

WANT Geotechnics

Site Classification & Bearing Capacity Assessment

For

Stage 3B, Zuccoli, Northern Territory

Prepared for the Ostoja Pty Ltd

Project NTG20212385 Rev 0

27 February 2022

PROVIDED FOR INFORMATION PURPOSES ONLY
AND SHOULD NOT BE USED FOR CONSTRUCTION
- BUILDERS/BUYERS ARE TO INFORM THEMSELVES

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Project NTG20212385 Rev B

Project: NTG20212385		
Date	Revision	Comments
4 December 2021	0	Draft issued to Client
9 December 2021	A	Issued to Client
27 February 2022	B	Issued to Client – Lot numbers changed

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Approved by: Stephen Flux

Distribution: Ostoic Pty Ltd (1 electronic)

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Site Classification & Bearing Capacity Assessment for Stage 3B, Zuccoli, Northern Territory

1. Introduction

WANT Geotechnics (WANT) was commissioned to undertake a geotechnical investigation to provide a report covering the site classification and bearing capacity of 43 Lots developed as Stage 3B, Zuccoli in the Northern Territory. The investigation and report was commissioned by the Ostoic Pty Ltd (Ostoic).

The assessment of individual lot site classification has been undertaken in general accordance with Australian Standard AS2870 *Residential Slabs and Footings*. The assessment of bearing capacity has been in accordance with the methodology presented in MJ Stockwell (1977) and titled *Determination of Allowable Bearing Pressure Under Small Structures*.

The geotechnical investigation undertaken comprised:

- Drilling an average 1.5 bores per lot; and
- A dynamic cone penetrometer test adjacent to each excavation.

This report presents the investigation data and certification of the site class and bearing capacity of each lot based on the November 2021 investigation undertaken by WANT Geotechnics Pty Ltd.

In our judgement, the extent of this investigation has been sufficient to correlate the observed soil conditions with the known geology and published information for this area. However, localised variations are very difficult to locate using test holes and boreholes and natural soils can vary greatly over short distances. Although the ground conditions revealed during this recent phase of investigation suggest the subsoils are reasonably uniform at Zuccoli Stage 3B.

2. Zuccoli Stage 3B

Zuccoli Stage 3B comprises 43 individual lots, earthworks to form the lots was undertaken by Ostoic, and Level 2 Inspection and Testing by HiQA and Construction Sciences Darwin. A plan showing the lot layout is included in Appendix A.

3. Geology and Land System

The Extractive Geology of the Outer Darwin Area 1:100 000 Geological Series map indicates Stage 3B is predominantly underlain by Tertiary age laterite gravel and ferricrete.

Reference to NT Government Natural Resource Maps website indicates the site sits on land of the Bustad Land System (sandstone plains and rises and no occurrence of acid sulphate soils).



4. Earthworks and Compaction

The specification for the earthworks was prepared by ADG and titled *Zuccoli Aspire, Zuccoli, Northern Territory Technical Specification* dated 11 November 2019.

Earthworks and associated activities undertaken as part of the construction typically comprised:

- Clearing and grubbing
- Stripping of topsoil
- Cutting and filling
- Preparation of the stripped subgrade surface
- Placement and compaction of Fill layers
- Level 2 inspection and testing

For details of specification requirements for the above activities, reference should be made to the relevant sections of the ADG Specification.

For details of inspections following topsoil stripping and proof rolling, see the appended reports by ADG. All areas of Stage 3B passed proof roll testing.

The specification requires the fill placed on residential lots be compacted to 93.0% Maximum Modified Dry Density (MMDD).

The earthworks were undertaken by Ostojic, and various NATA accredited Northern Territory Government Panel Soils Laboratories carried out Level 2 earthworks inspection and testing for the project. Field and laboratory tests were undertaken in accordance with AS1289 *Methods of Testing Soils for Engineering Purposes* to assess the compaction of fill.

The following test reports have been provided as a record of the compaction achieved during placement of the fill. They have been reviewed by WANT Geotechnics and found to conform to the requirements of the Specification:

- Construction Sciences: Lot Report – Dry Density Ratio / Moisture Ratio reports 21791/R/46722-1,
- HIQA: Material Test Reports D21309-4, 6, 8, 13, 16, 18 to 21 and 36

Copies of the above records and documents are included in Appendix A.

Field density and laboratory compaction tests were carried out to assess the relative compaction and moisture condition of compacted fill in accordance with the frequency stated in the Specification.

The following table summarises the compaction results for the fill placement, in order the test reports were issued. Full results are attached at the end of this report in Appendix A.



Table 1: Summarised Compaction Results

	General Fill							
	EWK_03 Lift 1	EWK_03 Lift 2	EWK_03 Lift 3	EWK_03 Lift 4	EWK_03 Lift 5	EWK_03 Lift 6	EWK_03 Lots 14889/14890	EWK_03A Trench Backfill
Date tested	04/08/2021	04/08/2021	04/08/2021	06/08/2021	06/08/2021	06/08/2021	09/08/2021	14/08/2021
No. of Compaction Tests	1	1	1	1	1	1	2	3
Compaction Results Range (MMDD%)	93.5	94.0	93.0	100.0	98.0	96.5	95.5 to 96.5	96.0 to 99.5
	General Fill							
	EWK_05 Lots 14890 to 14894	EWK_04 Lots 14905 to 14924 Lift 2	EWK_05 Lots 14890 to 14894	EWK_04 Lots 14905 to 14924 Lift 1	EWK_06 Lots 14929 to 14932 Lift 1	EWK_09 Lots 14925 to 14928 Lift 1	EWK_09 Lots 14925 to 14928 Lift 2	EWK_09 Lots 14925 to 14928 Lift 3
Date tested	23/08/2021	01/09/2021	01/09/2021	02/09/2021	06/09/2021	19/10/2021	19/10/2021	19/10/2021
No. of Compaction Tests	3	3	3	3	3	3	3	3
Compaction Results Range (MMDD%)	85.0 to 95.5 FAIL	94.5 to 98.0	95.5 to 99.5 RE-TEST PASS	92.5 to 95.0 RE-TEST	99.0 to 99.5	95.5 to 99.5	97.0 to 99.5	96.5 to 100.5

5. Assessment of Compaction Results

There was a single result of 92.5%MMD that is below the specification requirement for 93%MMDD. Given the subsequent second lift passed the required level of compaction and the DCP results all met refusal on the lots in question then this is not considered to affect the overall integrity of the lots.

6. Assessment of Site Class and Bearing Capacity

Australian Standard AS 2870 provides a system of site classification as shown in the table below.

Class	Predicted Surface Movement	Foundation
A		Most sand and rock sites with little or no ground movement from moisture changes
S	<20mm	Slightly reactive clay or silt sites with slight ground movement from moisture changes
M	20mm to 40mm	Moderately reactive clay or silt sites which can experience moderate ground movement from moisture changes
H1	40mm to 60mm	Highly reactive clay site, which can experience high ground movement from moisture changes
H2	60mm to 75mm	Highly reactive clay site, which can experience very high ground movement from moisture changes
E	>75mm	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 clays, silts or organic soils, loose sands, landslip, mine subsidence, collapsing soils, soils subject to erosion, reactive sites subject to abnormal moisture conditions, sites with highly variable conditions such as weathered dolerite dykes, and sites which cannot be classified otherwise.

Table 2: AS2870 Site Classes

The following tables summarise the ground investigation and DCP results and provide an assessment of site class along with the assessed allowable bearing capacity at likely foundation depth (0.30m to 0.50m).



Lot	Summary of Strata		Site Class	Minimum DCP Blow Count per 100mm below 0.30m	Allowable Bearing Capacity at 0.30m to 0.50m (kPa)
	Engineered Fill	Extremely weathered rock			
14888	0.00-0.60m	Not encountered	P Equivalent to S	>20	>300
14889	0.00-0.65m	Not encountered	P Equivalent to S	>20	>300
14890	0.00-0.90m	0.90-1.25m	P Equivalent to S	>20	>300
14891	0.00-0.35m	0.35-0.50m	S	>20	>300
14892	0.00-0.35m	0.35-0.45m	S	>20	>300
14893	0.00-0.20m	0.20-1.00m	S	>20	>300
14894	Not encountered	0.00-0.80m	S	9	230
14895	Not encountered	0.00-0.75m	S	>20	>300
14896	Not encountered	0.00-0.60m	S	>20	>300
14897	Not encountered	0.00-0.15m	S	>20	>300
14898	Not encountered	0.00-0.45m	S	>20	>300
14999	Not encountered	0.00-0.30m	S	>20	>300
14900	Not encountered	0.00-0.30m	S	>20	>300
14901	Not encountered	0.00-0.25m	S	>20	>300
14902	Not encountered	0.00-0.20m	S	>20	>300
14903	Not encountered	0.00-0.10m	S	>20	>300
14904	Not encountered	0.00-0.60m	S	>20	>300
14905	0.00-0.40m	0.40-0.50m	S	>20	>300
14906	0.00-0.20m	0.20-0.75m	S	>20	>300
14907	0.00-0.20m	0.20-0.50m	S	>20	>300
14908	0.00-0.20m	0.20-0.40m	S	>20	>300
14909	0.00-0.20m	0.20-0.40m	S	>20	>300

Table 3: Site Classification and Allowable Bearing Capacity for Lots 14888 to 14909



Lot	Summary of Strata		Site Class	Minimum DCP Blow Count per 100mm below 0.30m	Allowable Bearing Capacity at 0.30m to 0.50m (kPa)
	Engineered Fill	Sand / Gravel / Extremely weathered rock			
14910	0.00-0.25m	0.25-0.35m	S	>20	>300
14911	0.00-0.25m	0.25-0.60m	S	>20	>300
14912	0.00-0.60m	0.60-0.70m	P Equivalent to S	>20	>300
14913	0.00-0.35m	0.35-0.60m	S	>20	>300
14914	0.00-0.40m	0.40-0.60m	S	>20	>300
14915	0.00-0.40m	0.40-0.60m	S	>20	>300
14916	0.00-0.25m	0.25-0.80m	S	>20	>300
14917	0.00-0.45m	0.45-0.90m	P Equivalent to S	>20	>300
14918	0.00-0.45m	0.45-0.80m	P Equivalent to S	>20	>300
14919	0.00-0.40m	0.40-0.90m	S	>20	>300
14920	0.00-0.20m	0.20-1.00m	S	>20	>300
14921	0.00-0.40m	0.40-0.50m	S	>20	>300
14922	0.00-0.10m	0.10-0.60m	S	>20	>300
14923	0.00-0.50m	0.50-0.80m	P Equivalent to S	>20	>300
14924	0.00-0.25m	0.25-0.70m	S	>20	>300
14925	0.00-0.20m	0.20-0.80m	S	>20	>300
14926	0.00-0.10m	0.10-0.80m	S	>20	>300
14927	0.00-0.30m	0.30-0.80m	S	>20	>300
14928	0.00-0.15m	0.15-0.60m	S	>20	>300
14929	0.00-0.15m	0.15-1.25m	S	>20	>300
14930	0.00-0.20m	0.20-0.50m	S	>20	>300
14931	0.00-0.20m	0.20-0.50m	S	>20	>300

Table 4: Site Classification and Allowable Bearing Capacity for Lots 14910 to 14931

Site Classification & Bearing Capacity Assessment
Stage 3B, Zuccoli, Northern Territory



7. Foundations

Footing systems for residential dwellings on Class S and P equivalent to S sites can be designed in accordance with standard S class footings as set out in Section 3 of AS 2870.

P equivalent to S class means that in places the site is underlain by more than 0.40m of fill, however because the fill has been engineered (rolled, moisture conditioned and compacted under Level 2 supervision – see Section 4) the fill can be considered equivalent to in situ material, in effect the site is classed as S Class.

8. Certification

Subject to the site preparation set out in Section 5, the data provided, the above review, and utilising Stockwell's method for the determination of bearing capacity, then all 43 Lots making up Zuccoli Stage 3B are certified as having:

- an allowable bearing capacity of at least 100kPa at likely foundation depth (0.30m to 0.50m depth);
- are Class S or P equivalent to S; and
- are considered suitable for the construction of single or double storey masonry buildings.

9. References

1. Northern Territory Geological Survey *Extractive Minerals Within the Outer Darwin Area*
2. Australian Standard AS 2870 *Residential Slabs and Footings*
3. MJ Stockwell, 1977, *Determination of Allowable Bearing Pressure Under Small Structures*



10. Limitations

SCOPE OF SERVICES

This geotechnical report has been prepared in accordance with the scope of services set out in the agreement between WANT Geotechnics and their client and is subject to any qualifications and assumptions set out in the report. 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, WANT Geotechnics has relied upon data, surveys, and plans provided by the client. WANT Geotechnics has not verified the accuracy or completeness of the data, to the extent that the any statements, opinions, facts, 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. WANT Geotechnics will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have not been fully disclosed to WANT Geotechnics.

GEOTECHNICAL INVESTIGATION

This report was prepared expressly for the client and expressly for purposes indicated by the client or his representative. Use by any other persons for any purpose, or by the client for a different purpose, is not recommended. The client should not use this report for other than its intended purpose without seeking additional geotechnical advice.

LIMITATIONS OF SITE INVESTIGATION

In assessing a structure from a single exploratory location there is the possibility that variations may occur that were not encountered. 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 data derived from the investigation and subsequent laboratory testing have been extrapolated to form an inferred model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the structure. Actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. The exploratory test records are the subjective interpretation of subsurface conditions at a particular location, made by trained personnel. The interpretation may be limited by the method of investigation and cannot always be definitive. For example, inspection of an excavation or test pit allows a greater area of the subsurface profile to be inspected than borehole investigation; however, such methods are limited by depth and site disturbance restrictions. In borehole investigation, the actual interface between materials may be more gradual or abrupt than a report indicates.

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

Subsurface conditions may be modified by changing natural forces or man-made influences. A geotechnical engineering report is based on conditions which existed at the time of subsurface exploration. Construction operations, at or adjacent to the site, and natural events, such as floods or groundwater fluctuations may also affect subsurface conditions and thus the 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.

EXPLORATORY LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT



Final exploratory logs are developed by geotechnical engineers based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final exploratory 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 exploratory 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.

OTHER LIMITATIONS

WANT Geotechnics will not be liable to update or revise the report to consider any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

WANT Geotechnics Pty Ltd

“Unfortunately, soils are made by nature and not by man, and the products of nature are always complex. As soon as we pass from steel and concrete to earth, the omnipotence of theory ceases to exist. Natural soil is never uniform. Its properties change from point to point while our knowledge of its properties is limited to those few spots at which the samples have been collected. In soil mechanics the accuracy of the computed results never exceeds that of a crude estimate and the principal function of theory consists in teaching us what and how to observe in the field”

Karl Terzaghi – Founder of Modern Geotechnology



Appendix A

ADG Drawing 3B_002 Zuccoli Aspire Stage 3B Civil Works

Borehole Location Plan

Explanatory Notes

Borehole Logs

Dynamic Cone Penetrometer Results

Laboratory Test Results

ADG Inspection Reports



Note
Area to be surrendered from Lot 12432 (CLT 2508) is 4.65ha
Public Roads are vested in the City of Palmerston
Electricity Supply Easements are in favour of the Power and Water Corporation and are to be created by registration of this plan

I, **Keith Leslie Schulz** hereby certify that the survey represented on this plan was carried out by me or under my supervision and was completed on **17/2/2022** and that this survey has been executed in accordance with the Licensed Surveyors Act and the Directions thereunder.

Licensed Surveyor Date

Note
Refer to S2017/063B for enlargements
Dimensions of unmarked boundaries and connections are original unless otherwise shown
NIK denotes Nail in Kerb

Field Book
EJA REF: 9512
Drawn
Earl James & Associates
17/2/2022
Examined
Earl James & Associates
Map Reference

Grid Bearings
(Palmerston Datum)
AZIMUTH
Assumed from . . . S2017/062 . . .
Observed at

LEGEND
Concrete Post
Concrete Block
Peg or Wooden Post
Reference Mark
Locksplit
Fence Post

LOTS 14888 TO 14931
TOWN OF PALMERSTON

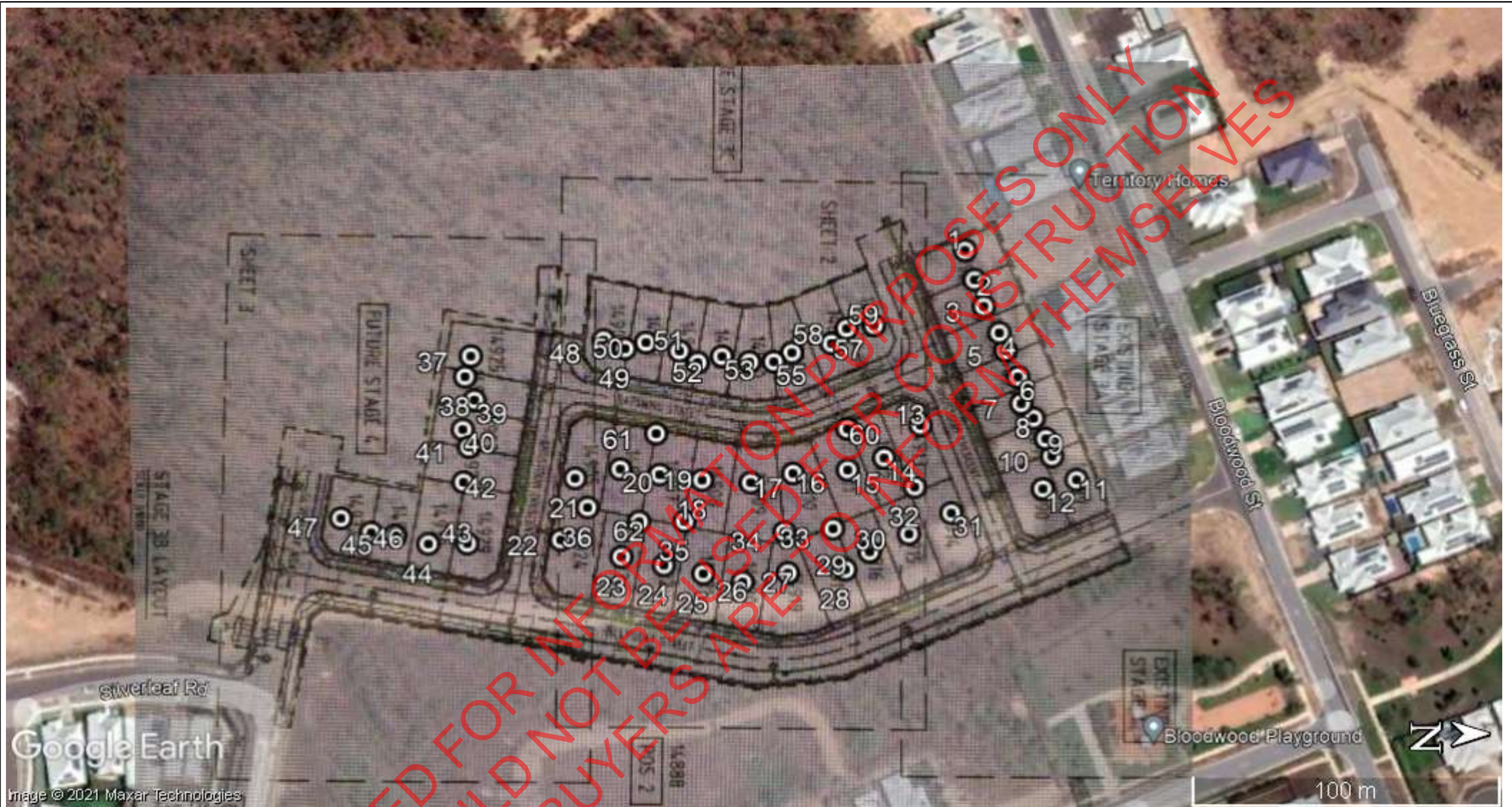
SCALE 1:1000 (A3)
10 0 10 20 30
metres

S2017/063A
SHEET 1 OF 2

SURVEY APPROVED

Surveyor-General Date

Version 1 - survey plan as lodged



Client: Ostoic Group

Drawn by: S Flux

Scale: NTS

Date: 28 Nov 2021

Auger Hole Locations

Zuccoli Stage 3B

Zuccoli, Northern Territory

Project No. NTG20212385

Drawing No. 1

Revision: 0

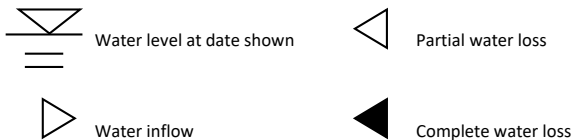
Explanatory Notes - Soil Description

In engineering terms soil includes every type of uncemented or partially cemented inorganic material found in the ground. In practice, if the material can be remoulded by hand in its field condition or in water it is described as a soil. The dominant soil constituent is given in capital letters, with secondary textures in lower case. The dominant feature is assessed from the Unified Soil Classification system and a soil symbol is used to define a soil layer.

METHOD

Method	Description
AS	Auger Screwing
BH	Backhoe
CT	Cable Tool Rig
EE	Existing Excavation/Cutting
EX	Excavator
HA	Hand Auger
HQ	Diamond Core - 63mm
NQ	Diamond Core - 47mm
PQ	Diamond Core - 85mm
JET	Jetting
NMLC	Diamond Core - 52mm
PT	Push Tube
RAB	Rotary Air Blast
RB	Rotary Blade
RT	Rotary Tricone Bit
TC	Auger TC Bit
V	Auger V Bit
WB	Washbore

WATER



Not observed: The borehole/test pit was dry soon after excavation. Inflow may have been observed had the borehole/test pit been left open for a longer period.

SAMPLING

Sample	Description
B	Bulk Disturbed Sample
D	Disturbed Sample
Jar	Jar Sample
SPT	Standard Penetration Test
U50	Undisturbed Sample - 50mm
U75	Undisturbed Sample - 75mm

UNIFIED SOIL CLASSIFICATION

The appropriate symbols are selected on the result of visual examination, field tests and available laboratory tests, such as, sieve analysis, liquid limit and plasticity index.

USC Symbol	Description
GW	Well graded gravel
GP	Poorly graded gravel
GM	Silty gravel
GC	Clayey gravel
SW	Well graded sand
SP	Poorly graded sand
SM	Silty sand
SC	Clayey sand
ML	Silt of low plasticity
CL	Clay of low plasticity
CI	Clay of medium plasticity
OL	Organic soil of low plasticity
MH	Silt of high plasticity
CH	Clay of high plasticity
OH	Organic soil of high plasticity
Pt	Peaty Soil

MOISTURE CONDITION

- Dry
- Cohesive soils are friable or powdery
 - Cohesionless soil grains are free-running
- Moist
- Soil feels cool, darkened in colour
 - Cohesive soils can be moulded
 - Cohesionless soil grains tend to adhere
- Wet
- Cohesive soils usually weakened
 - Free water forms on hands when handling

PLASTICITY

The potential for soil to undergo change in volume with moisture change is assessed from its degree of plasticity. The classification of the degree of plasticity in terms of the Liquid Limit (LL) is as follows:

Description of Plasticity	LL (%)
Low	<35
Medium	35 to 50
High	>50

COHESIVE SOILS - CONSISTENCY

The consistency of a cohesive soil is defined by descriptive terminology such as very soft, soft, firm, stiff, very stiff and hard. These terms are assessed by the shear strength of the soil as observed visually, by pocket penetrometer values and by resistance to deformation to hand moulding.

A Pocket Penetrometer may be used in the field or the laboratory to provide an approximate assessment of the unconfined compressive strength (UCS) of cohesive soils. The undrained shear strength of cohesive soils is approximately half the UCS. The values are recorded in kPa as follows:

Strength	Symbol	Undrained Shear Strength, C_u (kPa)
Very Soft	VS	< 12
Soft	S	12 to 25
Firm	F	25 to 50
Stiff	St	50 to 100
Very Stiff	VSt	100 to 200
Hard	H	> 200

COHESIONLESS SOILS - RELATIVE DENSITY

Relative density terms such as very loose, loose, medium, dense and very dense are used to describe silty and sandy material, and these are usually based on resistance to drilling penetration or the Standard Penetration Test (SPT) 'N' values. Other condition terms, such as friable, powdery or crumbly may also be used.

Term	Symbol	Density Index	N Value (blows/0.3 m)
Very Loose	VL	0 to 15	0 to 4
Loose	L	15 to 35	4 to 10
Medium Dense	MD	35 to 65	10 to 30
Dense	D	65 to 85	30 to 50
Very Dense	VD	>85	>50

COHESIONLESS SOILS PARTICLE SIZE DESCRIPTIVE TERMS

Name	Subdivision	Size
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 μ m to 2.36 mm
	medium	200 μ m to 600 μ m
	fine	75 μ m to 200 μ m

Rock Description

The rock is described with strength and weathering symbols as shown below. Other features such as bedding and dip angle are given.

METHOD

Refer soil description sheet

WATER

Refer soil description sheet

ROCK QUALITY

The fracture spacing is shown where applicable and the Rock Quality Designation (RQD) or Total Core Recovery (TCR) is given where:

TCR (%) = $\frac{\text{length of core recovered}}{\text{length of core run}}$

SCR (%) = $\frac{\text{length of core recovered with at least 1 full circumference}}{\text{length of core run}}$

RQD (%) = $\frac{\text{Sum of Axial lengths of core } > 100\text{mm long}}{\text{length of core run}}$

ROCK MATERIAL WEATHERING

Rock weathering is described using the abbreviations and definitions used in AS1726.

Symbol	Term	Definition
RS	Residual Soil	Soil definition on extremely weathered rock; the mass structure and substance are no longer evident; there is a large change in volume but the soil has not been significantly transported
XW	Extremely Weathered	Rock is weathered to such an extent that it has 'soil' properties, i.e. It either disintegrates or can be remoulded in water
HW	Highly Weathered	The rock substance is affected by weathering to the extent that limonite staining or bleaching affects the whole rock substance and other signs of chemical or physical decomposition are evident. Porosity and strength is usually decreased compared to the fresh rock. The colour and strength of the fresh rock is no longer recognisable.
MW	Moderately Weathered	The whole of the rock substance is discoloured, usually by iron staining or bleaching, to the extent that the colour of the fresh rock is no longer recognisable
SW	Slightly Weathered	Rock is slightly discoloured but shows little or no change of strength from fresh rock
FR	Fresh	Rock shows no sign of decomposition or staining

ROCK STRENGTH

Rock strength is described using AS1726, as follows:

Term	Symbol	Point Load Index $Is_{(50)}$ (MPa)
Extremely Low	EL	<0.03
Very Low	VL	0.03 to 0.1
Low	L	0.1 to 0.3
Medium	M	0.3 to 1
High	H	1 to 3
Very High	VH	3 to 10
Extremely High	EH	>10

○ Diametral Point Load Index test

● Axial Point Load Index test

DEFECT SPACING/BEDDING THICKNESS

Measured at right angles to defects of same set or bedding.

Term	Defect Spacing	Bedding
Extremely closely spaced	<6 mm	Thinly Laminated
	6 to 20 mm	Laminated
Very closely spaced	20 to 60 mm	Very Thin
Closely spaced	0.06 to 0.2 m	Thin
Moderately widely spaced	0.2 to 0.6 m	Medium
Widely spaced	0.6 to 2 m	Thick
Very widely spaced	>2 m	Very Thick

DEFECT DESCRIPTION

Type:	Definition:
B	Bedding
BP	Bedding Parting
F	Fault
C	Cleavage
J	Joint
SZ	Shear Zone
CZ	Crushed Zone
DB	Drill Break

Planarity:	Roughness:
P – Planar	R – Rough
Ir – Irregular	S – Smooth
St – Stepped	Sl – Slickensides
U – Undulating	Po – Polished

Coating or Infill:	Description
Clean	No visible coating or infilling
Stain	No visible coating or infilling but surfaces are discoloured by mineral staining
Veneer	A visible coating or infilling of soil or mineral substance but usually unable to be measured (<1mm). If discontinuous over the plane, patchy veneer
Coating	A visible coating or infilling of soil or mineral substance, >1mm thick. Describe composition and thickness

The inclinations of defects are measured from perpendicular to the core axis.

**BOREHOLE LOG****BH1 LOT 14896**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717770, 8615540 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						H	D	5 10 15 20
	0.75				Extremely weathered rock recovered as SILT sandy gravelly, dark orange brown, hard			>25 for 50mm
					End of test hole @ 0.75m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BIOREHOLE LOG****BH2 LOT 14896/14895**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717780, 8615543 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						D	D	5 10 15 20
	0.30				Extremely weathered rock recovered as SAND silty, light yellow brown brown, dense to very dense, hard	VD		13
					End of test hole @ 0.30m, virtual machine refusal			>25

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

D=dry M=moist W=wet

**BOREHOLE LOG****BH4 LOT 14894**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717798, 8615551 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20					ENGINEERED FILL: GRAVEL silty sandy, dark brown, very dense	VD	D	5 10 15 20
1.00					Extremely weathered rock recovered as SILT sandy gravelly, dark orange brown, hard	H		16 20 >25
					End of test hole @ 1.00m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH5 LOT 14894/14893**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717807, 8615554 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.25				ENGINEERED FILL: GRAVEL silty sandy, dark brown, dense to very dense	D	D	5 10 15 20
				Extremely weathered rock recovered as SILT sandy gravelly, dark orange brown, hrad	H		12 16 >25
0.55				End of test hole @ 0.55m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH6 LOT 14893**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717813, 8615557 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.35				ENGINEERED FILL: GRAVEL silty sandy, dark brown, very dense			20
	0.45				Extremely weathered rock recovered as GRAVEL sandy silty, dark orange brown, very dense			>25
					End of test hole @ 0.45m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH7 LOT 14892**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717824, 8615560 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL silty sandy, dark brown, very dense	VD	D	5 10 15 20
	0.35							15
	0.50				Extremely weathered rock recovered as GRAVEL sandy silty, dark orange brown, very dense			18
					End of test hole @ 0.50m, virtual machine refusal			>25

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH8 LOT 14892/14891**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717830, 8615563 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL silty sandy, dark brown, very dense	VD	D	5 10 15 20
	0.90							
	0.95				SAND silty, dark grey, roots, very dense Extremely weathered rock recovered as GRAVEL sandy silty, dark orange brown, very dense			
	1.20				End of test hole @ 1.20m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose) VS (very soft) <12kPa
L (loose) S (soft) 12-25
MD (medium dense) F (firm) 25-50
D (dense) St (stiff) 50-100
VD (very dense) VSt (very stiff) 100-200
H (hard) >200

MOISTURE CONDITION

D=dry M=moist W=wet

**BOREHOLE LOG****BH9 LOT 14891**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717834, 8615566 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					VD	D	5 10 15 20
0.90				ENGINEERED FILL: GRAVEL silty sandy, dark brown, very dense			>25 for 50mm
1.25				Extremely weathered rock recovered as GRAVEL sandy silty, dark orange brown, very dense			
				End of test hole @ 1.25m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH10** LOT 14891/14890/14889

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717840, 8615568 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					VD	D	5 10 15 20
0.95				ENGINEERED FILL: GRAVEL silty sandy, dark brown, very dense			>25 for 60mm
1.25				Extremely weathered rock recovered as GRAVEL sandy silty, dark orange brown, very dense			
				End of test hole @ 1.25m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH11 LOT 14889**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717848, 8615576 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark brown, some boulders, very dense	VD	D	5 10 15 20 >25 for 50mm
0.60					End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH12 LOT 14890**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717850, 8615569 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20 -25 for 50mm
	0.65				End of test hole @ 0.65m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH13 LOT 14913**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717829, 8615525 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.60								
0.70					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
					End of test hole @ 0.70m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH14 LOT 14912**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717829, 8615525 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.25					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.60					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 50mm
					End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH15 LOT 14911**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717844, 8615501 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
0.25					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			>25 for 50mm
0.35					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
					End of test hole @ 0.35m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH16 LOT 14910**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717845, 8615483 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.20				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			>25 for 80mm
	0.40				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
					End of test hole @ 0.40m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH17 LOT 14909**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717848, 8615469 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.20				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			>25 for 70mm
	0.40				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
					End of test hole @ 0.40m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH18 LOT 14908**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717847, 8615453 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20 18
0.50					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 25 for 60mm
					End of test hole @ 0.50m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH19 LOT 14907**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS:
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	18
0.75				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 >25 for 60mm
				End of test hole @ 0.75m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH20 LOT 14906**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717843,8615426 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
0.40					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			17 >25 >25 for 40mm
					End of test hole @ 0.40m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200



BOREHOLE LOG

BH21 LOT 14905

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717840,8615411 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20
0.60					End of test hole @ 0.60m, virtual machine refusal			20 >25 >25 for 40mm

GROUNDWATER

- water level (static)
- water level (at excavation)
- outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

- 1 - no resistance ranging to:
- 4 - refusal

FIELD DATA SYMBOLS

- shear vane test
- pocket penetrometer
- Permeability Test
- Undisturbed tube sample
- Disturbed sample
- Bulk sample

DENSITY

- VL (very loose)
- L (loose)
- MD (medium dense)
- D (dense)
- VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

- VS (very soft) <12kPa
- S (soft) 12-25
- F (firm) 25-50
- St (stiff) 50-100
- VSt (very stiff) 100-200
- H (hard) >200

**BOREHOLE LOG****BH22 LOT 14924**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717867,8615406
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
	0.10				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20 25 for 80mm
	0.60				End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH23 LOT 14923**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717840,8615411 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.35				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 70mm
					End of test hole @ 0.35m, virtual machine refusal			

GROUNDWATER ▼ water level (static) ▼ water level (at excavation) ◀▶ outflow / inflow	PENETRATION 1 - no resistance ranging to: 4 - refusal	FIELD DATA SYMBOLS ✕ shear vane test ⊥ pocket penetrometer ○ Permeability Test ■ Undisturbed tube sample ● Disturbed sample □ Bulk sample	DENSITY VL (very loose) L (loose) MD (medium dense) D (dense) VD (very dense)	CONSISTENCY VS (very soft) <12kPa S (soft) 12-25 F (firm) 25-50 St (stiff) 50-100 VSt (very stiff) 100-200 H (hard) >200
Weathering FR - Fresh; SW - Slightly Weathered MW - Mod Weathered; HW - Highly Weathered XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION D=dry M=moist W=wet	

**BOREHOLE LOG****BH24 LOT 14922**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717876, 8615440 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			11
1.00								>25
								>25 for 70mm
					End of test hole @ 1.00m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH25 LOT 14921**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717879, 8615453 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
0.40					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			20
0.75					SAND silty, dark grey, very dense			>25
0.80					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 40mm
					End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH26 LOT 14920**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717882, 8615466 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					VD	D	5 10 15 20
0.45				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			18
0.80				GRAVEL sandy silty, dark grey, very dense	M		>25 >25 for 60mm
				End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH27 LOT 14919**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS:
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.45								20
0.60					SAND silty, dark grey, roots, very dense		M	>25
0.90					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense		D	>25 for 50mm
					End of test hole @ 0.90m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH28 LOT 14917**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717878, 8615500 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.25				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	19
				GRAVEL sandy silty, dark grey, very dense		M	>25 >25 for 60mm
0.60				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
0.80				End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH29 LOT 14916**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717872, 8615508
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.40					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			20
0.60					End of test hole @ 0.60m, virtual machine refusal			>25 >25 for 40mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH30 LOT 14915**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717866, 8615521 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.40					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			24
0.60					End of test hole @ 0.60m, virtual machine refusal			>25 >25 for 40mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH31 LOT 14914**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717859, 8615535 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
0.35					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			22
0.60					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 >25 for 60mm
					End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH32 LOT 14912 to 14915**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717849, 8615521 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
0.50					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			23
0.80					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 >25 for 50mm
					End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH33** LOT 14911/14916/14917

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717849, 8615521 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.50				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			23
	0.80				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 >25 for 50mm
					End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH34** LOT 14909/14910/14919

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717865, 8615480 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.60								23
0.85					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 >25 for 50mm
					End of test hole @ 0.85m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH35** LOT 14907/14908/14921/14922

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717863, 8615445 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.45					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 80mm
1.05					End of test hole @ 1.05m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose) VS (very soft) <12kPa
L (loose) S (soft) 12-25
MD (medium dense) F (firm) 25-50
D (dense) St (stiff) 50-100
VD (very dense) VSt (very stiff) 100-200
H (hard) >200

MOISTURE CONDITION

D=dry M=moist W=wet



BOREHOLE LOG

BH36 LOT 14923/24 and 14905/06

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717854, 8615416 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.65					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 80mm
					End of test hole @ 0.65m, virtual machine refusal			

GROUNDWATER ▼ water level (static) ▼ water level (at excavation) ◀▶ outflow / inflow	PENETRATION 1 - no resistance ranging to: 4 - refusal	FIELD DATA SYMBOLS ✕ shear vane test ⊥ pocket penetrometer ○ Permeability Test ■ Undisturbed tube sample ● Disturbed sample □ Bulk sample	DENSITY VL (very loose) L (loose) MD (medium dense) D (dense) VD (very dense)	CONSISTENCY VS (very soft) <12kPa S (soft) 12-25 F (firm) 25-50 St (stiff) 50-100 VSt (very stiff) 100-200 H (hard) >200
Weathering FR - Fresh; SW - Slightly Weathered MW - Mod Weathered; HW - Highly Weathered XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION D=dry M=moist W=wet	

**BOREHOLE LOG****BH37 LOT 14925**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717804, 8615377 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.50								21
					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25
0.80								>25 for 40mm
					End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH38 LOT 14925/14926**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717813, 8615376 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.30					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20 24
1.05					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 30mm
					End of test hole @ 1.05m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH62 LOT 14906/14923**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717822, 8615376 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.25				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			21
					GRAVEL sandy silty, dark grey, very dense			>25
	0.50							>25 for 40mm
	0.70				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
					End of test hole @ 0.70m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH40 LOT 14927**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717833, 8615375 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.40				SAND gravelly silty, dark brown, very dense			>25 for 80mm
0.80				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
				End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH41 LOT 14927/14928**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717837, 8615375 Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.10				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	15
0.25				SAND gravelly silty, dark brown, very dense			>25 for 50mm
0.80				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
				End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH42** LOT 14928 to 149230

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717849, 8615373 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
	0.10				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20 17 >25 for 40mm
	0.60				End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH43 LOT 14929**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717868, 8615375 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.30				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			22
					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 30mm
	0.80				End of test hole @ 0.80m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH44 LOT 14930**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717868, 8615362 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.15					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20 17
0.60					End of test hole @ 0.60m, virtual machine refusal			>25 for 40mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer

○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH45 LOT 14931**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717865, 8615351 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.15					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			15
1.25					End of test hole @ 1.25m, virtual machine refusal			>25 for 40mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH46 LOT 14931/14932**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717864, 8615343 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20					ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	5 10 15 20
0.55					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 50mm
					End of test hole @ 0.55m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH47 LOT 14932**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717859, 8616333 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
	0.20				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	M	5 10 15 20
	0.50				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	D		14
					End of test hole @ 0.50m, virtual machine refusal			>25 for 40mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY










VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathd		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG****BH49 LOT 14904/14903**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717800, 8615428 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.30				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 40mm
					End of test hole @ 0.30m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH50 LOT 14903**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717800, 8615435 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
0.20					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20
					End of test hole @ 0.20m, virtual machine refusal			>25 for 50mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH51 LOT 14902**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717803, 8615446 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
	0.25				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20
					End of test hole @ 0.25m, virtual machine refusal			>25 for 30mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH52 LOT 14901/14902**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717807, 8615452 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.30				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 30mm
					End of test hole @ 0.30m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH53 LOT 14901**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717805, 8615460 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.30				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 30mm
					End of test hole @ 0.30m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH54 LOT 14900**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717807, 8615469 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.30				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 50mm
					End of test hole @ 0.30m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH55 LOT 14899/14900**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717807, 8615477 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.45				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 30mm
					End of test hole @ 0.45m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
┴ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH56 LOT 14899**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717804, 8615483 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.45				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 40mm
					End of test hole @ 0.45m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH57 LOT 14898**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717801, 8615496 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
	0.15				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense	VD	D	5 10 15 20
					End of test hole @ 0.15m, virtual machine refusal			>25 for 30mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH58 LOT 14897/14898**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717796, 8615501 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.30				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 40mm
					End of test hole @ 0.30m, virtual machine refusal			

GROUNDWATER ▼ water level (static) ▼ water level (at excavation) ◀▶ outflow / inflow	PENETRATION 1 - no resistance ranging to: 4 - refusal	FIELD DATA SYMBOLS ✕ shear vane test ⊥ pocket penetrometer ○ Permeability Test ■ Undisturbed tube sample ● Disturbed sample □ Bulk sample	DENSITY VL (very loose) L (loose) MD (medium dense) D (dense) VD (very dense)	CONSISTENCY VS (very soft) <12kPa S (soft) 12-25 F (firm) 25-50 St (stiff) 50-100 VSt (very stiff) 100-200 H (hard) >200
Weathering FR - Fresh; SW - Slightly Weathered MW - Mod Weathered; HW - Highly Weathered XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION D=dry M=moist W=wet	

**BOREHOLE LOG****BH59 LOT 14897**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717795, 8615505 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance		SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
0.60					Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25 for 50mm
					End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY










VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathd		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG****BH61 LOT 14906/14907**

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 02/12/2021
GPS:
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
	0.10				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense	VD	D	18
	0.20				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			>25
					End of test hole @ 0.20m, virtual machine refusal			>25 for 60mm

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

MOISTURE CONDITION

D=dry M=moist W=wet

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

**BOREHOLE LOG****BH62** LOT 14923/14906

Sheet 1 of 1

Project: Subdivision
Location: Zuccoli Stage 3B
Job No. NTG20212385

Client: Ostojic
Equipment: Drill Rig with 150mm Auger
Surface Conditions: Engineered Fill

Date: 22/11/2021
GPS: 717854, 8615416 Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Density/Consistency	Moisture Condition	Dynamic Cone Penetrometer Testing penetration per 100mm
						VD	D	5 10 15 20
	0.40				ENGINEERED FILL: GRAVEL sandy silty, dark orange brown, very dense			20
	0.50				Extremely weathered rock recovered as GRAVEL sandy silty, dark brown, very dense			
					End of test hole @ 0.40m, virtual machine refusal			

GROUNDWATER

▼ water level (static)
▼ water level (at excavation)
◀▶ outflow / inflow

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Xtremely Weathered; RS - Residual Soil

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
⊥ pocket penetrometer
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■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

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VL (very loose)
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VS (very soft) <12kPa
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St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200



LOT REPORT - DRY DENSITY RATIO / MOISTURE RATIO

Client:	Ostojic Group PTY LTD	Report Number:	21791/R/46722-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/978
Project:	OST2109-Zuccoli Stage 3BC	Lot Number:	EWK 06/Lot 14929-14932
Location:	Darwin	Internal Test Request:	21791/T/20006
Component:	Field Density Testing	Client Reference/s:	TR# 39
Area Description:	Zuccoli Aspire Stage 3BC	Report Date / Page:	15/09/2021 Page 1 of 2

Test Procedures:	AS1289.5.4.1, AS1289.5.2.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	21791/S/108734	21791/S/108735	21791/S/108736
ID / Client ID	Lift 1	Lift 1	Lift 1
Lot Number	EWK 06/Lot 14929-14932	EWK 06/Lot 14929-14932	EWK 06/Lot 14929-14932
Date / Time Tested	6/09/2021 12:00	6/09/2021 12:10	6/09/2021 12:20
Material Source	Client	Client	Client
Material Type	Backfill	Backfill	Backfill
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)	225 / 250 / -	225 / 250 / -	225 / 250 / -
Standard or Modified	Modified	Modified	Modified
Stabilised Material Curing Time	-	-	-
Location 1	Lift 1	Lift 1	Lift 1
Location 2	Selected by client	Selected by client	Selected by client
Location 3			
Location 4			
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize Wet (%)	0	0	0
Sample Oversize Dry (%)	0	0	0
MDR Sample Number	21791/S/108734	21791/S/108735	21791/S/108736
MDR Sample Date / Update	6/09/2021	6/09/2021	6/09/2021
Assigned MDR (Yes / No)	No	No	No
Moisture Test Results:			
Field Moisture Content (%)	7.6	8.6	7.5
Optimum Moisture Content (%)	9.5	10.5	9.5
Variation from OMC (%)	2.0% Drier than OMC	1.5% Drier than OMC	2.0% Drier than OMC
Moisture Ratio (%)	79.0	83.5	80.0
Density Test Results:			
Field Dry Density (t/m³)	2.10	2.07	2.09
Maximum Dry Density (t/m³)	2.11	2.08	2.12
Dry Density Ratio Required (%)	95	95	95
Dry Density Ratio (%)	99.5	99.5	99.0

Remarks	LOT NUMBER: EWK_06 VERGE BILLYGOAT/SILVERLAF ST ./LOT 14929-14932
---------	---

Accredited for compliance with ISO/IEC 17025 – Testing 		 Approved Signatory: Tejinder Singh Thandi Form ID: W27ASRepSum Rev 3	
Accreditation Number:	1986		
Corporate Site Number:	21791		

LOT REPORT - DRY DENSITY RATIO / MOISTURE RATIO

Client:	Ostojic Group PTY LTD	Report Number:	21791/R/46722-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/978
Project:	OST2109-Zuccoli Stage 3BC	Lot Number:	EWK 06/Lot 14929-14932
Location:	Darwin	Internal Test Request:	21791/T/20006
Component:	Field Density Testing	Client Reference/s:	TR# 39
Area Description:	Zuccoli Aspire Stage 3BC	Report Date / Page:	15/09/2021 Page 2 of 2

Test Procedures:	AS1289.5.4.1, AS1289.5.2.1, AS1289.5.8.1, AS1289.2.1.1
Statistical Analysis Test Method:	Lot Average (Lot average calculations are not covered by endorsement)

Nuclear Gauge Calibration Details

Calibration Number	-	Material Source	-
Calibration Last Updated	-	Material Type	-
Nominated Calibration Layer Depth (mm)	-		

LOT TEST RESULT SUMMARY





Tests in Lot = 3	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Moisture Ratio (%)	79.2	83.5	80.8	2.329
Dry Density Ratio (%)	98.9	99.4	99.2	0.265

Lot Number: EWK 06/Lot 14929-14932

Mean Moisture Ratio (%): 80.8

Mean Density Ratio (%): 99.2

Remarks	LOT NUMBER: EWK_06 VERGE BILLYGOAT/SILVERLAF ST ./LOT 14929-14932
---------	---

 Accredited for compliance with ISO/IEC 17025 – Testing Accreditation Number: 1986 Corporate Site Number: 21791		 Approved Signatory: Tejinder Singh Thandi Form ID: W27ASRepSum Rev 3
---	--	--

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-21
Issue Number: 1
Date Issued: 20/09/2021
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 038
Work Request: 4346
Sample Number: D21-4346A
Date Sampled: 30/08/2021
Dates Tested: 30/08/2021 - 16/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: Lots 14905-149241
Lot No: EWK-04 (Lift 2)
Material: General Fill

Accredited for compliance with ISO/IEC 17025 - Testing



Aldrin Bravo

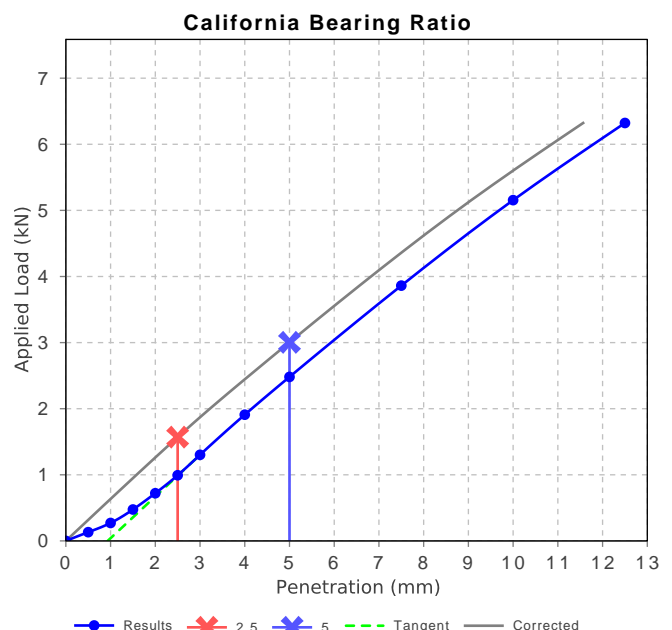
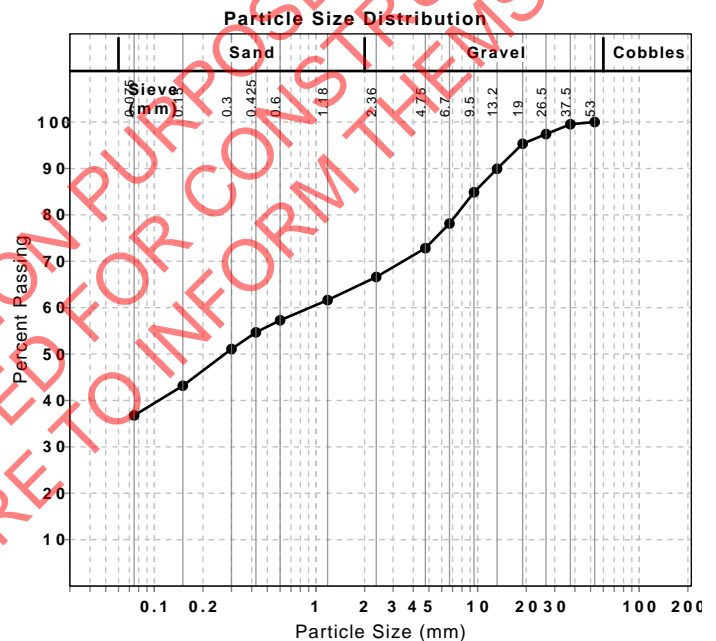
Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Particle Size Distribution (AS1289 3.6.1)		
Sieve	Passed %	Passing Limits
53 mm	100	
37.5 mm	100	
26.5 mm	97	
19 mm	95	
13.2 mm	90	
9.5 mm	85	
6.7 mm	78	
4.75 mm	73	
2.36 mm	67	
1.18 mm	62	
0.6 mm	57	
0.425 mm	55	
0.3 mm	51	
0.15 mm	43	
0.075 mm	37	

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		
	Min	Max
CBR taken at	5 mm	
CBR %	15	
Method of Compactive Effort	Modified	
Method used to Determine MDD	AS 1289 5.2.1 & 2.1.1	
Method used to Determine Plasticity	Visual/Tactile Assessment	
Maximum Dry Density (t/m ³)	2.17	
Optimum Moisture Content (%)	8.5	
Laboratory Density Ratio (%)	95.0	
Laboratory Moisture Ratio (%)	102.5	
Dry Density after Soaking (t/m ³)	2.02	
Field Moisture Content (%)	8.3	
Moisture Content at Placement (%)	8.6	
Moisture Content Top 30 mm (%)	13.7	
Moisture Content Rest of Sample (%)	11.3	
Mass Surcharge (kg)	4.5	
Soaking Period (days)	4	
Curing Hours	20.9	
Swell (%)	2.0	
Oversize Material (mm)	19	
Oversize Material Included	Excluded	
Oversize Material (%)	4.4	



Material Test Report

Report Number: D21309-21
Issue Number: 1
Date Issued: 20/09/2021
Client: Ostojic Group Pty Ltd
PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 038
Work Request: 4346
Sample Number: D21-4346A
Date Sampled: 30/08/2021
Dates Tested: 30/08/2021 - 16/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: Lots 14905-149241
Lot No: EWK-04 (Lift 2)
Material: General Fill



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Air Dried		
Preparation Method	Wet Sieve		
Liquid Limit (%)	24		
Plastic Limit (%)	17		
Plasticity Index (%)	7		
Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	2.5		
Cracking Crumbling Curling	None		

PROVIDED FOR INFORMATION PURPOSES ONLY
AND SHOULD NOT BE USED FOR CONSTRUCTION
- BUILDERS/BUYERS ARE TO INFORM THEMSELVES

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-4
Issue Number: 1
Date Issued: 10/08/2021
Client: Ostoic Group Pty Ltd
PO Box 38915, WINNELLIE NT 0821
Contact: Debbie Barbaro
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR012
Work Request: 4198
Date Sampled: 04/08/2021 10:00
Dates Tested: 04/08/2021 - 09/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Small Pond Backfill - Lots 14889/14890
Lot Number: EWK_03
Material: General Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4198A	D21-4198B	D21-4198C
Date Tested	04/08/2021	04/08/2021	04/08/2021
Time Tested	13:19	13:16	13:08
Test Request #/Location	TR012 Refer Plan	TR012 Refer Plan	TR012 Refer Plan
Layer / Reduced Level	Lift 1	Lift 2	Lift 3
Soil Description	General Fill	General Fill	General Fill
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	13	5	6
Oversize (dry basis) %	14	6	6
Curing Hours	91.8	116.9	92.9
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.26	2.28	2.24
Field Moisture Content %	9.7	10.3	9.4
Field Dry Density t/m ³	2.06	2.07	2.04
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.20	2.20	2.19
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	6.5	7.5	8.0
Moisture Variation %	-3.5	-3.0	-1.5
Moisture Ratio %	151.5	138.0	119.0
Density Ratio %	93.5	94.0	93.0
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

LEGEND

- | | |
|--|---------------------------|
| | EXISTING SURFACE CONTOURS |
| | BULK EARTHWORKS CONTOURS |
| | LIMIT OF WORKS |
| | LOT BOUNDARY |
| | FUTURE LOT BOUNDARY |
| | PROPOSED BATTER |
| | ROAD CENTRELINE |
| | NOMINAL KERB LINE |
| | PROPOSED RETAINING WALL |
| | PROPOSED EARTHWORKS CUT |
| | PROPOSED EARTHWORKS FILL |

ESL 14.083	✕	EXISTING SURFACE LEVEL
FSL 14.583		FINISHED SURFACE LEVEL

EARTHWORKS NOTES

1. FOR GENERAL NOTES REFER TO DRG No. 3B_001, WHICH IS TO BE REQUESTED AND VIEWED PRIOR TO COMMENCEMENT OF CONSTRUCTION IF NOT SUPPLIED.
2. GRASS AND TOPSOIL SHALL BE STRIPPED TO A DEPTH OF 50mm OVER THE EXTENT OF THE WORKS UNLESS DIRECTED OTHERWISE AND STOCKPILED FOR FUTURE USE AS NON-STRUCTURAL FILL IF REQUIRED.
3. ANY PROPOSED RETAINING WALL WORKS MUST BE WHOLLY WITHIN THE PROPERTY BOUNDARY OF THE SUBJECT SITE, INCLUDING REAR OF RETAINING WALL DRAINAGE INFRASTRUCTURE FOR RETAINING WALLS IN CUT.
4. ALL NEW WORKS TO MATCH NEATLY INTO EXISTING
5. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH APPROVED MANAGEMENT PLANS.
6. EARTHWORKS LEVELS WITHIN VERGES SHOWN ARE FINISHED EARTHWORKS SURFACE LEVELS INCLUSIVE OF 100mm TOPSOIL LAYER. EARTHWORKS LEVELS WITHIN LOTS ARE FINISHED EARTHWORKS LEVELS AND EXCLUDES TOPSOIL. EARTHWORKS LEVELS WITHIN ROAD CARRIAGEWAYS ARE ROAD BOX OUT LEVELS. REFER ROADWORKS AND DRAINAGE PLANS FOR FINISHED SURFACE LEVELS.
7. CONTRACTOR TO ENSURE SUITABLE EROSION CONTROL MEASURES ARE INSTALLED INCLUDING BUT NOT LIMITED TO SHAKE DOWNS, SILT FENCE ETC.
8. PRIOR TO THE CONTRACTOR COMMENCING ANY WORKS DETAILED ON THIS DRAWING, THE CONTRACTOR IS TO NOTIFY ADG ENGINEERS (AUST) PTY LTD AND RECEIVE WRITTEN CONFIRMATION THAT WORKS CAN COMMENCE
9. ADEQUATE SAFETY FENCING/BARRIERS TO BE APPLIED TO ALL BATTERS OR RETAINING WALLS (TEMPORARY OR PERMANENT) AS PER RELEVANT AUSTRALIAN STANDARDS AND LEGISLATION.
10. DUST CONTROL MEASURES ARE TO INCLUDE SPRAYING WATER ON UNPAVED ROADS, ACCESS TRACKS AND STOCKPILES AT A SUFFICIENT LEVEL TO SUPPRESS DUST GENERATION. ADDITIONALLY CONTRACTORS ARE TO COVER OR ENCLOSE STOCKPILES WHERE REASONABLY PRACTICAL TO RESTRICT DUST MOVEMENT.
11. FOR DETAILED GEOTECHNICAL INFORMATION, REFER TO GEOTECHNICAL INVESTIGATION REPORT BY DOUGLAS PARTNERS DATED MARCH 2015. IT IS RECOMMENDED THAT THE GEOTECHNICAL CONSULTANT BE CONTACTED TO CONFIRM THE SOIL CONDITIONS PRIOR TO EARTHWORKS COMMENCING.
12. ALL BATTERS AT FRONT OF LOTS TO BE 1 IN 6, UNLESS NOTED OTHERWISE. ALL BATTERS TO REAR AND SIDE BOUNDARIES WITHIN PRIVATE PROPERTIES TO BE 1 IN 2, UNLESS NOTED OTHERWISE.
13. CLEARED VEGETATION IS TO BE MULCHED AND STOCKPILED FOR RESPREADING AS DIRECTED BY THE SUPERINTENDENT.
14. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR IS TO RESPREAD TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
15. THE CONTRACTOR IS TO LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE OF THE WORKS BOUNDARY.
16. MAXIMUM BATTER SLOPES TO BE 1(V) : 2(H) AS PER SMC6 GEOTECHNICAL INVESTIGATION REPORT DATED MARCH 2015.

PERMISSION TO USE FOR CONSTRUCTION PURPOSES
ROADWORKS AND STORMWATER DRAINAGE

SIGNED _____ DATE _____

DIRECTOR CITY GROWTH AND OPERATIONS - CITY OF PALMERSTON

This permission to use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents associated. This permission is valid for two years from date of signing.

EXISTING TEMPORARY SEDIMENT BASIN TO BE DE-WATERED
AND CLEANED OUT AS NOTED ON THE ESC DRAWINGS.
BASIN TO BE FILLED IN ACCORDANCE WITH PROJECT
SPECIFICATRRION. FILL TO BE KEYED INTO EXISTING
BATTERS (BASIN WALLS) AS PER DETAIL.

EK-03 - small pond backfill

EXISTING
STAGE 1

POS 2

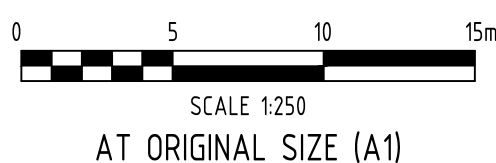
FUTURE STAGE 3C

1:2 BATTER MAX.
TEMPORARY BATT
TO EXISTING.

1:6 BATTER MAX
AT FRONT OF LOTS.

MATCHLINE - REFER DRG. 3B 201 FOR CONTINUATION

ISSUED FOR
CONSTRUCTION

[illegible]

Darwin Office
Suite G01, Manunda Place, 38 Cavenagh Street,
Darwin, Northern Territory 0800, Australia
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BRISBANE / DARWIN / GOLD COAST / MELBOURNE
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client	COSTO.IIC PTY LTD
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Project Name
ZUCCOLI ASPIRE
STAGE 3B
CIVIL WORKS

Discipline	CIVIL
------------	-------

Designed By	IMB
-------------	-----

checked B
SW

Project No.
20696

Drawn By
IMB

Status	CONSTRUCTION
--------	--------------

Approved By	SW
-------------	----

Scale at A1
1:250

Title
EARTHWORKS LAYOUT PLAN
SHEET 1 OF 3

Drawing No.
3B_200

Revised	C
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PLOT DATE: 7/29/2021 10:17 AM FILENAME: J:\20000\20696\CV\DWG\STAGE 3B\20696_3B_200_EARTHWORKS_LAYOUT_PLAN_SHEET 1 OF 3.DWG

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

LEGEND

- | | |
|--|---------------------------|
| | EXISTING SURFACE CONTOURS |
| | BULK EARTHWORKS CONTOURS |
| | LIMIT OF WORKS |
| | LOT BOUNDARY |
| | FUTURE LOT BOUNDARY |
| | PROPOSED BATTER |
| | ROAD CENTRELINE |
| | NOMINAL KERB LINE |
| | PROPOSED RETAINING WALL |
| | PROPOSED EARTHWORKS CUT |
| | PROPOSED EARTHWORKS FILL |

ESL 14.083 ✕ EXISTING SURFACE LEVEL
FSL 14.583 FINISHED SURFACE LEVEL

PERMISSION TO USE FOR CONSTRUCTION PURPOSES
ROADWORKS AND STORMWATER DRAINAGE

SIGNED DATE

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EARTHWORKS NOTES

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14. FOLLOWING THE COMPLETION OF EARTHWORKS THE CONTRACTOR IS TO RESPREAD TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
15. THE CONTRACTOR IS TO LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY FOR EARTHWORKS AND PROTECT ALL VEGETATION OUTSIDE OF THE WORKS BOUNDARY.
16. MAXIMUM BATTER SLOPES TO BE 1(V) : 2(H) AS PER SMEC GEOTECHNICAL INVESTIGATION REPORT DATED MARCH 2015.

EXISTING TEMPORARY SEDIMENT BASIN TO BE DE-WATERED
AND CLEANED OUT AS NOTED ON THE ESC DRAWINGS.
BASIN TO BE FILLED IN ACCORDANCE WITH PROJECT
SPECIFICATRION. FILL TO BE KEYED INTO EXISTING
BATTERS (BASIN WALLS) AS PER DETAIL.

EK-03 - small pond backfill

EXISTING
STAGE 1

POS 2

FUTURE STAGE 3C

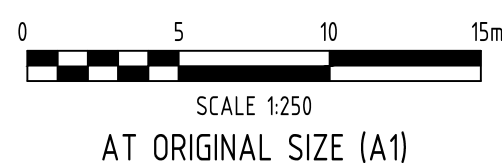
1:2 BATTER MAX.
TEMPORARY BATTER
TO EXISTING.

1:6 BATTER MAX
AT FRONT OF LOTS.

MATCHLINE - REFER DRG. 3B 201 FOR CONTINUATION

0	28.07.21	ISSUED FOR CONSTRUCTION		SM	JL
Rev	Date	Description		By	Chk

PLOT DATE: 7/29/2021 10:17 AM FILENAME: J:\20000\20696\CVL\DWG\STAGE 38\20696_38_200_EARTHWORKS LAYOUT PLAN SHEET 1 OF 3.DWG



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Darwin, Northern Territory 0800, Australia
GPO Box 2422, Darwin, Northern Territory 0801
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E info@adgce.com W www.adgce.com
BRISBANE / DARWIN / GOLD COAST / MELBOURNE
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client	COSTOJIC PTY LTD
--------	------------------

Project Name
ZUCCOLI ASPIRE
STAGE 3B
CIVIL WORKS

Discipline	CIVIL
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Designed By	JMB
-------------	-----

Checked By
SW

Project No.	20696
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Status	CONSTRUCTION
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Approved By	SW
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Scale at A1
1:250

ISSUED FOR
CONSTRUCTION

EARTHWORKS LAYOUT PLAN
SHEET 1 OF 3

Drawing No.	3B_200
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Revisio	0
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FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-6
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: Final Report
Date Issued: 22/08/2021
Client: Ostoic Group Pty Ltd
PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR #015
Work Request: 4214
Sample Number: D21-4214B
Date Sampled: 06/08/2021
Dates Tested: 06/08/2021 - 16/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: Small Pond Backfill - Lots 14889/14890 Lat: -12.5161, Long: 131.0048
Lot No: EWK-03 (Lift 4, 5 & 6)
Material: Backfill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	15		
Method of Compactive Effort	Modified		
Method used to Determine MDD	AS 1289.5.2.1		
Method used to Determine Plasticity	Visual/Tactile Assessment		
Additive Type	N/A		
Maximum Dry Density (t/m ³)	2.21		
Optimum Moisture Content (%)	6.5		
Laboratory Density Ratio (%)	95.0		
Laboratory Moisture Ratio (%)	97.0		
Dry Density after Soaking (t/m ³)	2.06		
Field Moisture Content (%)	6.5		
Moisture Content at Placement (%)	6.2		
Moisture Content Top 30mm (%)	12.1		
Moisture Content Rest of Sample (%)	10.7		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	44.9		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	5		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Air Dried		
Preparation Method	Wet Sieve		
Liquid Limit (%)	24		
Plastic Limit (%)	15		
Plasticity Index (%)	9		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	4.0		
Cracking Crumbling Curling	Cracking		

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-6
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: Final Report
Date Issued: 22/08/2021
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821

Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR #015
Work Request: 4214
Date Sampled: 06/08/2021 16:00
Dates Tested: 06/08/2021 - 11/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Small Pond Backfill - Lots 14889/14890
Lot Number: EWK-03 (Lift 4, 5 & 6)
Material: Backfill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4214A	D21-4214B	D21-4214C
Date Tested	06/08/2021	06/08/2021	06/08/2021
Time Tested	16:02	16:04	16:08
Test Request #/Location	TR#15 Small Pond Backfill - Lots 14889/14890	TR#15 Small Pond Backfill - Lots 14889/14890	TR#15 Small Pond Backfill - Lots 14889/14890
Latitude	-12.51621	-12.5161	-12.516
Longitude	131.00489	131.0048	131.00481
Layer / Reduced Level	4	5	6
Soil Description	General Fill	General Fill	General Fill
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	3	5	8
Oversize (dry basis) %	3	5	9
Curing Hours	18.8	3.5	19.9
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.31	2.31	2.29
Field Moisture Content %	5.8	6.0	7.6
Field Dry Density t/m ³	2.18	2.18	2.13
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.18	2.23	2.20
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.0	6.0	6.5
Moisture Variation %	1.0	0.0	-1.0
Moisture Ratio %	83.5	97.5	114.5
Density Ratio %	100.0	98.0	96.5
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-8
Issue Number: 1
Date Issued: 14/08/2021
Client: Ostoic Group Pty Ltd
PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR #016
Work Request: 4224
Date Sampled: 09/08/2021 14:00
Dates Tested: 09/08/2021 - 13/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Small Pond Backfill - Lots 14889/14890
Lot Number: EWK-03
Material: General Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4224A	D21-4224B
Date Tested	09/08/2021	09/08/2021
Time Tested	14:35	14:40
Test Request #/Location	TR 016 Small Pond Backfill - Lots 14889/14890	TR 016 Small Pond Backfill - Lots 14889/14890
Latitude	-12.51601	12.5162
Longitude	131.00477	131.00485
Layer / Reduced Level	Lift 7	Lift 8
Soil Description	Fill	Fill
Test Depth (mm)	250	250
Fraction Tested (mm)	19.0	19.0
Oversize (wet basis) %	3	5
Oversize (dry basis) %	3	5
Curing Hours	50.0	25.0
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.35	2.31
Field Moisture Content %	8.5	7.9
Field Dry Density t/m ³	2.16	2.14
Maximum Dry Density t/m ³	**	**
Adjusted Maximum Dry Density t/m ³	2.24	2.24
Optimum Moisture Content (OMC) %	**	**
Adjusted Optimum Moisture Content (OMC) %	8.0	7.5
Moisture Variation %	-0.5	-0.5
Moisture Ratio %	109.0	104.5
Density Ratio %	96.5	95.5
Compaction Method	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-13
Issue Number: 1
Date Issued: 26/08/2021
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 022
Work Request: 4269
Date Sampled: 13/08/2021 09:00
Dates Tested: 13/08/2021 - 25/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Stormwater Trench Backfill - Billygoat Street
Lot Number: EWK-03A
Material: Backfill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4269A	D21-4269B	D21-4269C
Date Tested	14/08/2021	14/08/2021	14/08/2021
Time Tested	**	**	**
Test Request #/Location	TR 022 Stormwater Trench Backfill - Billygoat Street	TR 022 Stormwater Trench Backfill - Billygoat Street	TR 022 Stormwater Trench Backfill - Billygoat Street
Latitude	-12.51579	-12.51575	-12.51569
Longitude	131.00480	131.00484	131.00486
Layer / Reduced Level	Lift 1	Lift 2	Lift 3
Soil Description	General Fill	General Fill	General Fill
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	12	8	4
Oversize (dry basis) %	11	8	4
Curing Hours	23.7	30.2	48.7
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.30	2.29	2.30
Field Moisture Content %	9.6	9.0	8.5
Field Dry Density t/m ³	2.10	2.11	2.12
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.19	2.11	2.20
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.5	7.0	6.0
Moisture Variation %	-2.0	-2.0	-2.5
Moisture Ratio %	127.0	127.0	145.0
Density Ratio %	96.0	99.5	96.5
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report



GEOTECHNICAL

Report Number: D21309-16
Issue Number: 1
Date Issued: 28/08/2021
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821

HiQa Geotechnical
 Darwin Laboratory
 1/6 Wedding Road Tivendale NT 822
 Phone: (08) 8947 4802
 Email: a.bravo@hiqa.com.au

Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 029
Work Request: 4320
Date Sampled: 23/08/2021
Dates Tested: 25/08/2021 - 27/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Lots 14890 - 14894
Lot Number: EWK-05



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1			
Sample Number	D21-4320A	D21-4320B	D21-4320C
Date Tested	23/08/2021	23/08/2021	23/08/2021
Time Tested	13:36	13:45	13:59
Test Request #/Location	TR 029 Lots 14890 - 14894 - Refer Map	TR 029 Lots 14890 - 14894 - Refer Map	TR 029 Lots 14890 - 14894 - Refer Map
Layer / Reduced Level	Fill (Layer 1)	Fill (Layer 1)	Fill (Layer 1)
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clayey Gravel	Sandy Clayey Gravel	Sandy Clayey Gravel
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	5	5	4
Oversize (dry basis) %	6	5	4
Curing Hours	23.6	4.7	22.9
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.13	2.24	1.97
Field Moisture Content %	6.3	7.0	3.9
Field Dry Density t/m ³	2.01	2.10	1.90
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.19	2.19	2.24
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.5	7.5	6.5
Moisture Variation %	1.0	0.5	2.5
Moisture Ratio %	86.5	91.5	61.0
Density Ratio %	91.5	95.5	85.0
Compaction Method	Modified	Modified	Modified

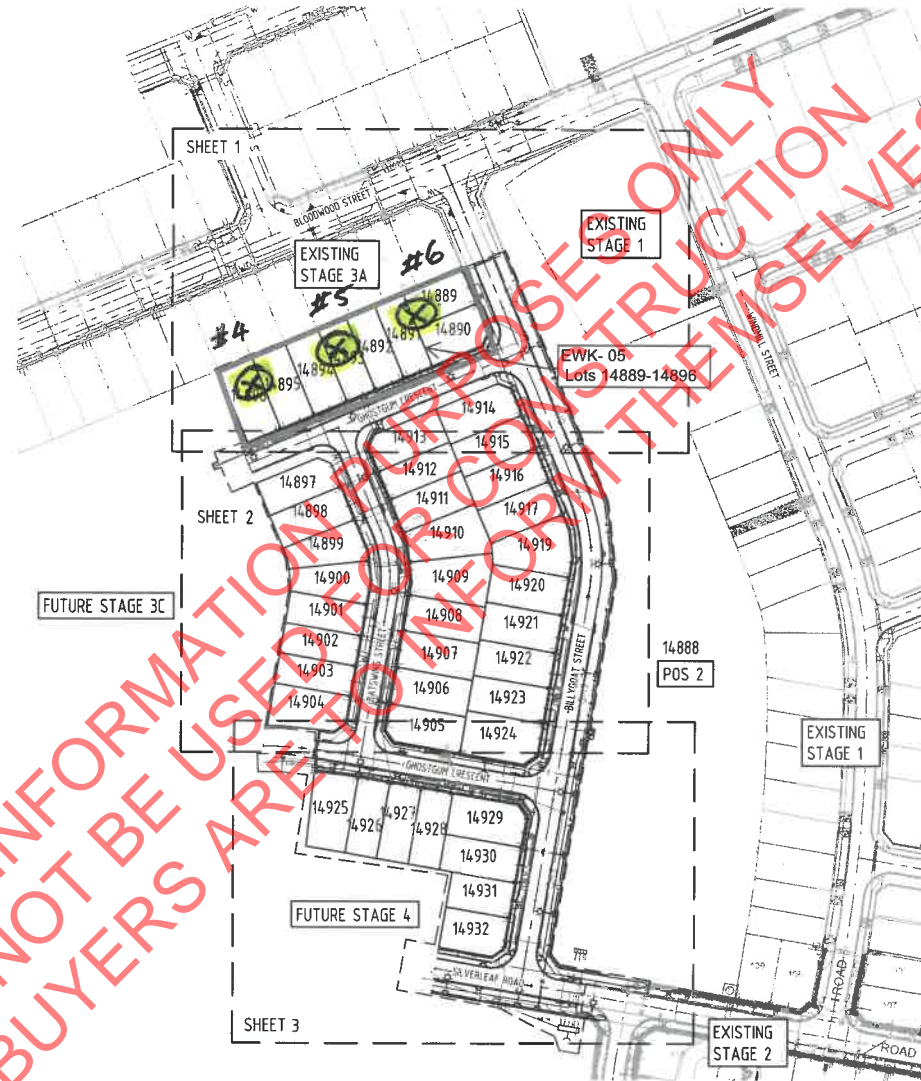
Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

PROVIDED FOR INFORMATION PURPOSES ONLY
 AND SHOULD NOT BE USED FOR CONSTRUCTION
 - BUILDERS/BUYERS ARE TO INFORM THEMSELVES

LEGEND

- EXISTING SURFACE CONTOURS
- DESIGNED SURFACE CONTOURS
- STAGE BOUNDARY
- SWD PROPOSED STORMWATER DRAINAGE PIPE
- PROPOSED SIDE ENTRY PIT (REFER LONG SECTION DRAWINGS FOR NO. OF BAYS & CHAMBER SIZE)
- PROPOSED STORMWATER DRAINAGE PIT
- PROPOSED SEWER
- PROPOSED WATER MAIN
- PROPOSED ROAD CENTRE LINE
- PROPOSED LAYBACK KERB & GUTTER. REFER DETAIL ON DRG. 3B_E300.
- PROPOSED STREETLIGHT



TR:29

STAGE 3B LAYOUT
SCALE 1:1000

PERMISSION TO USE FOR CONSTRUCTION PURPOSES
ROADWORKS AND STORMWATER DRAINAGE

SENT: _____ DATE: _____

DIRECTOR CITY GROWTH AND OPERATIONS - CITY OF PALMERSTON

This permission to use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents associated. This permission is valid for two years from date of signing.

PROVIDED FOR INFORMATION PURPOSES ONLY
AND SHOULD NOT BE USED FOR CONSTRUCTION
BUILDERS/BUYERS ARE TO TAKE THEMSELVES

Rev	Date	Description	SM	JL	By	CHK
1	28.07.21	ISSUED FOR CONSTRUCTION				



ADG

Darwin Office
Suite 021, Manunda Place, 38 Cavenagh Street,
Darwin, Northern Territory 0800, Australia
GPO Box 2422, Darwin, Northern Territory 0801
T: 1300 607 482 F: +617 3811 2266
E: info@adg.com.au W: www.adg.com.au

Client: COSTOJIC PTY LTD
Project Name: ZUCCOLI ASPIRE
STAGE 3B
CIVIL WORKS

Discipline	Checked By	Drawn By	Project No.
CIVIL	SW	JMB	20896

Status	Approved By	Scale at A1
CONSTRUCTION	SW	1:1000

Title	Drawing No.	Revisions
STAGE 3B OVERALL LAYOUT PLAN	3B_002	0

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-18
Issue Number: 1
Date Issued: 10/09/2021
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Debbie Barbaro
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 037
Work Request: 4345
Date Sampled: 01/09/2021 10:00
Dates Tested: 01/09/2021 - 09/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Lots 14905-149241
Lot Number: EWK-04
Material: General Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4345A	D21-4345B	D21-4345C
Date Tested	01/09/2021	01/09/2021	01/09/2021
Time Tested	10:11	10:18	10:30
Test Request #/Location	TR 037 Lots 14905-149241	TR 037 Lots 14905-149241	TR 037 Lots 14905-149241
Chainage (m)	**	**	**
Location Offset (m)	**	**	**
Layer / Reduced Level	General Fill - Layer 2	General Fill - Layer 2	General Fill - Layer 2
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clayey Gravel	Sandy Clayey Gravel	Sandy Clayey Gravel
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	15	5	15
Oversize (dry basis) %	15	5	15
Curing Hours	23.1	24.0	24.6
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.21	2.34	2.27
Field Moisture Content %	6.6	9.3	7.9
Field Dry Density t/m ³	2.07	2.14	2.11
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.19	2.19	2.22
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.5	7.0	6.5
Moisture Variation %	0.5	-2.5	-1.5
Moisture Ratio %	90.5	135.0	125.0
Density Ratio %	94.5	98.0	95.0
Compaction Method	Modified	Modified	Modified

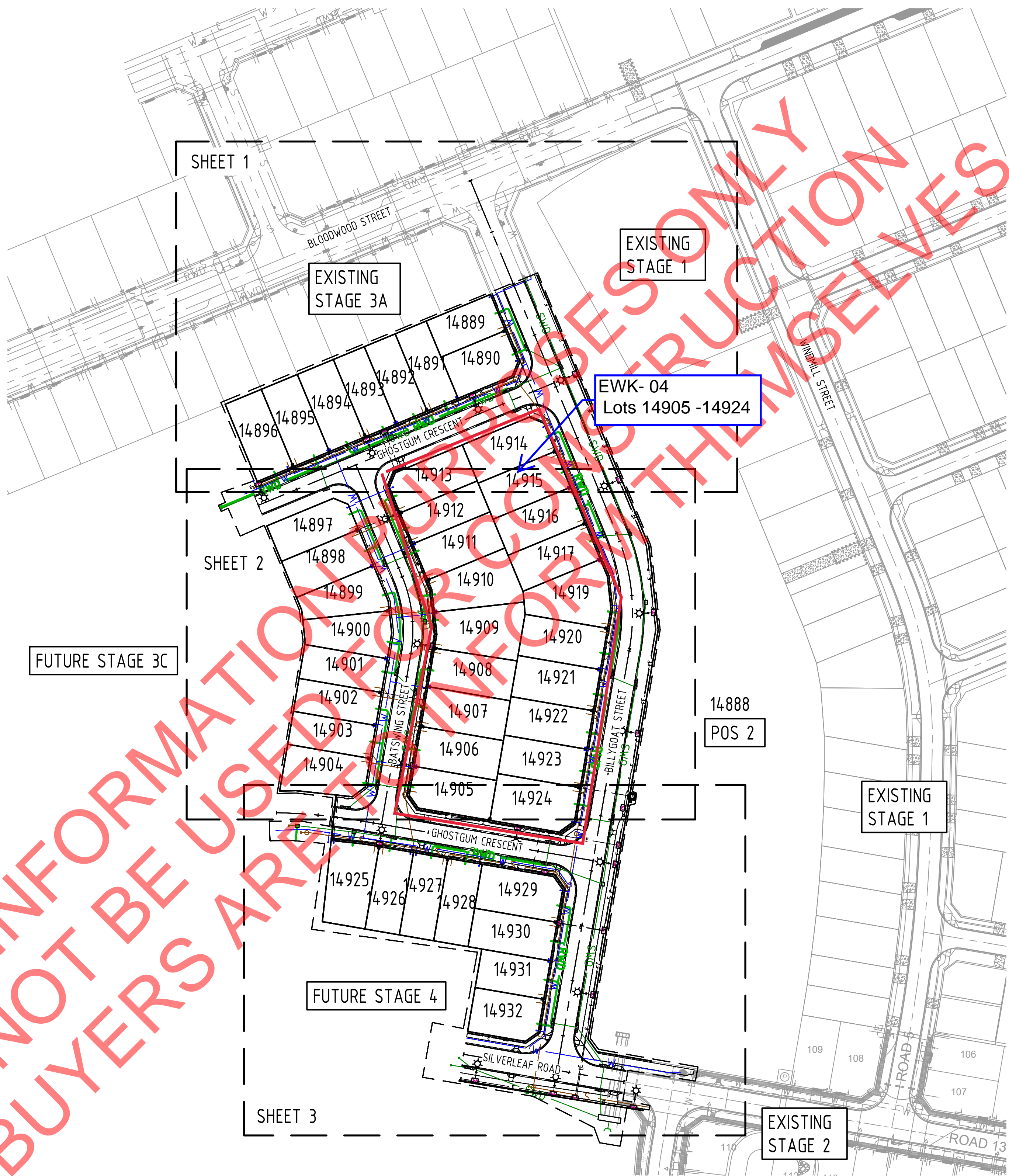
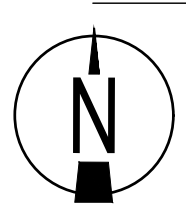
Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

LEGEND

- 12.0— EXISTING SURFACE CONTOURS
—12.0— DESIGNED SURFACE CONTOURS
- - - STAGE BOUNDARY
—SWD— PROPOSED STORMWATER DRAINAGE PIPE
[Symbol] PROPOSED SIDE ENTRY PIT (REFER LONG SECTION DRAWINGS FOR NO. OF BAYS & CHAMBER SIZE)
[Symbol] PROPOSED STORMWATER DRAINAGE PIT
—S— PROPOSED SEWER
—W— PROPOSED WATER MAIN
— PROPOSED ROAD CENTRE LINE
— PROPOSED LAYBACK KERB & GUTTER. REFER DETAIL ON DRG. 3B_C300.
[Symbol] PROPOSED STREETLIGHT



STAGE 3B LAYOUT
SCALE 1:1000

PERMISSION TO USE FOR CONSTRUCTION PURPOSES
ROADWORKS AND STORMWATER DRAINAGE

SIGNED _____ DATE _____

DIRECTOR CITY GROWTH AND OPERATIONS - CITY OF PALMERSTON

This permission to use is given on the basis that the Developer and/or Consultant is not absolved from full responsibility for the correctness and accuracy of the design and/or documents associated. This permission is valid for two years from date of signing.

ISSUED FOR
CONSTRUCTION

Rev	Date	Description	SM	JL
0	28.07.21	ISSUED FOR CONSTRUCTION	SM	JL
		By	Chk	

0 10 20 30 40 50m
SCALE 1:1000
AT ORIGINAL SIZE (A1)



Darwin Office
Suite G01, Manunda Place, 38 Cavenagh Street,
Darwin, Northern Territory 0800, Australia
GPO Box 2422, Darwin, Northern Territory 0801
T 1300 657 402 F +617 3871 2266
E info@adgce.com W www.adgce.com
BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client
COSTOJIC PTY LTD

Project Name
ZUCCOLI ASPIRE
STAGE 3B
CIVIL WORKS

Discipline
CIVIL

Designed By
JMB

Project No.
20696

Checked By
SW

Drawn By
JMB

Status
CONSTRUCTION

Approved By
SW

Scale at A1
1:1000

Title
STAGE 3B
OVERALL LAYOUT PLAN

Drawing No.
3B_002

Revision
0

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-19
Issue Number: 1
Date Issued: 10/09/2021
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 035
Work Request: 4326
Date Sampled: 01/09/2021 10:00
Dates Tested: 01/09/2021 - 08/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Lots 14890 - 14894
Lot Number: EWK-05
Material: Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4326A	D21-4326B	D21-4326C
Date Tested	01/09/2021	01/09/2021	01/09/2021
Time Tested	11:02	11:13	11:27
Test Request #/Location	TR 035 Lots 14890 - 14894	TR 035 Lots 14890 - 14894	TR 035 Lots 14890 - 14894
Chainage (m)	**	**	**
Location Offset (m)	**	**	**
Layer / Reduced Level	General Fill - Lift 2	General Fill - Lift 2	General Fill - Lift 2
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clayey Gravel	Sandy Clayey Gravel	Sandy Clayey Gravel
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	7	7	4
Oversize (dry basis) %	7	7	4
Curing Hours	23.2	23.4	30.8
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.32	2.25	2.27
Field Moisture Content %	7.3	7.0	4.9
Field Dry Density t/m ³	2.16	2.10	2.17
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.18	2.20	2.22
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	8.0	7.5	7.0
Moisture Variation %	0.5	0.5	2.0
Moisture Ratio %	92.5	95.0	71.5
Density Ratio %	99.5	95.5	97.5
Compaction Method	Modified	Modified	Modified

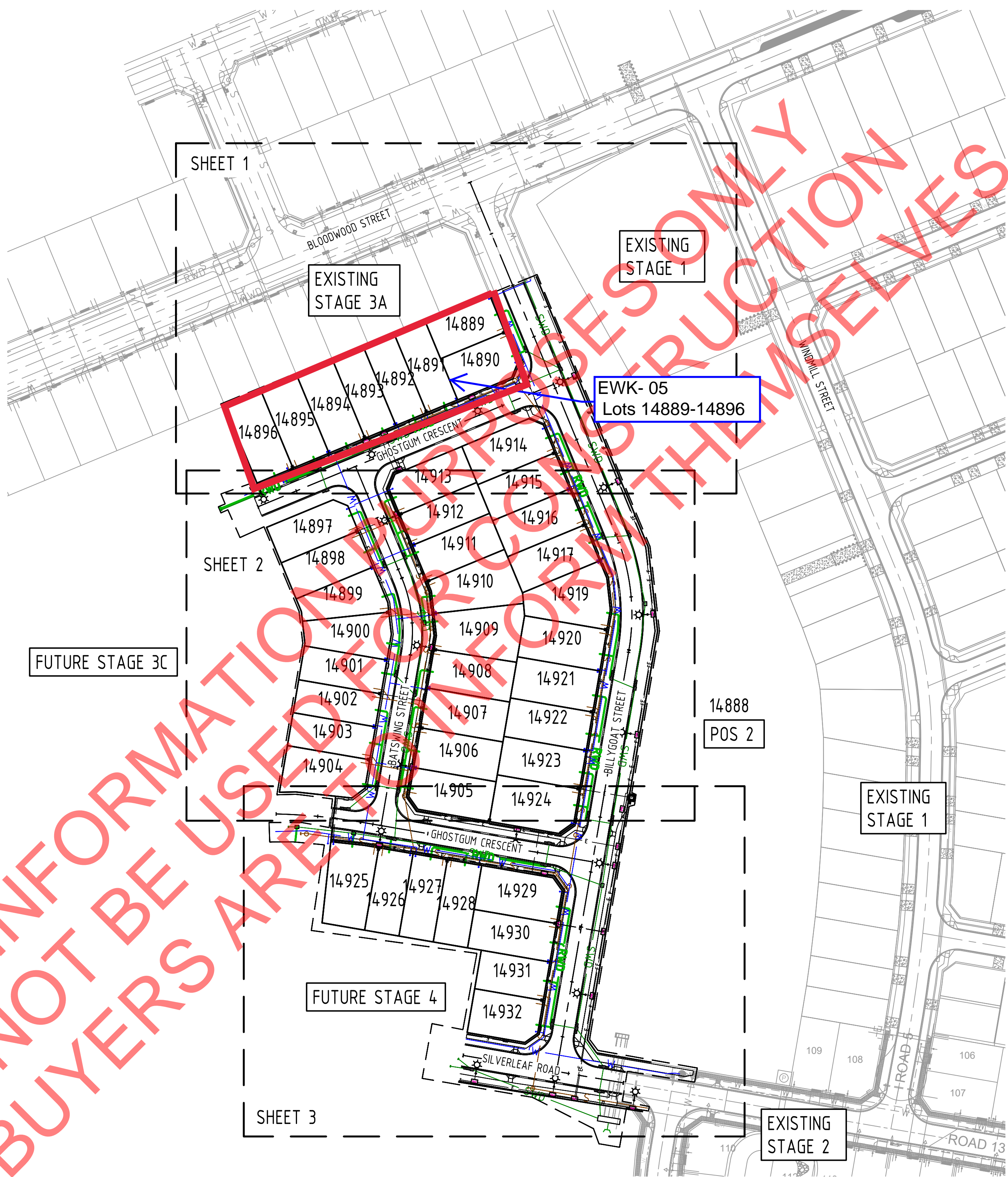
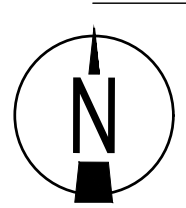
Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

LEGEND

- 12.0— EXISTING SURFACE CONTOURS
—12.0— DESIGNED SURFACE CONTOURS
- - - STAGE BOUNDARY
— SWD — PROPOSED STORMWATER DRAINAGE PIPE
— PROPOSED SIDE ENTRY PIT (REFER LONG SECTION DRAWINGS FOR NO. OF BAYS & CHAMBER SIZE)
□ PROPOSED STORMWATER DRAINAGE PIT
— S — PROPOSED SEWER
— W — PROPOSED WATER MAIN
— PROPOSED ROAD CENTRE LINE
— PROPOSED LAYBACK KERB & GUTTER. REFER DETAIL ON DRG. 3B_C300.
☀ PROPOSED STREETLIGHT



STAGE 3B LAYOUT
SCALE 1:1000

PERMISSION TO USE FOR CONSTRUCTION PURPOSES
ROADWORKS AND STORMWATER DRAINAGE

SIGNED _____ DATE _____

DIRECTOR CITY GROWTH AND OPERATIONS - CITY OF PALMERSTON

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ISSUED FOR
CONSTRUCTION

Rev	Date	Description	SM	JL
0	28.07.21	ISSUED FOR CONSTRUCTION	SM	JL

0 10 20 30 40 50m
SCALE 1:1000
AT ORIGINAL SIZE (A1)



Client
COSTOJIC PTY LTD
Project Name
ZUCCOLI ASPIRE
STAGE 3B
CIVIL WORKS

Discipline CIVIL		Status CONSTRUCTION
Designed By JMB	Checked By SW	Approved By SW
Project No. 20696	Drawn By JMB	Scale at A1 1:1000

Title STAGE 3B OVERALL LAYOUT PLAN	
Drawing No. 3B_002	Revision 0

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-20
Issue Number: 1
Date Issued: 14/09/2021
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 027A
Work Request: 4367
Date Sampled: 02/09/2021 10:00
Dates Tested: 02/09/2021 - 11/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Lots 14905 - 149241(Re-Test)
Lot Number: EWK-04 Lift 1



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D21-4367A	D21-4367B	D21-4367C
Date Tested	02/09/2021	02/09/2021	02/09/2021
Time Tested	10:24	10:36	10:48
Test Request #/Location	TR 027 (Re-test) EWKS_04 Lots 14905 - 14924	TR 027 (Re-test) EWKS_04 Lots 14905 - 14924	TR 027 (Re-test) EWKS_04 Lots 14905 - 14924
Layer / Reduced Level	General fill -Lift 1	General fill -Lift 1	General fill -Lift 1
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clayey Gravel	Sandy Clayey Gravel	Sandy Clayey Gravel
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	5	7	0
Oversize (dry basis) %	5	7	0
Curing Hours	43.5	43.6	19.8
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.19	2.29	2.19
Field Moisture Content %	6.3	9.0	9.1
Field Dry Density t/m ³	2.06	2.10	2.01
Maximum Dry Density t/m ³	**	**	2.17
Adjusted Maximum Dry Density t/m ³	2.22	2.21	**
Optimum Moisture Content (OMC) %	**	**	8.0
Adjusted Optimum Moisture Content (OMC) %	6.5	7.5	**
Moisture Variation %	0.0	-1.5	-1.0
Moisture Ratio %	96.5	121.5	113.5
Density Ratio %	93.0	95.0	92.5
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-36
Issue Number: 1
Date Issued: 01/11/2021
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 095
Work Request: 4626
Sample Number: D21-4626B
Date Sampled: 19/10/2021
Dates Tested: 19/10/2021 - 29/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: Lots 14925 - 14928 Lat: -12.51778, Long: 131.00443
Lot No: Lot EWK-09
Material: General Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

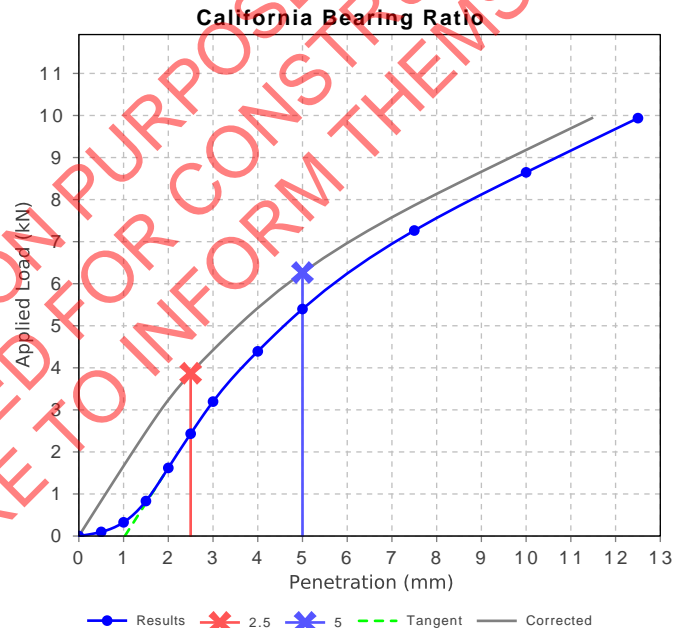
Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	30		
Method of Compactive Effort	Modified		
Method used to Determine MDD	AS 1289.5.2.1		
Method used to Determine Plasticity	Visual/Tactile Assessment		
Maximum Dry Density (t/m^3)	2.19		
Optimum Moisture Content (%)	7.5		
Laboratory Density Ratio (%)	94.5		
Laboratory Moisture Ratio (%)	101.5		
Moisture Content at Placement (%)	7.5		
Moisture Content Top 30mm (%)	11.1		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	66.7		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	7		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Air Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	23		
Plastic Limit (%)	15		
Plasticity Index (%)	8		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	2.5		
Cracking Crumbling Curling	None		



Material Test Report



GEOTECHNICAL

Report Number: D21309-36
Issue Number: 1
Date Issued: 01/11/2021
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821

HiQa Geotechnical
 Darwin Laboratory
 1/6 Wedding Road Tivendale NT 822
 Phone: (08) 8947 4802
 Email: a.bravo@hiqa.com.au

Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 095
Work Request: 4626
Date Sampled: 19/10/2021 14:00
Dates Tested: 19/10/2021 - 29/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Lots 14925 - 14928
Lot Number: Lot EWK-09
Material: General Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1					
Sample Number	D21-4626A	D21-4626B	D21-4626C	D21-4626D	D21-4626E
Date Tested	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Time Tested	**	**	**	**	**
Test Request #/Location	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928
Latitude	-12.51782	-12.51778	-12.51779	-12.51773	-12.51773
Longitude	131.00453	131.00443	131.00427	131.00429	131.00445
Layer / Reduced Level	Lift 1	Lift 1	Lift 1	Lift 2	Lift 2
Soil Description	General Fill	General Fill	General Fill	General Fill	General Fill
Test Depth (mm)	250	250	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0	19.0	19.0
Oversize (wet basis) %	6	7	10	10	8
Oversize (dry basis) %	6	7	10	10	8
Curing Hours	18.0	18.2	19.8	21.7	69.2
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.27	2.29	2.30	2.26	2.28
Field Moisture Content %	7.6	8.7	8.0	8.0	8.3
Field Dry Density t/m ³	2.11	2.11	2.13	2.10	2.11
Maximum Dry Density t/m ³	**	**	**	**	**
Adjusted Maximum Dry Density t/m ³	2.12	2.20	2.18	2.16	2.16
Optimum Moisture Content (OMC) %	**	**	**	**	**
Adjusted Optimum Moisture Content (OMC) %	8.5	7.0	7.0	7.5	7.0
Moisture Variation %	1.0	-2.0	-1.0	-0.5	-1.0
Moisture Ratio %	89.0	126.5	116.0	108.5	115.0
Density Ratio %	99.5	95.5	97.5	97.0	97.5
Compaction Method	Modified	Modified	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report



GEOTECHNICAL

HiQa Geotechnical

Darwin Laboratory

1/6 Wedding Road Tivendale NT 822

Phone: (08) 8947 4802

Email: a.bravo@hiqa.com.au

Report Number: D21309-36
Issue Number: 1
Date Issued: 01/11/2021
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Project Number: D21309
Project Name: OST2109-Zuccoli Stage 3BC
Project Location: Zuccoli Stage 3BC
Client Reference: TR 095
Work Request: 4626
Date Sampled: 19/10/2021 14:00
Dates Tested: 19/10/2021 - 29/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Zuccoli Stage 3BC - Lots 14925 - 14928
Lot Number: Lot EWK-09
Material: General Fill



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo

Darwin Laboratory Branch Leader

NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1					
Sample Number	D21-4626F	D21-4626G	D21-4626H	D21-4626I	
Date Tested	19/10/2021	19/10/2021	19/10/2021	19/10/2021	
Time Tested	**	**	**	**	
Test Request #/Location	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928	TR 095 Lots 14925 - 14928	
Latitude	-12.51775	-12.51769	-12.51768	-12.51767	
Longitude	131.00456	131.00453	131.00443	131.00427	
Layer / Reduced Level	Lift 2	Lift 3	Lift 3	Lift 3	
Soil Description	General Fill	General Fill	General Fill	General Fill	
Test Depth (mm)	250	250	250	250	
Fraction Tested (mm)	19.0	19.0	19.0	19.0	
Oversize (wet basis) %	5	0	9	6	
Oversize (dry basis) %	5	0	9	6	
Curing Hours	21.0	26.3	71.5	24.0	
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	
Field Wet Density t/m ³	2.29	2.26	2.29	2.26	
Field Moisture Content %	8.8	4.5	7.0	7.8	
Field Dry Density t/m ³	2.11	2.17	2.14	2.10	
Maximum Dry Density t/m ³	**	2.16	**	**	
Adjusted Maximum Dry Density t/m ³	2.11	**	2.16	2.17	
Optimum Moisture Content (OMC) %	**	7.5	**	**	
Adjusted Optimum Moisture Content (OMC) %	9.0	**	7.0	6.5	
Moisture Variation %	0.0	3.0	0.0	-1.0	
Moisture Ratio %	99.5	61.0	102.0	117.0	
Density Ratio %	99.5	100.5	99.0	96.5	
Compaction Method	Modified	Modified	Modified	Modified	

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC



SITE INSPECTION REPORT

ADG Engineers (Aust) Pty Ltd
ABN 63 131 876 143

BRISBANE
DARWIN
GOLD COAST
MELBOURNE
PERTH
SUNSHINE COAST
SYDNEY

NO. 42155

To: Brad Hodge - Ostojic Group Job No: 20696
Attn: Brad Hodge Date: 22 / 7 / 21
Job Name: Zuccoli - Stage 3B Time: 9:30am
Subject: _____

T 1300 657 402
E info@adgce.com
W www.adgce.com

☐ NON CONFORMANCE

☒ INSPECTION NOTICE

☐ SITE INSTRUCTION

ITEM	DETAILS
(1)	Clearing & grubbing inspection of the verge east of Billygoat Street.
	Verge clearing was acceptable. A few larger roots & sticks were identified. These are to be removed prior to filling.
	Proof roll conducted to confirm compact - No notable defects - therefore acceptable.
	Billygoat Street pre-subgrade compact & inspection
	Box cut was acceptable. A couple of tree roots noted that should be removed pre-fill.
	Proof roll conducted. Proof roll passed.

Notes: 1) Should this instruction constitute a variation to the contract, the contractor is NOT to proceed with work until a variation order is approved by the superintendent.
2) Commencement of works signifies the contractor's acceptance that these works do not constitute a variation to the contract.
3) This site inspection report does not relieve the contractor of their responsibility to comply with the documentation specifications.

ISSUED BY: [Signature]
For and on behalf of ADG Engineers (Aust) Pty Ltd

PRINT NAME: Jonathan Lemmon

RECEIVED BY: _____
For and on behalf of: Ostojic Group

PRINT NAME: Brad Hodge





SITE INSPECTION REPORT

ADG Engineers (Aust) Pty Ltd
ABN 63 131 876 143

NO. 42181

BRISBANE
DARWIN
GOLD COAST
MELBOURNE
PERTH
SUNSHINE COAST
SYDNEY

To: Richard Houghton

Job No: 20696

Attn: Ostojic Group

Date: 14, 10, 21

Job Name: Zuccoli - Stage 3C

Time: 10:00

Subject: Pre fitting inspection

T 1300 657 402
E info@adgce.com
W www.adgce.com

☐ NON CONFORMANCE

☒ INSPECTION NOTICE

☐ SITE INSTRUCTION

ITEM	DETAILS
(1)	Pre fitting inspection on Stage 3C + Stage 3B.
as	Stage 3B and eastern area of Stage 3C is acceptable to fit (refer to the plan)
	Area to the west of Stage 3C requires further comparison once dried out - particularly the southern area which was flooded in the recent rains prior to fit

Notes: 1) Should this instruction constitute a variation to the contract, the contractor is NOT to proceed with work until a variation order is approved by the superintendent.
2) Commencement of works signifies the contractor's acceptance that these works do not constitute a variation to the contract.
3) This site inspection report does not relieve the contractor of their responsibility to comply with the documentation specifications.

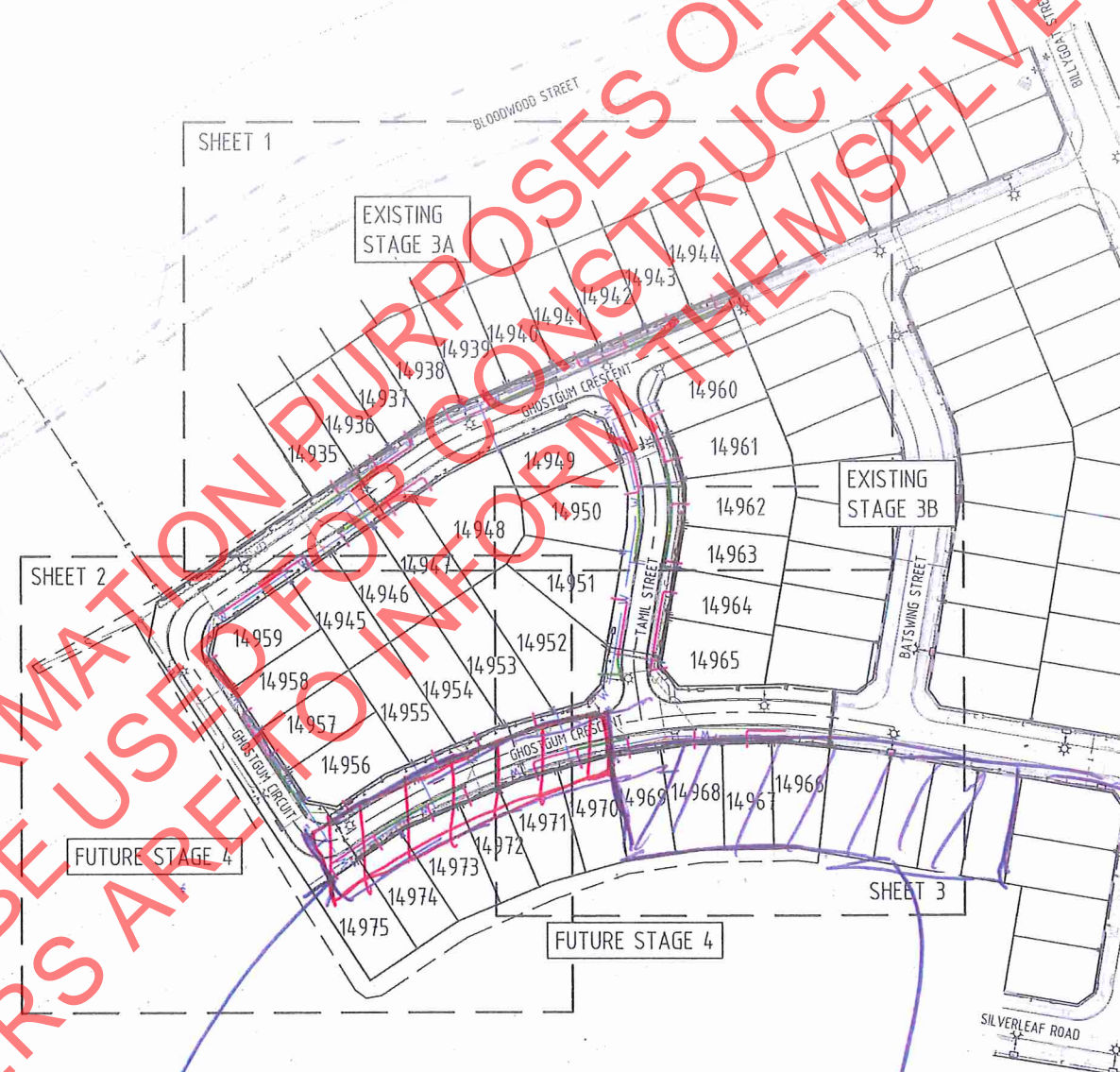
ISSUED BY: [Signature]
For and on behalf of ADG Engineers (Aust) Pty Ltd

RECEIVED BY: [Signature]
For and on behalf of: Ostojic Group

PRINT NAME: Jonathan Houghton

PRINT NAME: Richard Houghton

Site inspection report. 42181.
 John by 14/10/21.



STAGE 3C LAYOUT

SCALE 1:1000

Stage 3C

- Area to the south
needs drying out
and further compaction prior
to filling

Stage 3C

Area acceptable
to fill

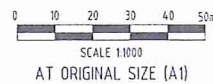
PERMISSION TO USE FOR CONSTRUCTION PURPOSES
ROADWORKS AND STORMWATER DRAINAGE

SIGNED _____ DATE _____

DIRECTOR CITY GROWTH AND OPERATIONS - CITY OF PALMERSTON

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0	03.09.21	ISSUED FOR CONSTRUCTION	JMB	SW
Rev	Date	Description	By	Ck



Client	COSTOJIC PTY LTD
Project Name	ZUCCOLI ASPIRE STAGE 3C CIVIL WORKS

Discipline CIVIL	Status CONSTRUCTION	
Designed by LS	Checked By SW	Approved By SW
Project No 20696	Drawn By JMB	Scale at A1 1:1000
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ISSUED FOR
CONSTRUCTION

N	<table><tr><td data-bbox="2561 1827 2861 1923">Title STAGE 3C OVERALL LAYOUT PLAN</td><td data-bbox="2861 1827 2905 2005"><table><tr><td data-bbox="2861 1827 2905 1923">Revision</td><td data-bbox="2861 1923 2905 2005">0</td></tr></table></td></tr><tr><td data-bbox="2561 1923 2861 2005">Drawing No 3C_002</td><td data-bbox="2861 1923 2905 2005"></td></tr></table>	Title STAGE 3C OVERALL LAYOUT PLAN	<table><tr><td data-bbox="2861 1827 2905 1923">Revision</td><td data-bbox="2861 1923 2905 2005">0</td></tr></table>	Revision	0	Drawing No 3C_002	
Title STAGE 3C OVERALL LAYOUT PLAN	<table><tr><td data-bbox="2861 1827 2905 1923">Revision</td><td data-bbox="2861 1923 2905 2005">0</td></tr></table>	Revision	0				
Revision	0						
Drawing No 3C_002							
gth							