8 DRAPER RD, MAHOGANY CREEK

GEOTECHNICAL INVESTIGATION REPORT

CLIENT:
Danelle Warne

PROJECT:
8 Draper Rd, Mahogany Creek

DATE:
20 September 2022

WA GEOTECHNICS REF:
WA004-pri-248 (r001-a)

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NORTH PERTH WA 6906
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Date: 20 September 2022

Ms Danelle Warne
12 Draper Road
Mahogany Creek WA 6072

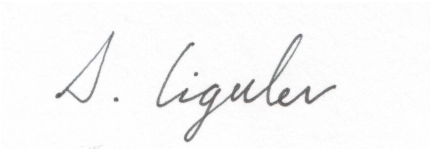
Dear Madam,

RE: 8 DRAPER ROAD, MAHOGANY CREEK
GEOTECHNICAL INVESTIGATION REPORT

WA Geotechnics Pty Ltd is pleased to provide this report on a geotechnical investigation carried out at the above site.

If you have any questions related to the report or we can be of further assistance, please do not hesitate to contact the undersigned.

For and on behalf of
WA GEOTECHNICS PTY LTD



SIMON CIGULEV

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WA GEOTECHNICS
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SECTION 1.0 - INTRODUCTION

WA Geotechnics Pty Ltd was commissioned by Ms Rachel Whan (the client) on 7 September 2022 to perform a geotechnical investigation for a proposed subdivided Lot at 8 Draper Rd, Mahogany Creek and to classify the proposed shed site in accordance with the definitions provided in Australian Standard AS2870.

SECTION 2.0 - FIELDWORK

Fieldwork for the geotechnical site investigation was carried out on 14 September 2022 and consisted:

- Walkover and description of the site.
- Excavation of three test holes using a 75 mm diameter hand auger at selected locations on the site to a target depth of 2.0 m.
- Dynamic Cone Penetrometer (DCP) testing from the surface level to a target depth of 1.0 m alongside each test hole location. Blow counts were recorded every 100 mm test depth interval.
- Sampling of hand auger hole HA1.

The fieldwork was carried out by a geotechnical engineer from WA Geotechnics Pty Ltd. The test holes were backfilled with the excavated spoil. The Site Description Sheet is presented in **Figure 1**. The Site Location Sheet with test locations is presented in **Figure 2**.

SECTION 3.0 - SUBSURFACE CONDITIONS/PROFILE

The Perth Groundwater Map on the Department of Water and Environmental Regulation website[5] indicates the site is situated in an area that comprises Laterite overlying Mesozoic sediments and Precambrian crystalline rocks. The subsurface profile encountered within the test holes is summarised below.

TOPSOIL, LATERITE GRAVEL	Non-plastic, fine to medium, dark orange/brown, with trace of organic matter. The gravel was loose to medium dense in relative density and this layer ranged from the surface to 0.1 m depth below ground level; and overlaid
LATERITE GRAVEL	Non-plastic, fine to medium, becoming fine to coarse with depth, orange/brown in colour. The gravel was generally medium dense in relative density, except for the top 0.5 m of the surface at HA2 and this layer ranged from 0.1 to the maximum excavated depth of 0.7 m below ground level.

Hand auger holes HA1 to HA3 did not achieve their excavation target depth of 2.0 m due to hand auger refusal at 0.7 m, 0.7 m and 0.35 m depth, respectively on coarse laterite gravel or cobble (inferred). The hand auger excavation logs of the site investigation are presented in **Appendix A**.

3.1 DYNAMIC CONE PENETROMETER TESTING

DCP testing was performed alongside each hand auger hole. The DCP tests performed achieved their target depth of 1.0 m. Results indicated the relative density of the laterite gravel is generally medium dense, except for the top 0.5 m of the surface in the vicinity of HA2. The DCP test results are shown in **Appendix B**.

3.2 GROUNDWATER

Groundwater was not encountered in the hand auger holes excavated at the time of field work. It must be noted that groundwater levels are subject to variations due to the effects of rainfall, temperature and local drainage

3.3 LABORATORY TESTING

Testing by a NATA (National Association of Testing Authorities, Australia) registered laboratory was carried out on a disturbed sample for assessment of the following parameters:

- Percentage Fines < 0.075mm in size.
- Atterberg Limits.

Table 3.3 shows a summary of the laboratory test results.

Table 3.3: - Summary of Laboratory Test Results

Test Location	Sample Depth (m)	% Fines <0.075mm size	Atterberg Limits				Group Symbol
			Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Linear Shrinkage (%)	
HA1	0.1 – 0.6	9	27	NP	NP	1.0	GM

NP – Non-Plastic

The sample taken and tested to have 9% fines and assessed as silty gravel. All tests were carried out in accordance with current AS 1289 standard test procedures. The laboratory test certificate is presented in **Appendix C**.

3.4 ACID SULPHATE SOILS

The 2004 Perth Groundwater Atlas published by Water and Rivers Commission (used in conjunction with the latest information on their website)[5] indicates no known risk of acid sulphate soil occurring that could be disturbed by land development activities in the site.

SECTION 4.0 - DISCUSSION

4.1 SITE CLASSIFICATION

Australian Standard 2870 provides a system of site classification for residential slabs and footing design as follows:

Table 4.1: - Site Classification from AS2870-2011

Class	Foundation Type	Characteristic Surface Movement Y_s (mm)
A	Most sand and rock sites with little or no ground movement from moisture changes	Little or no ground movement
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes	0 < Ys ≤ 20
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes	20 < Ys ≤ 40
H1	Highly reactive clay site, which may experience high ground movement from moisture changes	40 < Ys ≤ 60
H2	Highly reactive clay site, which may experience very high ground movement from moisture changes	60 < Ys ≤ 75
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes	Ys > 75
P	Problematic sites, sites consisted of soft soils, soft clay or silt or loose sand; landfills, mine subsidence, collapsing soils, very reactive soils, subjected to erosion and sites which cannot be classified as A to E.	-

The above system is only applicable to one or two storey residential buildings or other structures of similar loadings.

For the soil profile encountered in the holes excavated and based on the results of laboratory tests carried out, the characteristic surface movement (Y_s Value) for the site is assessed to be **3mm**. This assumes a depth of soil suction change of 1.8 metres depth. Based on these findings the site is assigned a site classification of **S** in accordance with the definitions provided in Australian Standard AS2870, subject to good building practice.

4.2 SITE PREPARATION

Earthworks should be carried out in accordance with AS3798, “Guidelines on Earthworks for Commercial and Residential developments”. The topsoil should be removed and replaced with clean fill sand.

The base should be compacted or proof rolled to achieve a minimum of 95% of maximum dry density of modified compaction to at least 300mm below the base surface before any placement of fill. A thin sand pad is recommended where entry/ exit of services are connected to building(s).

Imported fill, should comprise free draining sand with no more than 5% passing a 75μm sieve, and free of organic matter and other deleterious materials. The clean fill sand should be compacted to achieve a minimum density index of 70% (96% of maximum dry density of modified compaction). Typically for Perth sands a minimum of 8 blows for the test depth interval 150 mm to 450 mm is required to achieve the minimum relative compaction of 96% of maximum dry density (modified compaction). To allow for depth effects, this implies that

PSP blow counts should not be less than 10 blows for the test interval 450 mm to 750 mm, and not less than 13 blows for the test interval 750 mm to 1050 mm.
The level of compaction should at least extend 2.0 m past the building envelope.

4.3 EXCAVATIONS

Shallow excavations within the development area could require a large (>13T) excavator or excavator with rockbreaker attachment due to the near surface laterite formation encountered on the site.

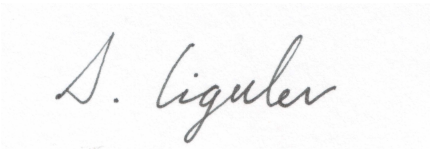
4.4 DRAINAGE AND STORMWATER RUNOFF

It is recommended a cut-off trench excavated into the laterite gravel layer on the uphill side of the proposed building site to intercept water running down the hill.
It is recommended a well contoured site surface at the proposed building site will be critical to ensure water does not pond on the surface that may saturate and soften soils in the vicinity of the building or any pavement area as in AS2870, Appendix B[2]. Furthermore, a covered or paved site surface bordering the proposed building will help stop water infiltrating the surface that could saturate and soften soils in the vicinity of the proposed shed.

4.5 SITE MAINTENANCE

It is recommended to follow the CSIRO publication “Guide to Home Owners on Foundation Maintenance and Footing Performance” in Building Technology File Number 18[7]. This document provides important information about implications of plumbing, property maintenance, site classification on foundation design, drainage and performance expectations.

For and on behalf of
WA GEOTECHNICS PTY LTD



SIMON CIGULEV
MIEAust, Member No. 2727537

SECTION 5.0 - STANDARDS AND REFERENCES

1. AS 1726, *Geotechnical Site Investigations*
2. AS 2870, *Australian Standard for residential slabs and footings*
3. AS 3798, *Australian Standard for Earthworks for Residential and Commercial Developments*
4. AS 1289, *Methods of Testing Soils for Engineering Purposes*
5. https://maps.water.wa.gov.au/#/webmap/gwm, Perth Groundwater Map, Department of Water and Environmental Regulation, Government of Western Australia
6. Australian Geomechanics, May 2002, AGS Sub-Committee, *Landslide Risk Management*
7. CSIRO Information Sheet BTF (Building Technology File) 18, *Foundation Maintenance and Footing Performance: A Homeowner's Guide*
8. Standards Australia, Hand Book HB 160-2006, *Soil Testing*

SECTION 6.0 - INFORMATION ABOUT YOUR REPORT

This report presents the results of a geotechnical investigation prepared for the purpose of this commission. The data and advice provided herein relate only to the project and structures described herein and must be reviewed by a competent geotechnical engineer before being used for any other purpose. WA Geotechnics accepts no responsibility for other use of the data.

Where drill hole or test pit logs, cone tests, laboratory tests, geophysical tests and similar work have been performed and recorded by others the data is included and used in the form provided by others. The responsibility for the accuracy of such data remains with the issuing authority, not with WA Geotechnics.

The advice tendered in this report is based on information obtained from the investigation location's test points and sample points and is not warranted in respect to the conditions that may be encountered across the site at other than these locations. It is emphasised that the actual characteristics of the subsurface materials may vary significantly between adjacent test points and sample intervals and at all locations other than where observations, explorations and investigations have been made. Subsurface conditions, including groundwater levels and contaminant concentrations can change in a limited time. This should be borne in mind when assessing the data.

It should be noted that because of the inherent uncertainties in subsurface evaluations, changed or unanticipated subsurface conditions may occur that could affect total project cost and / or execution. WA Geotechnics does not accept responsibility for the consequences of significant variances in the conditions and the requirements for execution of the work.

The subsurface and surface earthworks, excavations and foundations should be examined by a suitably qualified and experienced Engineer who shall judge whether the revealed conditions accord with both the assumptions in this report and / or the design of the works. If they do not accord, the Engineer shall modify advice in this report and / or design of the works to accord with the circumstances that are revealed.

An understanding of the geotechnical site conditions depends on the integration of many pieces of information, some regional, some site specific, some structure specific and some experienced based. Hence this report should not be altered, amended or abbreviated, issued in part and issued incomplete in any way without prior checking and approval by WA Geotechnics. WA Geotechnics accepts no responsibility for any circumstances, which arise from the issue of the report, which has been modified in any way as outlined above.

FIGURE 1

Site Description and Test Locations
Page 1 of 1

Client: Danelle Warne **Job No:** WA004-pri-248

Project: Site Classification **Date Tested:** 14 Sep 2022

Location: 8 Draper Rd, Mahogany Creek

SITE DESCRIPTION	
Topography: **General:** Hilly. **Local:** Gentle slope.	***Adjacent Structures:*** Approximately 45 y/o single B + T home in average condition.
Drainage: Fair.	***Movement Noted:*** No.
Groundwater Noted: Not encountered to 0.7 m depth below surface.	***Boundary Conditions:*** No.
Vegetation: Natural bushland with moderate cover of large Eucalypt trees.	
Fill Encountered: No.	***Fall Across Site:*** ~1.5 m north. ***Fall Across Building Envelope:*** N/A.

SITE SKETCH (NOT TO SCALE)

(Refer to Figure 2 - Site Plan)

FIGURE 2


Site Location Plan
Untitled Map
Write a description for your map.
Legend
8 Draper Rd
8 Draper Rd
HA1
E116°07'56.64"
HA2
HA3
HA1 - Hand Auger Hole
N
30 m
Google Earth

APPENDIX A

HAND AUGER LOGS

SOIL DESCRIPTION

DEFINITION:

In engineering terms, soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL AND SOIL NAME:

Soils are described in accordance with the Unified Soil Classification (UCS) as shown attached.

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 µm to 2.36 µm
	Medium	200 µm to 600 µm
	Fine	75 µm to 200 µm

MOISTURE CONDITION

Dry Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.

Moist Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.

Wet As for moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH Su (kPa)	FIELD GUIDE
Very Soft	< 12	A finger can be pushed well into the soil with little effort.
Soft	12 - 25	A finger can be pushed into the soil to about 25 mm depth.
Firm	25 - 50	The soil can be indented about 5 mm with the thumb, but not penetrated.
Stiff	50 - 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 - 200	The surface of the soil can be marked but not indented with thumb pressure.
Hard	> 200	The surface of the soil can be marked only with the thumbnail.
Friable	-	Crumbles or powders when scraped by thumbnail.

DENSITY OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very Loose	Less than 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye. but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, but soil properties little different to general properties of primary component.	Fine grained soils: 15% - 30%

Soil and Rock Description Explanation Sheets
Updated May 2009
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SOIL STRUCTURE

ZONING		CEMENTING	
Layers:	Continuous across exposure or sample.	Weakly Cemented:	Easily broken up by hand in air or water.
Lenses:	Discontinuous layers of lenticular shape.	Moderately Cemented:	Effort is required to break up the soil by hand in air or water.
Pockets:	Irregular inclusions of different material.		

GEOLOGICAL ORIGIN

Weathered in Place Soils	
Extremely weathered material	Structure and fabric of parent rock visible.
Residual soil	Structure and fabric of parent rock not visible.
Transported Soils	
Aeolian soil	Deposited by wind.
Alluvial soil	Deposited by streams and rivers.
Colluvial soil	Deposited on slopes (transported down slope by gravity).
Fill	Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
Lacustrine soil	Deposited by lakes.
Marine soil	Deposited in ocean basins, bays, beaches and estuaries.

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (excluding particles larger than 60mm and basing fractions on estimated mass)							USC	PRIMARY NAME
COARSE GRAINED SOILS More than 50% of material less than 63mm is larger than 0.075mm.	(A 0.075mm particle is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than 2.0mm.	CLEAN GRAVELS (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.			GW	GRAVEL
				Predominantly one size or a range of sizes with more intermediate sizes missing.			GP	GRAVEL
			GRAVELS WITH FINES (appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).			GM	SILTY GRAVEL
				Plastic fines (for identification procedures see CL below).			GC	CLAYEY GRAVEL
		SANDS More than half of coarse fraction is smaller than 2.0mm.	CLEAN SANDS (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.			SW	SAND
				Predominantly one size or a range of sizes with more intermediate sizes missing.			SP	SAND
			SANDS WITH FINES (appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).			SM	SILTY SAND
				Plastic fines (for identification procedures see CL below).			SC	CLAYEY SAND
FINE GRAINED SOILS More than 50% of material less than 63mm is smaller than 0.075mm.		IDENTIFICATION PROCEDURES ON FRACTIONS < 0.2mm						
		SILTS & CLAYS Liquid limit < 50	DRY STRENGTH	DILATANCY	TOUGHNESS			
			None to low	Quick to slow	None		ML	SILT
			Medium to high	None	Medium		CL	CLAY
			Low to medium	Slow to very slow	Low		OL	ORGANIC SILT
		SILTS & CLAYS Liquid limit > 50	Low to medium	Slow to very slow	Low to medium		MH	SILT
			High	None	High		CH	CLAY
			Medium to high	None	Low to medium		OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS		Readily identified by colour, odour, spongy feel and frequently by fibrous texture.					Pt	PEAT

▪Low plasticity – Liquid Limit W_L < 35% ▪Medium plasticity - W_L between 35% and 50% ▪High plasticity – Liquid Limit W_L > 50%

Soil and Rock Description Explanation Sheets
Updated May 2009
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ROCK DESCRIPTION

The descriptive terms used by WAG are given below. They are broadly consistent with Australian Standard AS1726-1993.

DEFINITIONS: Rock substance, defect and mass are defined as follows:

Rock Substance	In engineering terms rock substance is any naturally occurring aggregate of minerals and organic matenal which cannot be disintegrated or remoulded by hand In air or water Other material is described using soil descriptive terms effectively homogenous material, may be isotropic or anisotropic.
Defect	Discontinuity or break in the continuity of a substance or substances.
Mass	Any body of material which is not effectively homogenous. It can consist of two or more substances without detects, or one or more substances with one or more defects.

SUBSTANCE DESCRIPTIVE TERMS:

ROCK NAME	Simple rock names are used rather than precise geological classification.
PARTICLE SIZE	Grain size terms for sandstone are:
Coarse grained	Mainly 0.6mm to 2mm
Medium grained	Mainly 0.2mm to 0.6mm
Fine grained	Mainly 0.06mm (just visible) to 0.2mm
FABRIC	Terms for layering or penetrative fabric (eg. Bedding, cleavage etc.) are:
Massive	No layering or penetrative fabric.
Indistinct	Layering or fabric just visible. Little effect on properties.
Distinct	Layering or fabric is easily visible. Rock breaks more easily parallel to layering or fabric.

CLASSIFICATION OF WEATHERING PRODUCTS

Term	Abbreviation	Definition
Residual Soil	**RS**	Soil derived from the weathering of rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
Extremely Weathered Material	**XW**	Material is weathered to such an extent that It has soil properties, ie. it either disintegrates or can be remoulded in water. Original rock fabric still visible.
Highly Weathered Rock	**HW**	Rock strength is changed by weathering. The whole of the rock substance is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Some minerals are decomposed to clay minerals. Porosity may be increased by leaching or may be decreased due to the deposition of minerals in pores.
Moderately Weathered Rock	**MW**	The whole of the rock substance is discoloured, usually by iron staining or bleaching, to the extent that the colour at the fresh rock is no longer recognisable.
Slightly Weathered Rock	**SW**	Rock substance affected by weathering to the extent that partial staining or partial discolouration of the rock substance (usually by limonite) has taken place. The colour and texture of the fresh rock is recognisable. strength properties are essentially those of the fresh rock substance.
Fresh Rock	**FR**	Rock substance unaffected by weathering.

Notes on Weathering:

1. AS1726 suggests the term "Distinctly Weathered" (**DW**) to cover the range of substance weathering conditions between **XW and SW**. For projects where it is not practical to delineate between HW and MW or it is judged that there is no advantage of making such a distinction. DW may be used with the definition given in AS1726.
2. Where physical and chemical changes were caused by hot gasses and liquids associated with igneous rocks, the term "altered" may be substituted for weathering to give the abbreviations XA, HA., MA, SA, and DA.

ROCK SUBSTANCE STRENGTH TERMS

Term	Abbrev-iation	Point Load Index, I_s50 (MPa)	Field Guide
Very Low	**VL**	**< 0.1**	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; pieces up to 30mm thick can be broken by finger pressure.
Low	**L**	**0.1 to 0.3**	Easily scored with a knife; indentations 1mm to 3mm show with firm blows of a pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	**M**	**0.3 to 1.0**	Readily scored with a knife; a piece of core l50mm long by 50mm diameter can be broken by hand with difficulty.
High	**H**	**1 to 3**	A piece of core 150mm long by 5Omm can not be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	**VH**	**3 to 10**	Hand specimen breaks after more than one blow of a pick; rock rings under hammer.
Extremely High	**EH**	**> 10**	Specimen requires many blows with geological pick to break; rock rings under hammer.

Notes on Rock Substance Strength:

1. In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy.
2. The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes It clear that materials in that strength range are Soils in engineering terms.
3. The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fail across the planar anisotropy) is typically 10 to 25 times the point load index (ls5O). The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.

Soil and Rock Description Explanation Sheets
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Hand Auger Log

Page 1 of 1

Client:	Danelle Warne	**Test Location:**	See Figure 2
Project:	Site Classification	**Test Number:**	**HA1**
Location:	8 Draper Rd, Mahogany Creek	**Job Number:**	WA004-pri-248
Date Tested:	14-Sep-2022	**Site Coordinates:**	Not Recorded
Equipment:	75mm diameter Hand Auger	**Logged By:**	SC

Soil type: plasticity or particle characteristics, colour, secondary and minor components, cementing, moisture, origin	Depth (metres)	Sample	Remarks
TOPSOIL, Silty GRAVEL (GM) - medium dense, orange/brown, fine to medium, subrounded laterite gravel, moist			
LATERITE GRAVEL (GM) - medium dense, non-plastic, orange/brown, fine to medium, subrounded laterite gravel, moist		D	
0.6 m depth....becoming fine to coarse gravel			
Sharp Refusal at 0.7 m depth on coarse laterite gravel/ cobble (inferred).			
Target depth of 2.0 m not achieved.	1.00		
Groundwater not encountered.	2.00		
	3.00		
	4.00		

Notes:	B - Bulk Sample	PL - Plastic Limit	Groundwater Observations:	
	D - Disturbed Sample	LL - Liquid Limit	Depth water noted (m)	N/A
	U - Undisturbed Tube Sample		Depth to steady level (m)	N/A

Hand Auger Log

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Client:	Danelle Warne	**Test Location:**	See Figure 2
Project:	Site Classification	**Test Number:**	**HA2**
Location:	8 Draper Rd, Mahogany Creek	**Job Number:**	WA004-pri-248
Date Tested:	14-Sep-2022	**Site Coordinates:**	Not Recorded
Equipment:	75mm diameter Hand Auger	**Logged By:**	SC

Soil type: plasticity or particle characteristics, colour, secondary and minor components, cementing, moisture, origin	Depth (metres)	Sample	Remarks
TOPSOIL, Silty GRAVEL (GM) -loose, orange/brown, fine to medium, subrounded laterite gravel, trace organics, moist			
LATERITE GRAVEL (GM) - medium dense, non-plastic, orange/brown, fine to medium, subrounded laterite gravel, moist			
0.5 m depth....becoming fine to coarse gravel			
Sharp Refusal at 0.7 m depth on coarse laterite gravel/ cobble (inferred).			
Target depth of 2.0 m not achieved.			
Groundwater not encountered.	1.00		
	2.00		
	3.00		
	4.00		

Notes:	B - Bulk Sample	PL - Plastic Limit	Groundwater Observations:	
	D - Disturbed Sample	LL - Liquid Limit	Depth water noted (m)	N/A
	U - Undisturbed Tube Sample		Depth to steady level (m)	N/A

Hand Auger Log

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Client:	Danelle Warne	**Test Location:**	See Figure 2
Project:	Site Classification	**Test Number:**	HA3
Location:	8 Draper Rd, Mahogany Creek	**Job Number:**	WA004-pri-248
Date Tested:	14-Sep-2022	**Site Coordinates:**	Not Recorded
Equipment:	75mm diameter Hand Auger	**Logged By:**	SC

Soil type: plasticity or particle characteristics, colour, secondary and minor components, cementing, moisture, origin	Depth (metres)	Sample	Remarks
TOPSOIL, Silty GRAVEL (GM) -loose, orange/brown, fine to medium, subrounded laterite gravel, trace organics, moist **LATERITE GRAVEL (GM)** - medium dense, non-plastic, orange/brown, fine to medium, subrounded laterite gravel, moist **Sharp Refusal at 0.35 m depth on coarse laterite gravel/ cobble (inferred).** **Target depth of 2.0 m not achieved.** **Groundwater not encountered.**	1.00 2.00 3.00 4.00		

Notes:	B - Bulk Sample	PL - Plastic Limit	Groundwater Observations:	
	D - Disturbed Sample	LL - Liquid Limit	Depth water noted (m)	N/A
	U - Undisturbed Tube Sample		Depth to steady level (m)	N/A

APPENDIX B

DCP TEST RESULTS

PERTH SAND PENETROMETER
AS1289.6.3.3 - 1997
SCALA PENETROMETER TEST ✓
AS1289.6.3.2 - 1997

Test Report No.
Job No: WA004-pri-248
Office: Perth

Client: Danelle Warne Project: Site Classification Location: 8 Draper Rd, Mahogany Creek Soil type: Laterite Gravel Soil moisture: moist Depth to water: N/E to 1.0 m depth	Date: 14/09/2022 Tested by: SC Hammer mass: 9kg Hammer drop: 510mm Penetrometer used: 1AA

Test Location	HA1	HA2	HA3			
Start Depth bgl (mm)	0	0	0			
Depth to Water (mm)	N/A	N/A	N/A			
	Blows/100mm					
0-100	2	1	2			
100-200	2	1	3			
200-300	2	1	3			
300-400	2	1	3			
400-500	2	1	4			
500-600	2	3	7			
600-700	2	3	8			
700-800	3	5	9			
800-900	4	7	13			
900-1000	5	9	11			

Notes: bgl – below ground level; N/E – Not Encountered; R – Penetrometer Refusal

APPENDIX C

LABORATORY TEST RESULTS

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

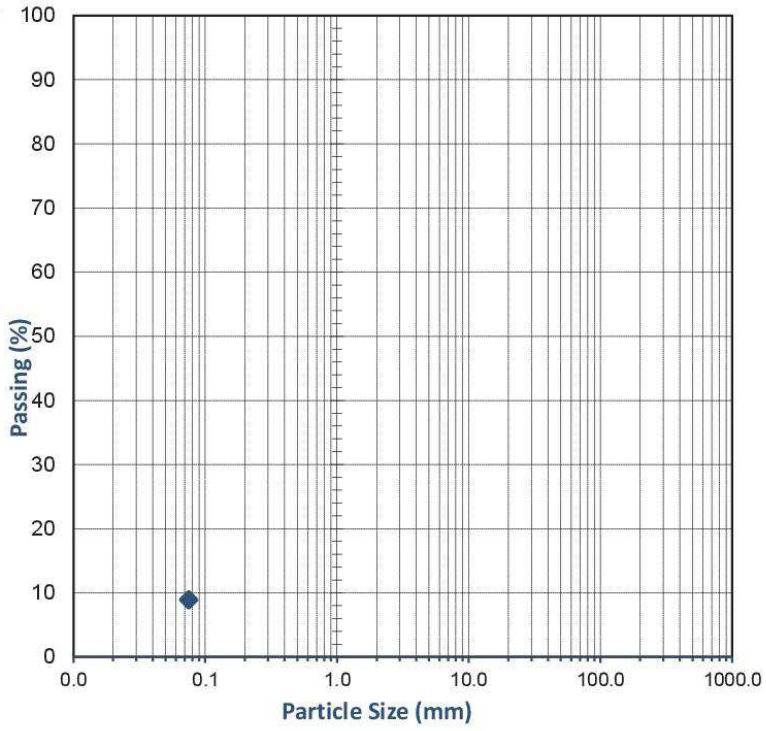
TEST REPORT - AS 1289.3.6.1 (% Fines)

Client:	WA Geotechnics	*Ticket No.*	S7398
Client Address:	P.O. Box 564 North Perth WA 6906	*Report No.*	WG22.14041_1_%FINES
Project:	Site Classification	*Sample No.*	WG22.14041
Location:	8 Draper Rd, Mahogany Creek	*Date Sampled:*	14-09-2022
Sample Identification:	HA1: 0.1 - 0.6m	*Date Tested:*	16/09 - 19/09/2022

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: Sampled by Client, Tested as Received

Sieve Size (mm)	Percent Passing Sieve (%)
75.0	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	
0.150	
0.075	9



Comments: Clients request for the % Fines of Material passing 0.075mm only.

Approved Signatory:

Name: Cody O'Neill
Date: 19-September-2022

NATA Accreditation No. 20599
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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.9.2, 3.2.1, 3.3.2 & 3.4.1

Client:	WA Geotechnics	*Ticket No.*	S7398
Client Address:	P.O. Box 564 North Perth WA 6906	*Report No.*	WG22.14041_1_PI
Project:	Site Classification	*Sample No.*	WG22.14041
Location:	8 Draper Rd, Mahogany Creek	*Date Sampled:*	14/09/2022
Sample Identification:	HA1: 0.1 - 0.6m	*Date Tested:*	19/09/2022

TEST RESULTS - Consistency Limits (Cone)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.9.2	**Liquid Limit (%)**	**27**
AS 1289.3.2.1	**Plastic Limit (%)**	**Non-Plastic**
AS 1289.3.3.2	**Plasticity Index (%)**	**Non-Plastic**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**1.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**250**
AS 1289.3.4.1	**Condition of Dry Specimen**	**-**

Comments:

Approved Signatory: Cody O'Neill

Name: Cody O'Neill
Date: 20/September/2022

NATA
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WG_AS 1289.3.9.2,3.2.1,3.3.1,3.4.1_TR_2