 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :		18/09/2017		Drill Rig/Excavator :		1.6t Excavator			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
TP 37	0.00 – 0.75	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
Lot 294 / 14680 GPS: UTM E0718202 N8615139 Refusal at 0.75m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 38	0.00 – 0.70	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 295 / 14681 GPS. UTM 52L E0718208 N8615154 Refusal at 0.70m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 39	0.00 – 0.50	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)	-	-	-	-	-	
<p>Lot 296 / 14682 GPS: UTM 52L E0718205 N8615073</p>												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 40	0.00 – 0.15	Moist	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 40	0.15 – 0.25	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 40	0.25 – 0.70	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 272 / 14683

GPS: UTM 52L E0718194 N8615185

Refusal at 0.70m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 41	0.00 – 0.10	Moist	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 41	0.10 – 0.15	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 41	0.15 – 0.35	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Lot 273 / 14684 GPS: UTM 52L E0718208 N8615189 Refusal at 0.35m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 42	0.00 – 0.10	Moist	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 42	0.10 – 0.20	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 42	0.20 – 0.70	Moist	GP	Pale Yellow/Orange – Sandy Gravel with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
Lot 274 / 14685 GPS: UTM 52L E0718222 N8615073 Refusal at 0.70m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 43	0.00 – 0.15	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 43	0.15 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 275 / 14686 GPS: UTM 52L E0718235 N8615200 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 44	0.00 – 0.15	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 44	0.15 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 276 / 14687 GPS: UTM 52L E0718240 N8615178 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 45	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 45	0.10 – 0.20	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 277 / 14688 GPS: UTM 52L E0718242 N8615163 Refusal at 0.20m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 46	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 46	0.10 – 0.35	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 278 / 14689 GPS: UTM 52L E0718244 N8615144 Refusal at 0.35m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 47	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 47	0.10 – 0.50	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 279 / 14690 GPS: UTM 52L E0718244 N8615129 Refusal at 0.50m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 48	0.00 – 0.15	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 280 / 14691 GPS. UTM 52L E0718242 N8615113 Refusal at 0.15m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 49	0.00 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 281 / 14692 GPS. UTM 52L E0718245 N8615101 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 50	0.00 – 1.00	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 282 / 14693 GPS. UTM 52L E0718243 N8615087 Refusal at 1.00m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 51	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 283 / 14694 GPS. UTM 52L E0718243 N8615075 Refusal at .025m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 52	0.00 – 0.65	Dry	GP	Pale Yellow/ Orange – Sandy GRAVEL with Silt	Dense	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 284 / 14695 GPS. UTM 52L E0718242 N8615062 Refusal at 0.65m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 53	0.00 – 0.30	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 20 30	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 53	0.30 – 0.95	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 269 / 14661 GPS: UTM 52L E0718156 N8615178 Refusal at 0.95m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 54	0.00 – 0.40	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 54	0.40 – 0.65	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 54	0.65 – 0.90	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 270 / 14660  
GPS: UTM 52L E0718130 N8615164  
Refusal at 0.90m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 55	0.00 – 0.15	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 55	0.15 – 0.30	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 271 / 14659 GPS: UTM 52L E0718159 N8615151 Refusal at 0.30m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 56	0.00 – 0.25	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 56	0.25 – 0.55	Dry	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 56	0.55 – 0.65	Dry	GP	Plaе Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 268 / 14662

GPS: UTM 52L E0718161 N8615170

Refusal at 0.65m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 57	0.00 – 0.30	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 57	0.30 – 0.50	Moist	GP	Pale Grey/Blue – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 57	0.50 – 0.65	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 267 / 14663

GPS: UTM 52L E0718165 N8615153

Refusal at 0.65m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 58	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 58	0.10 – 0.35	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 58	0.35 – 0.70	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERED ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 266 / 14664

GPS: UTM 52L E0718172 N8615133

Refusal at 0.70m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 59	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)			-	-	-	
Lot 265 / 14665 GPS. UTM 52L E0718168 N8615087 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 60	0.00 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 264 / 14666 GPS. UTM 52L E0718163 N8615073 Refusal at 0.25m												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 61	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 61	0.10 – 0.45	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 263 / 14667 GPS: UTM 52L E0718163 N8615062 Refusal at 0.45m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 62	0.00 – 0.50	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 62	0.50 – 0.70	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 262 / 14668 GPS: UTM 52L E0718163 N8615046 Refusal at .070m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 63	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 63	0.10 – 0.25	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 253 / 14702 GPS: UTM 52L E0718286 N8614980 Refusal at 0.25m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 64	0.00 – 0.20	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 64	0.20 – 0.45	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 254 / 14701 GPS: UTM 52L E0718269 N8614983 Refusal at 0.45m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 65	0.00 – 0.15	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 65	0.15 – 0.30	Dry	GP	Pale Grey/Black – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 65	0.30 – 0.40	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	100 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 255 / 14700  
GPS: UTM 52L E0718256 N8614993  
Refusal at 0.40m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 66	0.00 – 0.40	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 66	0.40 – 0.70	Dry	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 66	0.70 – 0.80	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 256 / 14699  
GPS: UTM 52L E0718243 N8614998  
Refusal at 0.80m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 67	0.00 – 0.75	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 67	0.75 – 1.05	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 67	1.05 – 1.15	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 257 / 14698  
GPS: UTM 52L E0718226 N8615002  
Refusal at 1.15m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 68	0.00 – 0.50	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 68	0.50 – 0.75	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 15 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 68	0.75 – 0.85	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 258 / 14672

GPS: UTM 52L E0718210 N8615006

Refusal at 0.85m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 69	0.00 – 0.10	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 69	0.10 – 0.20	Moist	GM	Pale Grey/Yellow – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	53 10 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	-	Natural
TP 69	0.20 – 0.75	Moist	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	
		-	-			MPS (mm) LL (%) Pass. 0.075 (%)		-	-	-	-	

Lot 259 / 14671  
GPS: UTM 52L E0718192 N8615000  
Refusal at 0.75m, Hit Rock

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017	Drill Rig/Excavator :			1.6t Excavator				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
TP 70	0.00 – 0.45	Dry	GP	Pale Yellow/Orange – Sandy GRAVEL with Silt	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	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 (%)			-	-	-	
Lot 260 / 14670 GPS. UTM 52L E0718174 N8615001 Refusal at 0.45m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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 :	18/09/2017		Drill Rig/Excavator :		1.6t Excavator				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
TP 71	0.00 – 0.90	Dry	GM	Pale Yellow/Orange – Silty Sandy GRAVEL	Very Dense	MPS (mm) LL (%) Pass. 0.075 (%)	53 30 20	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	FILL	
TP 71	0.90 – 1.00	Moist	GP	Pale Yellow/Orange – Sandy	-	MPS (mm) LL (%) Pass. 0.075 (%)	75 NP 5	Fine to Course	Medium to Course	Sub Angular-Sub Rounded	EXTREMELY WEATHERD ROCK	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
		-	-		-	MPS (mm) LL (%) Pass. 0.075 (%)	-	-	-	-	-	
Lot 261 / 14699 GPS: UTM 52L E0718155 N8615006 Refusal at 1.00m, Hit Rock												

\*\*Constituent Parts are logged: Least Second 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



## APPENDIX C

### Laboratory Test Reports

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE USED FOR CONSTRUCTION  
- BUILDERS/BUYERS 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



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 Stage 2C - Site Classifications**  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / A  
Test Date: 15/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 1		10312/ 2		10312/ 3		10312/ 4		10312/ 5	
Location:	Lot 226 / 14792		Lot 227 / 14728		Lot 228 / 14727		Lot 229 / 14726		Lot 230 / 14725	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	21	5	25	4	15	7	25	4
100-200	25	4	25	4	Refusal		25	4	Refusal	
200-300	Refusal		Refusal				Refusal			
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. D1041 10312/A  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley



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 Stage 2C - Site Classifications  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / B  
 Test Date: 15/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 6		10312/ 7		10312/ 8		10312/ 9		10312/ 10	
Location:	Lot 231 / 14724		Lot 232 / 14723		Lot 233 / 14722		Lot 24 / 14721		Lot 235 / 14720	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	25	4
100-200	Refusal		Refusal		Refusal		Refusal		Refusal	
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. D1041 10312/B  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley



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 Stage 2C - Site Classifications  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / C  
 Test Date: 15/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 11		10312/ 12		10312/ 13		10312/ 14		10312/ 15	
Location:	Lot 236 / 14717		Lot 237 / 14718		Lot 238 / 14717		Lot 239 / 14716		Lot 240 / 14715	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	25	4
100-200	Refusal		Refusal		Refusal		Refusal		Refusal	
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. D1041 10312/C  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley



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 Stage 2C - Site Classifications  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / D  
Test Date: 15/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 16		10312/ 17		10312/ 18		10312/ 19		10312/ 20	
Location:	Lot 241 / 14714		Lot 242 / 14713		Lot 243 / 14712		Lot 244 / 14711		Lot 245 / 14710	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	17	6
100-200	Refusal		Refusal		Refusal		Refusal		25	4
200-300									Refusal	
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. D1041 10312/D  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley





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 Stage 2C - Site Classifications  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / E  
 Test Date: 15/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 21		10312/ 22		10312/ 23		10312/ 24		10312/ 25	
Location:	Lot 246 / 14709		Lot 247 / 14708		Lot 248 / 14707		Lot 249 / 14706		Lot 250 / 14705	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	25	4
100-200	Refusal		Refusal		Refusal		Refusal		Refusal	
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. D1041 10312/E  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley



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 Stage 2C - Site Classifications**  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / F  
Test Date: 15/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 26		10312/ 27		10312/ 28		10312/ 29		10312/ 30	
Location:	Lot 251 / 14704		Lot 252 / 14703		Lot 285 / 14697		Lot 286 / 14696		Lot 287 / 14673	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	25	4
100-200	Refusal		Refusal		Refusal		Refusal		Refusal	
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. D1041 10312/F  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley



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 Stage 2C - Site Classifications  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / G  
Test Date: 15/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 31		10312/ 32		10312/ 33		10312/ 34		10312/ 35	
Location:	Lot 288 / 14674		Lot 289 / 14675		Lot 290 / 14676		Lot 291 / 14677		Lot 292 / 14678	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	21	5	25	4	25	4	25	4
100-200	Refusal		25	4	Refusal		Refusal		Refusal	
200-300			Refusal							
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. D1041 10312/G  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley



## 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 Stage 2C - Site Classifications**  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / H  
 Test Date: 18/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:		10312/ 36		10312/ 37		10312/ 38		10312/ 39		10312/ 40	
Location:		Lot 293 / 14679		Lot 294 / 14680		Lot 295 / 14681		Lot 296 / 14682		Lot 272 / 14683	
Starting Depth (m):		0.00		0.00		0.00		0.00		0.00	
Soil Description:		Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:		Dry		Dry		Dry		Dry		Dry	
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	21	5	21	5	25	4	25	4
100-200		Refusal		25	4	20	5	Refusal		Refusal	
200-300				Refusal		15	7				
300-400						25	4				
400-500						Refusal					
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. D1041 10312/H  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley



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 Stage 2C - Site Classifications**  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / I  
Test Date: 18/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 41		10312/ 42		10312/ 43		10312/ 44		10312/ 45	
Location:	Lot 273 / 14684		Lot 274 / 14685		Lot 275 / 14686		Lot 276 / 14687		Lot 277 / 14688	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	13	8	25	4	25	4	25	4
100-200	Refusal		25	4	Refusal		Refusal		Refusal	
200-300			Refusal							
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. D1041 10312/1  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley



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 Stage 2C - Site Classifications  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / J  
 Test Date: 18/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 46		10312/ 47		10312/ 48		10312/ 49		10312/ 50	
Location:	Lot 278 / 14689		Lot 279 / 14690		Lot 280 / 14691		Lot 281 / 14692		Lot 282 / 14693	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	17	6	25	4	25	4	25	4	25	4
100-200	25	4	Refusal		Refusal		Refusal		Refusal	
200-300	Refusal									
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. D1041 10312/J  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley





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 Stage 2C - Site Classifications**  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / K  
Test Date: 18/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 51		10312/ 52		10312/ 53		10312/ 54		10312/ 55	
Location:	Lot 283 / 14694		Lot 284 / 14695		Lot 269 / 14661		Lot 270 / 14660		Lot 271 / 14659	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4
100-200	Refusal		18	6	Refusal		Refusal		Refusal	
200-300			15	7						
300-400			25	4						
400-500			Refusal							
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. D1041 10312/K  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley

## 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 Stage 2C - Site Classifications**  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / L  
Test Date: 18/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:		10312/ 56		10312/ 57		10312/ 58		10312/ 59		10312/ 60	
Location:		Lot 268 / 14662		Lot 267 / 14663		Lot 266 / 14664		Lot 265 / 14665		Lot 264 / 14666	
Starting Depth (m):		0.00		0.00		0.00		0.00		0.00	
Soil Description:		Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:		Dry		Dry		Dry		Dry		Dry	
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	14	7	25	4	25	4	25	4
100-200		Refusal		20	5	Refusal		Refusal		Refusal	
200-300				25	4						
300-400				Refusal							
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. D1041 10312/L  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley



## 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 Stage 2C - Site Classifications**  
Location : Various Test Pit - House Lot  
Job No.: D1041 Sample No.: 10312 / M  
Test Date: 18/09/2017 By: J.Acton  
Check Date: 3/10/2017 By: M.Dunkley  
Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 61		10312/ 62		10312/ 63		10312/ 64		10312/ 65	
Location:	Lot 263 / 14667		Lot 262 / 14668		Lot 253 / 14702		Lot 254 / 14701		Lot 255 / 14700	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	25	4
100-200	Refusal		Refusal		Refusal		Refusal		Refusal	
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. D1041 10312/M  
Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory

M.Dunkley



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 Stage 2C - Site Classifications  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / N  
 Test Date: 18/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2	Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 66		10312/ 67		10312/ 68		10312/ 69		10312/ 70	
Location:	Lot 256 / 14699		Lot 257 / 14698		Lot 258 / 14672		Lot 259 / 14671		Lot 260 / 14670	
Starting Depth (m):	0.00		0.00		0.00		0.00		0.00	
Soil Description:	Refer Logs		Refer Logs		Refer Logs		Refer Logs		Refer Logs	
Moisture Condition:	Dry		Dry		Dry		Dry		Dry	
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	25	4	25	4	25	4	25	4
100-200	Refusal		Refusal		Refusal		Refusal		Refusal	
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. D1041 10312/N  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley



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 Stage 2C - Site Classifications  
 Location : Various Test Pit - House Lot  
 Job No.: D1041 Sample No.: 10312 / O  
 Test Date: 18/09/2017 By: J.Acton  
 Check Date: 3/10/2017 By: M.Dunkley  
 Client Ref.: -

Test Procedure : As 1289. 6.3.2		Dynamic Cone Penetrometer Test Results.									
Test Number:	10312/ 71										
Location:	Lot 261 / 14699										
Starting Depth (m):	0.00										
Soil Description:	Refer Logs										
Moisture Condition:	Dry										
Ground Water Depth:	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									
100-200	Refusal										
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. D1041 10312/O  
 Date of Issue: 3/10/2017

Accredited for compliance with ISO/IEC 17025

Authorised Signatory .....

M.Dunkley

## APPENDIX D

CSIRO Information Sheet BTF 18

PROVIDED FOR INFORMATION PURPOSES ONLY  
AND SHOULD NOT BE USED FOR CONSTRUCTION  
- BUILDERS/BUYERS 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



# 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).

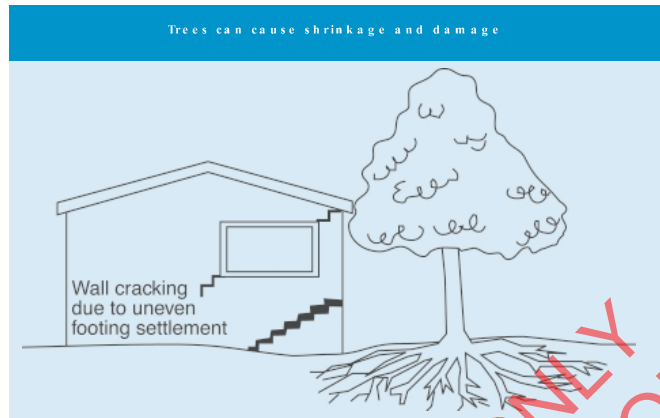
Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

#### 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

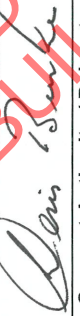
# Staging Plan SUB-STAGE 2 ZUCCOLI 3 & 4

- Zuccoli 3 & 4 Boundary
- Sub - Stage Boundary
- Public Open Space: 2.66ha
- Retention Pond
- Padmount - Transformer
- Zones (Use)
  - Single Dwelling Residential (Single Dwelling)
  - Multiple Dwelling Residential (Single Dwelling)
  - Multiple Dwelling Residential (Multiple Dwelling)

**Lot Size Distribution**

300m <sup>2</sup> to 449m <sup>2</sup>	132
450m <sup>2</sup> to 599m <sup>2</sup>	57
600m <sup>2</sup> to 799m <sup>2</sup>	15
>800m <sup>2</sup>	2
<b>TOTAL</b>	<b>206</b>

2A: 66 Lots  
2B: 69 Lots  
2C: 71 Lots  
**TOTAL: 206 Lots**

Drawing No: 2015/0713/01A referred to in  
Permit No: DP16/0033A issued by  
the consent authority on: 21/02/2017  
  
Consent Authority / Delegate

