#### ABN 31 105 704 078

13 Brock Street, Thomastown Victoria 3074 (P) +61 3 9464 4617 (F) +61 3 9464 4618



# GEOTECHNICAL SITE CLASSIFICATION LOT 138 FIVE FARMS ESTATE STAGE 1, CLYDE NORTH

Prepared for Frasers Property Australia c/- Beveridge Williams Pty Ltd

Report Reference: G4589.1

Date: 2 February 2022

#### ABN 31 105 704 078

13 Brock Street, Thomastown Victoria 3074 (P) +61 3 9464 4617 (F) +61 3 9464 4618



# **PROJECT DETAILS**

Project Reference	G4589.1	Rev	BL
Project Title	Five Farms Estate Stage 1		
Project Location	Clyde North	State	VIC
Date	2 February 2022		

# **CLIENT DETAILS**

Prepared For (Client)	Frasers Property Australia		
Prepared For (Facilitator)	Beveridge Williams Pty Ltd		
Client Address	Level 9, 484 St Kilda Road	Suburb	Melbourne

# **DISTRIBUTION**

Original Held By	Ground Science Pty Ltd
One (1) Electronic Copy	Frasers Property Australia
One (1) Electronic Copy	Beveridge Williams Pty Ltd

This document presents the results of the site classification conducted for the aforementioned project and is detailed for the sole use of the intended recipient. Should you have any questions related to this report please do not hesitate to contact the undersigned.

AUTHOR:

Chris Connelly

CDCorully

**Engineering Geologist** 

**TECHNICAL REVIEW:** 

Gee Singh, MIEAust (NER) Senior Geotechnical Engineer

# Table of Contents

APPENDIX C

LABORATORY RESULTS

1.	INTR	ODUCTION	. 1
2.	PRO	JECT BACKGROUND & UNDERSTANDING	. 1
3.	PRO	JECT AIMS	. 1
4.	FIELD	DWORK	. 1
5.	RESU	JLTS	. 2
5.	1 RI	EGIONAL GEOLOGICAL CONDITIONS	. 2
5.	2 SI	JRFACE CONDITIONS	. 2
5.	3 SI	JBSURFACE CONDITIONS	. 2
5.	4 GI	ROUNDWATER	. 2
5.	5 L/	ABORATORY TESTING	. 3
6.	DISC	USSION & RECOMMENDATIONS	. 4
6.	1 PF	RELIMINARY AS2870-2011 SITE CLASSIFICATION	. 4
6.	2 F(	DOTING DESIGN	. 4
7.	GEN	ERAL RECOMMENDATIONS	. 5
7.	1 F(	DOTINGS	. 5
7.	2 DI	RAINAGE DESIGN REQUIREMENTS (AS2870-2011)	. 5
7.	3 SI	JBGRADE PREPARATION	. 6
8.	DISC	LOSURE	. 6
9.	LIMIT	ATIONS	. 7
10.	REFE	RENCES	. 8
TAB	LES		
TABI	LE 1: L	ABORATORY TEST RESULTS SUMMARY	3
TABI	LE 2: S	SITE CHARACTERISTICS	4
APP	ENDIC	CES CONTRACTOR OF THE CONTRACT	
APP	ENDIX	A SITE LAYOUT PLANS	
APP	ENDIX	(B BOREHOLE LOG SHEETS	



#### 1. INTRODUCTION

This report presents the results of the geotechnical site classification investigation carried out by Ground Science at Lot 138, Five Farms Estate Stage 1 located in Clyde North, Victoria (the site). The scope of works detailed herein was commissioned by Beveridge Williams Pty Ltd (the facilitator) on behalf of Frasers Property Australia (the Client).

#### 2. PROJECT BACKGROUND & UNDERSTANDING

The project involved providing geotechnical site classifications for the allotments within Stage 1 of the Five Farms Estate residential development.

The residential development included the construction of building platforms as part of the bulk earthworks phase of the project, which primarily involved site cuts and placement of controlled fill. Controlled fill was placed and compacted to Level 1 procedures in general accordance with AS3798 (2007) 'Guidelines on Earthworks for Residential and Commercial Developments'. A plan showing the approximate areas of fill and field density test locations is shown on Figure 2 in Appendix A. Ground Science were the nominated Geotechnical Inspection and Testing Authority for the Level 1 filling works within this stage of the estate (report reference: GS5860.1 AA dated 29th September 2021).

The professional advice provided in this report is based on the information provided at the time of the report preparation and may not be valid if changes are made to the site, the development proposal, or the construction methods. In the event of such changes, further advice should be sought from Ground Science.

#### 3. PROJECT AIMS

The aims of the investigation were as follows:

- To assess the subsurface conditions at the site relevant to the proposed development through a desktop regional geological study;
- To recover soil samples for laboratory analysis (representative soil samples spread across Stage 1);
- To log the soils as per the guidelines presented in AS1726 (2017) 'Geotechnical Site Investigations';
- To classify the site in accordance with AS2870 (2011) 'Residential Slabs and Footings';
- To calculate the characteristic surface movement (Y<sub>S</sub>) for the site;
- To provide advice on allowable bearing pressures and geotechnical parameters for the design of footing systems;
- To provide general construction advice.

#### 4. FIELDWORK

The fieldwork was completed on the 9th and 13th of December 2021 which involved the drilling of 23 boreholes at the locations shown on Figure 3 in Appendix A. The boreholes were drilled using an ATS or GT10 drilling rig supplied and operated by Ground Science. The boreholes were advanced to a target depth of 2.0m below the surface level.

Details of the subsurface conditions encountered within the boreholes are presented in the engineering borehole logs in Appendix B. The fieldwork was conducted by a geotechnical engineer from Ground Science who located the boreholes, recovered soil samples, operated the drilling rig and prepared the engineering borehole logs. The laboratory testing was undertaken in Ground Science's NATA accredited laboratory in Thomastown, Victoria.



#### 5. RESULTS

#### 5.1 REGIONAL GEOLOGICAL CONDITIONS

An understanding of the regional geological conditions was undertaken through the review of the Geological Survey maps of Victoria, which indicates the site to be underlain by Miocene to Pliocene aged 'Red Bluff Sandstone' deposits, with Pleistocene to Holocene aged alluvial deposits indicated to exist to the west and south/west. This assessment excludes any fill or foreign material, with controlled (engineered) fill noted to have been placed on the allotments. The regional geological conditions are presented in Figure 2:

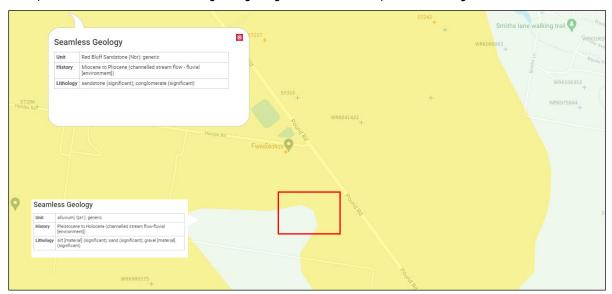


Figure 2: Regional Geological Conditions

#### 5.2 SURFACE CONDITIONS

The site is located south-west of Pound Road and south of Hardys Road and situated north and east of existing greenfields that are yet to be developed. At the time of our investigation, the site was observed to be generally flat with poor to fair drainage conditions noted. The surface of the allotments was dry and generally comprised barren soil. The site was generally trafficable to a 4WD mounted drilling rig with occasional large soil stockpiles noted across the site. No trees were observed to be located within close proximity to the building envelopes.

#### 5.3 SUBSURFACE CONDITIONS

The subsurface soil profile encountered during the field investigation is considered to be generally consistent with our expectations of the site. The subsurface soils generally comprised controlled fill (Sandy CLAY (CL-CH), low to high plasticity, brown mottled orange/grey/red, stiff to very stiff and moist, approximately equal to the Plastic Limit) overlying natural occurring inferred alluvial deposits (comprising Silty SAND (SM), fine to coarse grained, grey, loose to medium dense and moist) or inferred 'Red Bluff Sandstone' residual soils (comprising Silty/Sandy CLAY (CI-CH), medium to high plasticity, grey mottled orange/brown or brown mottled orange/grey red, stiff to very stiff and moist, approximately equal to the Plastic Limit).

As observed during the Level 1 filling phase, controlled fill generally present within all allotments in the site (refer to Figure 2 in Appendix A).

#### 5.4 GROUNDWATER

Groundwater was not encountered during the borehole drilling. The Visualising Victoria's Groundwater dataset indicates the regional groundwater table to exist at a depth of less than 5.0m below surface level. During wet



seasons or following torrential rainfalls, there is a possibility for a perched water table to develop in the area. This should be carefully considered during the construction stage, especially when footing excavations are left exposed or prior to topsoil application.

#### 5.5 LABORATORY TESTING

Representative soil samples of natural clay soils and controlled fill materials were collected from nominated borehole locations for Shrink/Swell Index tests and Atterberg Limits tests. It is considered the soil samples generally represent the soil conditions at the time of testing. Laboratory test reports are presented in Appendix C and a summary of the laboratory test results are present in Table 1:

**Table 1: Laboratory Test Results Summary** 

Sample #	Borehole	Depth (m)	Soil Unit	Liquid Limit (%)	Plasticity Index (%)	Shrink Swell Index Iss (%)		
S1	BH2	0.5 - 1.0	Fill	-	-	1.1		
S2	BH6	1.0 - 1.4	Natural	-	-	4.0		
<b>S</b> 3	BH9	1.0 - 1.3	Natural			Natural	-	3.5
<b>S4</b>	BH13	0.5 - 0.75	Fill 34		22	-		
<b>S</b> 5	BH16	0.5 - 0.9	Fill	-	-	3.2		
<b>S</b> 7	BH20	1.0 - 1.5	Fill	38	20	-		

The laboratory test results indicate the fill to comprise low to medium plasticity material, with a Shrink/Swell Index of 1.1%. The naturally occurring materials recorded Shrink/Swell values ranging between 3.5% and 4.0%.



#### 6. DISCUSSION & RECOMMENDATIONS

#### 6.1 PRELIMINARY AS2870-2011 SITE CLASSIFICATION

The site has been classified in general accordance with the guidelines presented in AS2870-2011 'Residential Slabs and Footings'.

The following site characteristics were adopted in the site classification assessment:

**Table 2: Site Characteristics** 

Climatic Zone	2 (Figure D1 of AS2870-2011)
Soil Profile Group	Predominantly Group 3 (Table D1 of AS2870-2011) or Controlled Fill
Depth of Soil Suction Change (Hs)	1.8m

Based on the results of the geotechnical investigation, the geological setting and the guidelines presented in AS2870-2011, the site has been classified as **Class H1**, with an assessed characteristic surface movement (y<sub>s</sub>) of between 40mm and 60mm.

According to the Building Code of Australia (BCA), the above classification is only applicable for building Class 1 to 10a. For other building types/loads, this classification should only be used as a guide.

It is recommended that precautions be taken to control moisture variations within the founding soils given the variable reactivity of subsurface soils, as follows:

- Restrict tree planting in the vicinity of the building. AS2870-2011 advises that trees be planted no closer
  to the building than a distance equal to 1.0 times their mature height on Class H1 sites. This distance
  should be increased where rows or groups of trees are involved;
- Provide paving to the edge of the building to limit soil moisture variations due to seasonal wetting and drying. The paved surface should be graded away from the building such that run-off drains away, and water cannot pond against the building;
- Service trenches, particularly plumbing and drainage, should be avoided beneath buildings. Where
  service trenches are to pass beneath or close to the building, they should be backfilled with a low
  permeability material, such as compacted clay, to prevent the ingress of water. The use of porous backfill
  materials should be avoided;
- Any leaking or damaged underground services should be repaired promptly; and
- During construction, footing excavations should not be left exposed to the weather for extended periods.
   Water should not be allowed to pond in these areas, nor should it be left unprotected to dry and crack in the sun.

#### 6.2 FOOTING DESIGN

#### **Shallow/Spread Footings**

It is considered that shallow footings suitably embedded within the controlled fill or naturally occurring sols may adopt an allowable bearing pressure of 100kPa, under stiff/medium dense (or better) and dry to damp conditions.

#### **Deep Footings**

Where deep footings such as bored piers are adopted, the footings shall be found 4 times the diameter of the pier foundation from the nominal ground level, and the below parameters may be adopted.

Allowable End Bearing Capacity (stiff/medium dense or better clay/sand): 200kPa



Allowable Skin Friction (stiff/medium dense or better clay/sand):

15kPa

No skin friction shall be adopted for downloads in fill soils or soils within 1200mm of surface level, however, are applicable for uplift load due to soil swelling. Alternatively, screw piles mat be considered and the loss of ground support due to soil shrinkage may be considered as 0.5 x H<sub>S</sub> (1.8m) for this site during the design.

It should be noted that construction during wet/winter periods may experience a reduced bearing pressure, particularly if left exposed for periods of time. Where required, a reassessment of the applicable bearing pressures may be undertaken. Footings should not be founded within any fill, unless the fill has been placed as controlled fill in accordance with AS3798 (2007) 'Guidelines for Earthworks on Residential and Commercial Developments' if applicable.

#### 7. GENERAL RECOMMENDATIONS

#### 7.1 FOOTINGS

- It is recommended that all footing excavations be inspected by a geotechnical engineer from this office to confirm that the founding conditions are consistent with design recommendations. The footing size and the founding level may need to be adjusted if the required founding material is not encountered at the design founding level.
- To reduce soil moisture variations near the footings, the builder should compact clean soil (without rubble or organic matter) around the footings to reduce potential water ingress around the footings.
- To reduce, but not eliminate, the possibility of damage to the footing, tree planting should be restricted as indicated earlier in this report.
- Good drainage is important to footing performance. The Builder should prevent water accumulation near the building footings (even during construction). It is recommended that sufficient ground clearance be created to accommodate paving which slopes a minimum of 1:20 away from the building. This slope should be achieved by excavation and not by building up loose fill around the footings.
- The roof water should be diverted away from the footing as soon as the roof is constructed by using temporary
  pipes, if necessary. The surface water should also be provided by constructing surface gutters or grading the
  surface to divert the water away from the footing.
- During wet conditions, machinery traffic may disturb the subgrade soils and should be avoided in the area of the building
- Any proposed footings which are close to an easement, underground service trenches, and/or other
  excavations, (including those in adjoining properties) should be founded below a line projected up at 45° to the
  horizontal (for firm/stiff Clay) and measured from the nearest base of the easement excavations.
- Avoid excavations close to footings since those founded on sandy soils can experience settlements while those
  founded in clayey soils can also move due to the shrinking and swelling of the clay. Plumbers and drainers
  should follow all the recommendations made in AS 2870-2011 and other appropriate codes with respect to
  drainage works.
- Protection of the footing system from moisture ingress or moisture loss after construction is the responsibility of the homeowner.

#### 7.2 DRAINAGE DESIGN REQUIREMENTS (AS2870-2011)

• It should be noted that the building and site drainage design, as well as height of the floor level above the finished ground level, may be affected by factors other than structural design requirements, such as below:



- Run-off water and influence of local topography;
- Possibility of flooding;
- Effects of existing and post-construction landscaping;
- Level of the legal point of stormwater discharge;
- Plumbing and drainage requirements;
- Minimum height from finished ground level to the damp-proof course level;
- Termite management.
- Surface drainage shall be designed and constructed to avoid water ponding against or near the footing. The ground in the immediate vicinity of the perimeter footing, including the ground uphill from the slab on cut and fill sites shall be graded to fall 50mm minimum away from the footing over 1m and shaped to prevent ponding of water. Where the filling is placed adjacent to the building, the filling shall be compacted and graded to ensure drainage of water away from the building. The requirements of Clause 5.2.2 of AS2870 (2011) shall be applied to reduce the possibility of surface water entering living areas. Alternative drainage systems will be required on zero lot line construction. Any paving shall also be suitably sloped.
- The site classification as stated in this report shall be stated on any construction drawings. The selected footing system and any required site work and required site drainage shall be documented.

#### 7.3 SUBGRADE PREPARATION

- The subgrade should be stripped of all topsoil and soils containing significant organic matter.
- The exposed subgrade surface should be presented in a suitably moist condition and test rolled with several
  passes of an 8-10 tonne smooth drum roller. Any soft spots identified during test rolling should be removed by
  excavation and replaced with well-compacted suitable fill.
- Under no circumstances should any additional fill contain a significant amount of organic matter or be a mixture
  of greatly different particle sizes; e.g. it should not be a mixture of rock and soil, although less than 10% rock
  may be permitted.
- It is important that any fill be compacted close to its optimum moisture content during compaction.
- The compaction method and equipment should suit the fill material used and its degree of compaction should be tested and/or inspected by a suitably accredited NATA laboratory to meet the requirements of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments".

#### 8. DISCLOSURE

This document is detailed for the sole use of the intended recipient(s) or its authorized representatives. Distribution of this report may be carried out at the Clients discretion and must be reproduced in full. Should you have any questions related to this report please do not hesitate to contact this office.

**AUTHOR:** 

**TECHNICAL REVIEW:** 

Chris Connelly Engineering Geologist

CDCorulls

Gee Singh, MIEAust (NER)
Senior Geotechnical Engineer



#### 9. LIMITATIONS

The advice provided in this document (as per our commission) is not designed or capable of identifying all soil conditions, (which can vary with products chosen). The advice given in this document is based on the assumption that the test results are representative of the overall soil conditions. However, it should be noted that actual conditions in some parts of the site might differ from those found. If further sampling/ testing reveals soil characteristics significantly different from those shown in our findings, Ground Science must be consulted.

The scope and the period of Ground Science services are described in the document and are subject to restrictions and limitations. Ground Science did not perform a complete assessment of all possible conditions or circumstances that may exist. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Ground Science in regards to it.

Where data has been supplied by the client or a third party, it is assumed that the information is correct unless otherwise stated. No responsibility is accepted by Ground Science for incomplete or inaccurate data supplied by others.

It is recognized that the passage of time affects the information and assessment provided in this document. Ground Science's assessment is based on information that existed at the time of the preparation of this document. It is understood that the services provided allowed Ground Science to form no more than an opinion of the actual site conditions observed during sampling and observations of the site visit and cannot be used to assess the effects of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any drawings or figures presented in this report should be considered only as pictorial evidence of our work. Therefore, unless otherwise stated, any dimensions should not be used for accurate calculations or dimensioning.

This document is COPYRIGHT- all rights reserved. No part of this document may be reproduced or copied in any form or by means without written permission by Ground Science Pty Ltd. All other property in this submission shall not pass until all preparation fees have been settled. This submission is for the use only of the party to whom it is addressed and for no other purpose. No responsibility is accepted to any third party who may use or rely on the whole or any part of the content of this submission. No responsibility will be taken for this report if it is altered in any way, or not reproduced in full. This document remains the property of Ground Science Pty Ltd until all fees and monies have been paid in full.

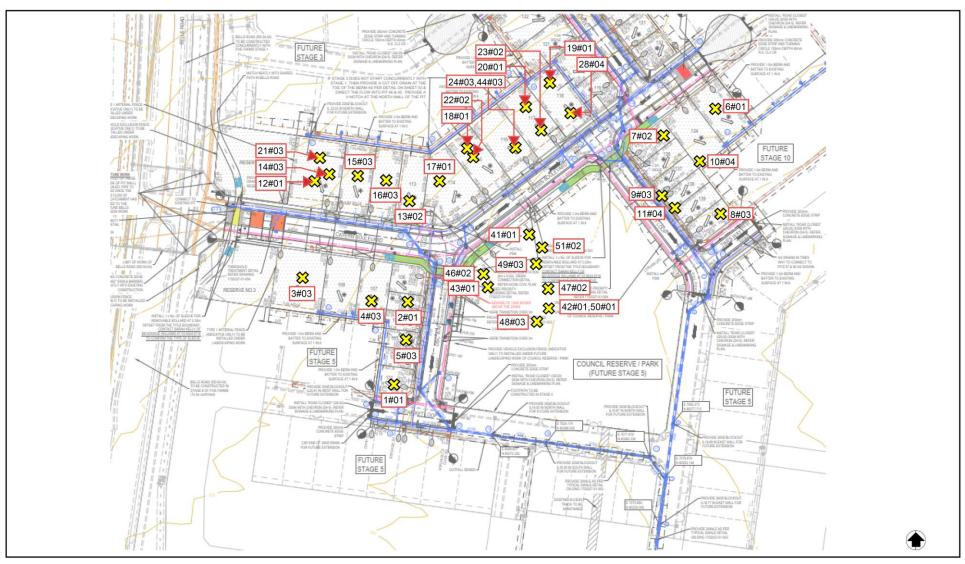


## 10. REFERENCES

- Geological maps, Geological Survey of Victoria.
- AS2870 2011 Residential Slabs and Footings.
- AS3798 2007 Guidelines on Earthworks for Residential and Commercial Developments.
- AS1289 Testing of Soils for Engineering Purposes.
- AS1726 2017 Geotechnical Site Investigations.

# APPENDIX A

Site & Test Location Plans



Rev		Drawn	Date	Checked	Scale	
	s					
0	Figure 1: Density Test Locations	AM	21/09/2021	GS	NTS	1

# Legend

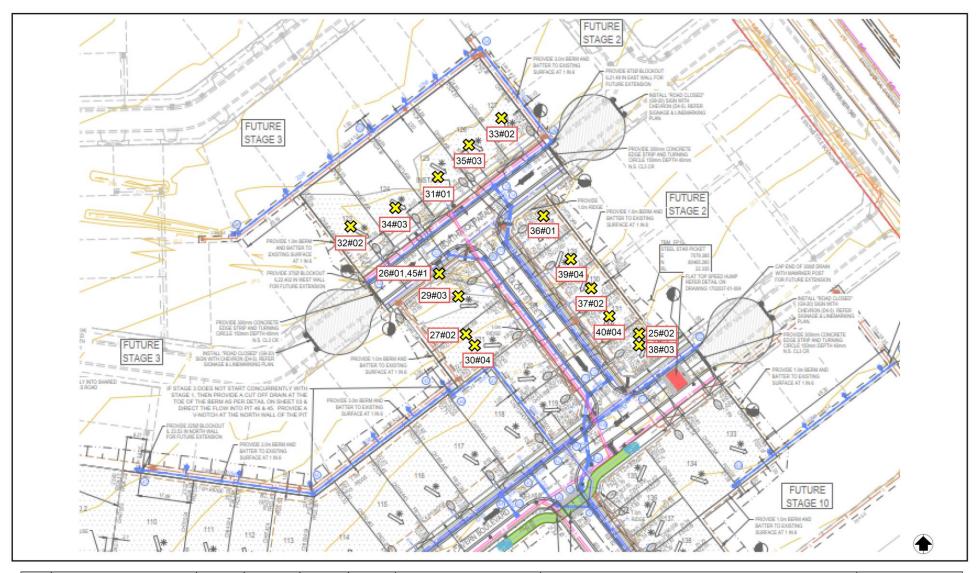
Density Test Location (#Layer number)

# FIVE FARMS - STAGE 1 CLYDE NORTH (LEVEL 1)

Prepared For: Frasers Property Australia

Job No: GS5860.1 AA





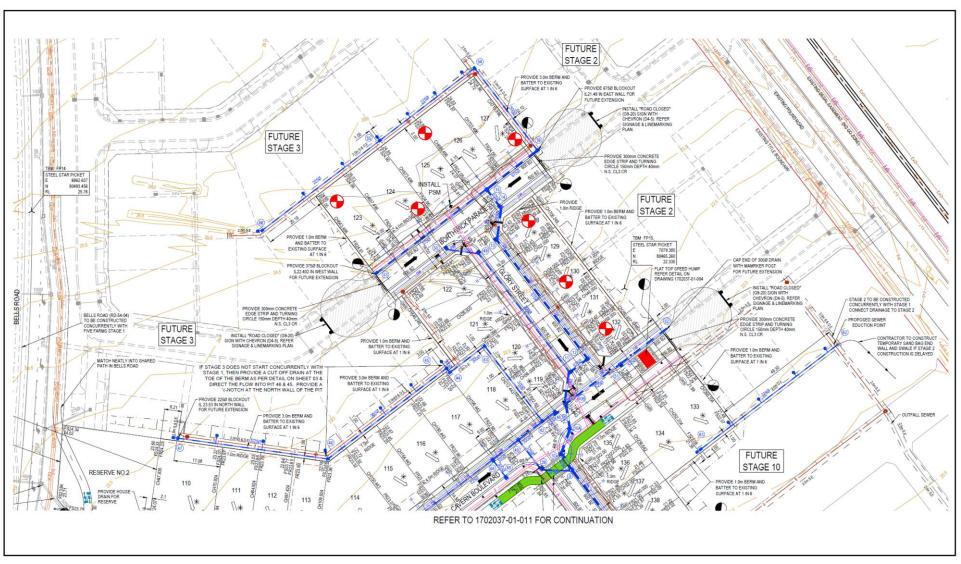
Rev		Drawn	Date	Checked	Scale	Legend
						Density Test Location
						(#Layer number)
						2729 94 49
0	Figure 2: Density Test Locations	AM	21/09/2021	GS	NTS	

FIVE FARMS - STAGE 1 CLYDE NORTH (LEVEL 1)

Prepared For: Frasers Property Australia

Job No: GS5860.1 AA





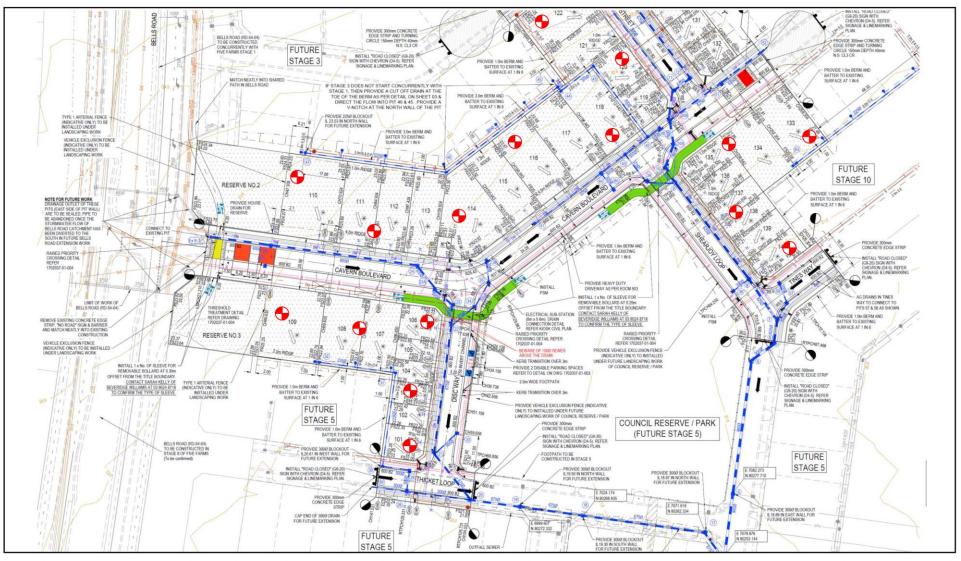
Rev		Drawn	Date	Checked	Scale	Legend
						Proposed Borehole Location
3						
0	Figure 1 of 2: Proposed Boreholes	CC	13.09.21		NTS	

# STAGE 1 PROPOSED BOREHOLE LOCATIONS FIVE FARMS ESTATE, CLYDE NORTH

Prepared For: Frasers Property Australia

Job No: G4589.1





Rev		Drawn	Date	Checked	Scale	Legend
						Proposed Borehole Location
0	Figure 2 of 2: Proposed Boreholes	СС	13.09.21		NTS	

# STAGE 1 PROPOSED BOREHOLE LOCATIONS FIVE FARMS ESTATE, CLYDE NORTH

Prepared For: Frasers Property Australia

Job No: G4589.1



# APPENDIX B

Borehole Log Sheets

G G	iround Science	ENGINEERING BOREHOLE LOG	Borehole	No	BH1	
			JOB No :		G4589.1	
	ers Property Group Pty Ltd Farms Estate Site Classification - Stage 1		TEST DAT		09-Dec-21 JSP	
	e North r to site plan, Appendix A		CHECKED VANE SHE		CC N/A	
DRILL METHOD: GT1 HOLE DIAMETER: 100	10 Drill Rig	EASTING: ND NORTHING: ND	INCLINAT		90° ND	
DRILLING	SAMPLING	FIELD MATERIAL DESCRIPTION			Ι	
DEPTH (metres)	DEPTH (RL) SAMPLE OR FIELD TEST RECOVERED GRAPHIC LOG USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION	CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS	
0.0	0.05 SM	FILL: sitty SAND, fine to medium grained, angular to subangular, pale brown, low plasticity sit, trace rootlets FILL: sandy CLAY, medium to high plasticity, brown mottled orange/grey, fine to coarse grained, angular to subangular	L St - VSt	M w≈PL	Controlled Fill	=
0.5 0.0	0.50 0.75 CH	brown, trace gravel  sity CLAY, medium to high plasticity, brown mottled orange/grey/red, with sand	VSt		Inferred Red Bluff Sandstone Residual Soil	
Not Encountered	1.70	sandy CLAY, high plasticity, brown mottled orange/grey/red, with sand	•			
25	2.00	Borehole Terminated @ 2m			-	
PENETRATION	CONSISTENCY  Vs Very Soft	DENSITY         MOISTURE CONDITION         TEST NOTES           Fb         Friable         D         Dry         PP         Pocket Penetrom	eter Test		▼ Groundwater Level	$\exists$
1 2 3 4 no resistence refusal HAM_LOG_6.0.2019	S         Soft           F         Firm           St         Stiff           VSt         Very Stiff           H         Hard	VL     Very Loose     M     Moist     U50     Undisturbed Sam       L     Loose     W     Wet     U63     Undisturbed Sam       MD     Medium Dense     w < PL Moist, dry of plastic limit	ple 50mm ple 63mm e mple e test		UTP Unable to Penetrate  Sheet 1 of 1	

<b>U</b>			Gro	undSci	en	ce		ENGINEERING BOREHOLE LOG	Borehole		BH2 G4589.1
CLIENT: PROJECT: LOCATION: TEST LOCAT		F C R	ive Farms E lyde North lefer to site p	erty Group Pty Ltd state Site Classification	on - Stage	e 1			TEST DA' LOGGED CHECKEI	BY: D BY: EAR:	09-Dec-21 JSP CC N/A
DRILL METH HOLE DIAME			GT10 Drill F 100mm	Rig				EASTING: ND NORTHING: ND	INCLINAT SURFACE		90° ND
	DRILL	.ING		SAMPLING	П	Н		FIELD MATERIAL DESCRIPTION			
2 PENERTRATION 2 RESISTANCE	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION	CONSISTENCY	MOISTURE	ADDITIONAL OBSERVATIONS
1 2 3	Not Encountered Not Encountered WATE	0.0	0.30	GHVVS	U50		SM CI-CH	FilL: slity SAND, fine to medium grained, angular to subangular, pale brown, low plasticity slit, trace rootlets  FilL: sandy CLAY, medium to high plasticity, brown mottled orange/grey, fine to coarse grained, angular to subangular sand, with slit, trace gravel  sandy CLAY, medium to high plasticity, brown mottled orange/grey/red, fine to coarse grained, angular to subangular sand, with slit, trace gravel	SV VSt	М	Controlled Fill
PENETRATIO no re	1 2	2.5		CONSISTENCY Vs S F St VSt H	Very Soft Firm Stiff Very Hard			DENSITY MOISTURE CONDITION TEST NOTES  Fb Friable D Dry PP Pocket Penetron VL Very Loose M Moist U50 Undisturbed Sar L Loose W Wet U63 Undisturbed Sar MD Medium Dense W < PL Moist, dry of plastic limit Bs Bulk Sample VD Very Dense W > PL Moist, near plastic limit Bs Bulk Sample VD Very Dense W > PL Moist, wet of liquid limit W > LL Wet, wet of liquid limit W SLL Wet, wet of liquid limit W SLL Wet, wet of liquid limit C U Undrained Shea	nple 50mm nple 63mm e ample e test	n n	Groundwater Level UTP Unable to Penetrate

			Gr	oun	<b>d</b> Sci	ien	ce		ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH.	3	
7	L		<u> </u>									JOB No :		G4589.1		
CLIENT: PROJECT:					oup Pty Ltd	on - Stag	e 1					TEST DA		09-Dec-21 JSP		
LOCATION:			Clyde No	rth site plan, Ap	nnendiy A							CHECKE VANE SH		CC N/A		
DRILL MET	HOD:		GT10 E	rill Rig	ррепих и				EASTING: ND			INCLINAT	TION:	90°		
HOLE DIAM		t: RILLIN	100mm	Т	SAMPLING	i	Г		NORTHING: ND	FIELD MA	ATERIAL DESCRIPTION	SURFAC	E RL:	ND		
N.	T		$\top$	T	TEST											
D PENERTRATION S RESISTANCE	4		DEPTH (metres) DEPTH (RL)		SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL		SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	JA.	DDITIONAL OBSERVATION:	S
1 2 3		0.0 T.1. T.1. T.1. T.1. T.1. T.1. T.1. T	0.60	0	divis	NECO NECO NECO NECO NECO NECO NECO NECO		CI-CH	sand, with silt, trace gravel  silty SAND, fine to coarse grained, angula sandy CLAY, medium to high plasticity, b with silt	rown mottled orangelgrey, fine to coarse gra	sined, angular to subangular sand,	SV - VSt  VSt  VSt	w≈ Pl	L Inferred R	Controlled Fill  led Bluff Sandstone Residual Soil	
PENETRATI	ION	3.		cons	ISTENCY				DENSITY	MOISTURE CONDITION	TEST NOTES					
no r	1 esister		refusal	Vs S F St Vs	S St	Very Soft Firm Stiff Very Hard	Stiff		Fb Friable VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	D Dry M Moist W Wet w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit w > LL Wet, near liquid limit w > LL Wet, wet of liquid limit	PP Pocket Penetron U50 Undisturbed San U63 Undisturbed San D Disturbed Sample Bs Bulk Sample E Environmental se HSV Hand Shear Van Cu Undrained Shear	nple 50mr nple 63mr e ample e test	n n		Groundwater Level Unable to Penetrate	
HAM	/_LO	G_6.0 2	2019												Sheet 1 of	1

	Gro	undSci	en	ce		ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH4	
									JOB No :		G4589.1	
CLIENT: PROJECT:		erty Group Pty Ltd	n - Stage	e 1					TEST DA		09-Dec-21 JSP	
LOCATION: TEST LOCATION:	Clyde North Refer to site	olan, Appendix A							CHECKE VANE SH		CC N/A	
DRILL METHOD: HOLE DIAMETER:	GT10 Drill F					EASTING: ND NORTHING: ND			INCLINAT	ION:	90° ND	
DRILLING	100///	SAMPLING					FIELD MA	ATERIAL DESCRIPTION	JORFACI	I NE.	T.	
C PENETRATION C RESISTANCE A MATER DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	s	OIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS	5
1 2 3 4 🕺 🖫	-	Ø		<b>₩</b>		FILL: silty SAND, fine to medium grained,	angular to subangular, pale brown, low plas	sticity silt, with clay, trace rootlets	L	M	Controlled Fill	Τ.
0.5 Library MAI Encountered	0.10				CI-CH		ity, brown mottled orange/grey, fine to coard			w = PL w = PL	Inferred Red Bluff Sandstone Residual Soil	
2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.00					Borehole Terminated @ 2m						
PENETRATION	$\perp$	CONSISTENCY				DENSITY	MOISTURE CONDITION	TEST NOTES				-
1 2 3 4	refusal	Vs S F St VSt H	Very Soft Firm Stiff Very Hard	Stiff		Fb	MOISTURE CONDITION  D Dry  M Moist  W Wet  w < PL Moist, dry of plastic limit  w ≈ PL Moist, near plastic limit  w > PL Moist, wet of plastic limit  w > LL Wet, near liquid limit  w > LL Wet, wet of liquid limit	PP Pocket Penetron U50 Undisturbed San U63 Undisturbed San D Disturbed Sampl Bs Bulk Sample E Environmental st HSV Hand Shear Van Cu Undrained Shea	nple 50mr nple 63mr e ample e test	n n	Groundwater Level UTP Unable to Penetrate  Sheet 1 of	1

CLIENT: Frasers Property Group Pty Ltd TEST DATE: 09-Dec PROJECT: Five Farms Estate Site Classification - Stage 1 LOGATION: Clyde North CHECKED BY: USP LOCATION: Clyde North CHECKED BY: CC TEST LOCATION: Refer to site plan Appendix A VANE SHEAR: NIA DRILL METHOD: GT10 Drill Rig EASTING: ND NORTHING: ND SURFACE RI: ND NORTHING: ND SURFACE RI: ND DRILLING SAMPLING FIELD MATERIAL DESCRIPTION    NORTHING: ND SOIL / ROCK MATERIAL DESCRIPTION   DRILL METHOD: SOIL / ROCK MATERIAL	Dec21
PROJECT: Five Farms Estate Site Classification - Stage 1  LOGGED BY: JSP  LOCATION: Clyde North Clyde North Clyde North Clyde North Refer to site plan, Appendix A  VANE SMEAR: NIA  DRILL METHOD: GT10 Drill Rig EASTING: ND NORTHING: ND NORTHING: ND  NORTHING: ND  SURFACE RL: ND  DRILLING  FIELD MATERIAL DESCRIPTION  SURFACE RL: ND  SOIL / ROCK MATERIAL DESCRIPTION  DRILL METHOD: GRAPH ALL SITE SITE SITE SITE SITE SITE SITE SITE	00° I/D ADDITIONAL OBSERVATIONS
TEST LOCATION: Refer to site plan, Appendix A  DRILL METHOD: GT10 Drill Rig EASTING: ND INCLINATION: 90° SURFACE RL: ND  DRILL METHOD: NORTHING: ND SURFACE RL: ND  DRILLING  SAMPLING  SAMPLING  SAMPLING  SOIL / ROCK MATERIAL DESCRIPTION  SURFACE RL: ND  SOIL / ROCK MATERIAL DESCRIPTION  DRILLING  SOIL / ROCK MATERIAL DESCRIPTION  SOIL / ROCK MATERIAL DESCRIPTION  DRILLING  SOIL / ROCK MATERIAL DESCRIPTION  SOIL / ROCK MATERIAL DESCRIPTION  DRILLING  SOIL / ROCK MATERIAL DESCRIPTION  SOIL / ROCK MATERIAL DESCRIPTION  SOIL / ROCK MATERIAL DESCRIPTION  DRILLING  SOIL / ROCK MATERIAL DESCRIPTION  SOIL / ROCK MATERIAL DESCRIPTION  DRILLING  SOIL / ROCK MATERIAL DESCRIPTION  SOIL / R	0° ID  ADDITIONAL OBSERVATIONS
DRILL METHOD: GT10 Drill Rig BASTING: ND NORTHING: ND SURFACE RL: ND  DRILLING SAMPLING FIELD MATERIAL DESCRIPTION  NOTHING: ND SOIL / ROCK MATERIAL DESCRIPTION  SURFACE RL: ND  OUT OF SAMPLING SAMPLING FIELD MATERIAL DESCRIPTION  SOIL / ROCK MATERIAL DESCRIPTION  OUT OF SAMPLING S	0° ID  ADDITIONAL OBSERVATIONS
DRILLING  SAMPLING  FIELD MATERIAL DESCRIPTION    SOIL / ROCK MATERIAL DESCRIPTION   Control of the control of	ADDITIONAL OBSERVATIONS
NOT THE PROPERTY OF THE PROPER	
0.0 SM FILL: sitly SAND, fine to medium grained, angular to subangular, pale brown, with clay, trace motiets L M 0.05 CI-CH FILL: sandy CLAY, medium to high plasticity, brown motified orangelgrey, fine to coarse grained, angular to subangular St - VSt w ≈ PL	
0.05 CI-CH FILL: sandy CLAY, medium to high plasticity, brown mottled orange/grey, fine to coarse grained, angular to subangular St - VSt w ≈ PL	Controlled Fill
sand, with self  0.5  0.65  Fill: silly CLAY, medium to high plasticity, brown mottled orangelyrey/red/white, with sand, trace gravel  VSt	ferrad Red Bluff Sandstone Residual Soil
Borehole Terminated @ 2m  2.0 2.00 Borehole Terminated @ 2m  2.3 2.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3	Groundwater Level
S Soft VL Very Loose M Moist U50 Undisturbed Sample 50mm UTP  St Stiff MD Medium Dense W < PL Moist, dry of plastic limit VSt Very Stiff D Dense W > PL Moist, near plastic limit W = LL Wet, near liquid limit W > LL Wet, near liquid limit W > LL Wet, wet of liquid limit W > LL Wet, wet of liquid limit UTP  HAM, LOG_6.0 2019	

				iro	undSci	en	ce	,	ENGINE	ERING BOREHO	LE LOG	Borehole	No	ВН6	
7	L			310	0110 50			,				JOB No :		G4589.1	
CLIENT: PROJECT:					erty Group Pty Ltd state Site Classificatio	on - Stag	e 1					TEST DA		09-Dec-21 JSP	
LOCATION: TEST LOCA		l:	-	de North er to site p	olan, Appendix A							CHECKEI VANE SH		CC N/A	
DRILL MET	HOD:		G1	T10 Drill F					EASTING: ND NORTHING: ND			INCLINAT	TION:	90° ND	
HOLE DIAM		K: RILLI		10mm	SAMPLING				NONTHINO. NO	FIELD M	ATERIAL DESCRIPTION	SURFACE	E KL:	ND	
NO					D TEST										
c PENERTRATION S RESISTANCE	4	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL		SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY	MOISTURE	ADDITIONAL OBSER	/ATIONS
			0.0	0.05						, angular to subangular, pale brown, low plas city, brown mottled orange/grey, fine to coars		St - VSt	M w≈PL	Controlled Fill	
			=				<b>**</b>		sand, with sirt						-
			$\dashv$												
			1												
ш			0.5	0.50					FILL: silty CLAY, medium to high plasticit	v. brown mottled grange/grev/red		VSt	-		
			1				<b>₩</b>			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
-			}	0.70			<b>***</b>	SM	silty SAND, fine to coarse grained, angula	ar to subangular, grey, low plasticity silt		L - MD	M	Inferred Alluvial Deposi	ts =
			-												
ш			+	0.90				СН	silty CLAY, high plasticity, brown mottled	orange/grey, fine to coarse grained, angular	r to subangular sand, with silt	VSt	w≈ PL	Inferred Red Bluff Sandstone I Soil	Residual
			1.0		S2	U50									
			}												]
			1	1.00											
				1.30			// ///		sandy CLAY, high plasticity, brown mottle	ed orange/grey, fine to coarse grained, angul	lar to subangular sand, with silt				
			1.5				77.2 57.2 67.2								
			=				%X %X								
		ntered	7				%% %%								-
		Not Encountered	}				9% 9%								- 13
		Ž	-				922 922								
	٦		2.0	2.00		$\vdash$	<b>9</b>		Borehole Terminated @ 2m						+
			1												
			4												-
			1												
			_												- 13
		1	2.5												
			=												
			4												
			=												
			3.0												
			7												
			_]												]
			]												]
			=												
	Ш		3.5						DE LOUEV	Lucionium coupini	TEGE NOTES				-
PENETRAT				$\dashv$	Vs	Very	Soft		DENSITY Fb Friable	MOISTURE CONDITION  D Dry	PP Pocket Penetron			_ <u>▼</u> Groundwater Le	
Þ	1	2 3	4		S F	Soft Firm			VL Very Loose L Loose	M Moist W Wet	U50 Undisturbed Sam U63 Undisturbed Sam			UTP Unable to Penetr	rate
			L		St VSt	Stiff			MD Medium Dense D Dense	w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit	D Disturbed Sample				
no r	esiste	nce			H	Very Hard			VD Very Dense	w > PL Moist, wet of plastic limit	E Environmental sa				
L			refusa	al .						w ≈ LL Wet, near liquid limit w > LL Wet, wet of liquid limit	HSV Hand Shear Van Cu Undrained Shear		_		
HAM	M_LO	G_6.0	2019											She	et 1 of 1

Gro	oundScience	ENGINEERING BOREHOLE LOG	Borehole N		BH7 64589.1
PROJECT: Five Farms LOCATION: Clyde North	perty Group Pty Ltd  Estate Site Classification - Stage 1  plan, Appendix A		TEST DATE LOGGED B CHECKED VANE SHEA	BY: BY:	09-Dec-21 JSP CC N/A
DRILL METHOD: GT10 Drill HOLE DIAMETER: 100mm		EASTING: ND NORTHING: ND	INCLINATION SURFACE I	ON:	90° ND
DRILLING	SAMPLING	FIELD MATERIAL DESCRIPTION	SURFACE	KL:	NU
DEPRETRATION RESISTANCE WATER DEPTH (Reitors)	SAMPLE OR FIELD TEST RECOVERED GRAPHICLOG USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION	CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS
0.05		FILL: sandy CLAY, medium to high plasticity, brown mottled orangelgrey, fine to coarse grained, angular to subangular sand, with silt	L St-VSt	M w≈PL	Controlled Fill
0.50		FILL: silty CLAY, medium to high plassicity, brown mottled orange/grey/red	VSI		-  -
0.70	SM		L - MD	М	Inferred Alluvial Deposits
1.60	GM CH	sity CLAY, high plasticity, brown mottled orangelgrey, with sand  sandy CLAY, high plasticity, brown mottled orangelgrey, fine to coarse grained, angular to subangular sand, with sit	VSt t	w≈PL	Inferred Red Bluff Sandstone Residual Soil
NAI Encounting		Borehole Terminated @ 2m			- - - -
25					- - - - - - - - - - - - - - - - - - -
PENETRATION  1 2 3 4  no resistence refusal  HAM_LOG_6.0.2019	CONSISTENCY           Vs         Very Soft           S         Soft           F         Firm           St         Stiff           VSt         Very Stiff           H         Hard	DENSITY	ple 50mm ple 63mm mple test		Groundwater Level UTP Unable to Penetrate  Sheet 1 of 1

			Gre	ound	ISci	en	ce	)	ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH8	}	
7	L			JOI10				,				JOB No :	:	G4589.1		
CLIENT: PROJECT:				roperty Group I s Estate Site C		n - Stag	e 1					TEST DA		09-Dec-21 JSP		
LOCATION: TEST LOCA			Clyde No Refer to s	th te plan, Appen	dix A							CHECKE VANE SH		CC N/A		
DRILL METH	HOD:		GT10 D						EASTING: ND NORTHING: ND			INCLINAT	TION:	90°		
HOLE DIAM		: RILLIN	100mm G	S.	AMPLING				NORTHING: NO	FIELD MA	ATERIAL DESCRIPTION	SURFAC	E RL:	ND		
NO				TEGE	3											
D PENERTRATION  RESISTANCE	4		DEPTH (metres) DEPTH (RL)	CAMBIE OD SIELD TEST	SAMPLE ON THE	RECOVERED	GRAPHIC LOG	USC SYMBOL		OIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE		ITIONAL OBSERVATIONS	s
		0.	° -					SM	FILL: silty SAND, fine to medium grained,	angular to subangular, pale greybrown, low	v plasticity silt, with clay, trace gravel	L	М		Controlled Fill	=
			0.20	4			**** ****		silty SAND, fine to coarse grained, angula	ar to subangular sand, pale grey-brown, trace	ne clav	L - MD	-	Inferred Ir	nferred Alluvial Deposits	
	١		3								,				·	
	١		]													$\mid \exists$
	١	0.	5													$\vdash$
	١		1													
	١		4													-
ш			0.85	+				СН	silty CLAY, high plasticity, brown mottled	orange/grey, with sand		VSt	w≈ Pl	- Inferred Rec	f Bluff Sandstone Residual	$\exists$
	١	L													Soil	
	١	1.	" <u>†</u>													
	١		1													=
	١		1.30	-					sandy CLAY, high plasticity, brown mottle	d orange/grey, fine to coarse grained, angul	lar to subangular sand, with silt	-				=
	١		]				992 992									
	١	1.	5				**** ****									$\vdash$
	3	B	1				9922 9922 8923									
	bosetan coord told	counter	1				988 988									-
	lo to	NOT EN	]				9% 9%									$\mid \exists$
	╛		-				9900 9900									$\perp$
	١	2.	2.00				П		Borehole Terminated @ 2m							
	١		1				П									=
	١		3				П									=
	١		]				П									=
	١	2.	5				П									
	١		1				П									
	١		4				П									_
	١		1				П									=
	١		_}				П									$\mid \exists$
	1	3.	° 🖠				П									
	١		-				П									
	١		7				П									=
	1		1				П									
		3.	5													
PENETRATI	ION			CONSISTE	NCY	Very	Soft		DENSITY Fb Friable	MOISTURE CONDITION  D Dry	TEST NOTES  PP Pocket Penetron	neter Teet		G	roundwater Level	
	1 :	2 3	4	S		Soft			VL Very Loose	M Moist	U50 Undisturbed San	ple 50mr	m		nable to Penetrate	
	-	3		F St		Firm Stiff			L Loose  MD Medium Dense	W Wet w < PL Moist, dry of plastic limit	U63 Undisturbed San D Disturbed Sampl		n			
no re	esisten	ice		VSt H		Very Hard			D Dense VD Very Dense	w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit	Bs Bulk Sample E Environmental sa	ample				
			refusal	"		u				w ≈ LL Wet, near liquid limit	HSV Hand Shear Van	e test				
HAN	/_LOG	3_6.02	2019							w > LL Wet, wet of liquid limit	Cu Undrained Shear	orrength			Sheet 1 of	1

	Gro	undSci	en	æ	ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH9	
								JOB No :		G4589.1	
CLIENT: PROJECT:		erty Group Pty Ltd Estate Site Classification	n - Stage	1				TEST DA		09-Dec-21 JSP	
LOCATION: TEST LOCATION:	Clyde North Refer to site p	plan, Appendix A						CHECKEI VANE SH		CC N/A	
DRILL METHOD: HOLE DIAMETER:	GT10 Drill F				EASTING: ND NORTHING: ND			INCLINAT		90° ND	
DRILLING	TOOMIN	SAMPLING				FIELD MA	ATERIAL DESCRIPTION	SURFACE	E KL:	NO	
DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG USC SYMBOL	\$	SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS	
0.0	-				FILL: sandy CLAY, medium to high plasti sand, with silt	city, orange-yellow mottled grey, fine to coars	se grained, angular to subangular	St	w≈ PL	. Controlled Fill	T -
0.5	0.30			SM		ar to subangular sand, pale grey-brown, trace	e day	L - MD	М	Inferred Inferred Alluvial Deposits	-
	0.80			CH	sity CLAY, high plasticity, brown mottled	orange(grey, with sand		VSt	w≈PL	Inferred Red Bluff Sandstone Residual Soil	-
1.0	1.40	\$3	U50		sandy CLAY, high plasticity, brown mottle	ed orangelgrey, fine to coarse grained, angul	lar to subangular sand, with silt				
Not Encountered				72 72 72 72 72 72 72 72 72 72 72 72 72 7	Borehole Terminated @ 2m						-
-											
-											-   -   -   -   -   -
-											
PENETRATION 3.5		CONSISTENCY	<u></u>		DENSITY	MOISTURE CONDITION	TEST NOTES				1
no resistence	refusal	Vs S F St VSt H	Very S Soft Firm Stiff Very S Hard		Fb Friable VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	D Dry M Moist W Wet w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit w > LL Wet, near liquid limit w > LL Wet, wet of liquid limit	PP Pocket Penetrom U50 Undisturbed Sam U63 Undisturbed Sample D Disturbed Sample Bs Bulk Sample E Environmental sa HSV Hand Shear Vanu Cu Undrained Shear	iple 50mn iple 63mn e imple e test	n n	▼ Groundwater Level UTP Unable to Penetrate  Sheet 1 of 1	

			Gre	ound:	Scie	nc	е	ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH10	
7	L	_									JOB No :		G4589.1	
CLIENT: PROJECT:				roperty Group Pty s Estate Site Clas		tage 1					TEST DA		09-Dec-21 JSP	
LOCATION:		l:	Clyde No Refer to s	th te plan, Appendix	. A						CHECKE VANE SH		CC N/A	
DRILL MET	HOD:		GT10 D 100mm					EASTING: ND NORTHING: ND			INCLINAT	TION:	90° ND	
HOLE DIAM		RILLIN			IPLING		_		FIELD MA	ATERIAL DESCRIPTION	JORFACI	I NL.		
D PENERTRATION  RESISTANCE	4	WATER	DEPTH (metres) DEPTH (RL)	SAMPLE OR FIELD TEST	GLIGHT COLOR	NECOVERED COADUIC DO	USC SYMBOL		SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSE	ERVATIONS
	Ť		1.0	†		8	CI-CI	FILL: sandy CLAY, medium to high plasi	icity, orange-yellow mottled grey, fine to coar	rse grained, angular to subangular	St	w≈ PL	Controlled Fill	
	1		1			8	× ×							
	1		0.20					silty SAND, fine to coarse grained, angu	ar to subangular sand, pale grey-brown, trac	e clay	L - MD	М	Inferred Inferred Alluvial	Deposits
	1		‡											=
	1	0	1.5											
	1		-											=
ш	1		0.70	1			СН	silty CLAY, high plasticity, brown mottled	l orange, with sand		VSt	w≈ PL	Inferred Red Bluff Sandstor Soil	ne Residual
	1		3											]
	1		.0											
	1	ľ	1											
	1		3											13
	1		-											-
	1		1.40	1		% %	% %	sandy CLAY, high plasticity, brown mottl	ed orange/grey, fine to coarse grained, angul	lar to subangular sand, with silt	1			=
	1	1	.5			<b>%</b>	ž ž							
	ŀ	ered	-			<b>8</b>	<b>X</b>							-
		Not Encountered	-			88.8	88 88 88							
		Not	1			% %	% %							
	$\dashv$	2	2.00	+	+			Borehole Terminated @ 2m						
	1		-											-
	1		4											_
	1		1											
	1													13
	1	2	.5											-
	1		4											=
	1		7											=
	1		}											]
	1	3	1.0											-
	1		-											=
	1		4											
			]	1										
														]
PENETRAT	ON	13	1.5	CONSISTEN		_		DENSITY	MOISTURE CONDITION	TEST NOTES				
	1	2 3	4	Vs S	Ve Sc	ery So oft	ft	Fb Friable VL Very Loose	D Dry M Moist	PP Pocket Penetron U50 Undisturbed San			✓ Groundwater  UTP Unable to Pen	
		7	ı	F St	Fii St			L Loose MD Medium Dense	W Wet w < PL Moist, dry of plastic limit	U63 Undisturbed San D Disturbed Sampl		m		
no r	esister	nce		VSt H	Ve	ry Sti	ff	D Dense	w ≈ PL Moist, near plastic limit	Bs Bulk Sample				
			refusal	"	Па	ard		VD Very Dense	w > PL Moist, wet of plastic limit w ≈ LL Wet, near liquid limit	HSV Hand Shear Van	e test			
HAM	/_LO	G_6.0	2019	1				1	w > LL Wet, wet of liquid limit	Cu Undrained Shear	Strength	1	Si	heet 1 of 1

	Gro	undSci	end	e	ENGINE	ERING BOREHOL	LE LOG	Borehole	No	BH11	
								JOB No :		G4589.1	
CLIENT: PROJECT:		erty Group Pty Ltd State Site Classification	n - Stage 1					TEST DA		09-Dec-21 JSP	
LOCATION: TEST LOCATION:	Clyde North Refer to site	plan, Appendix A						CHECKEI VANE SH		CC N/A	
DRILL METHOD: HOLE DIAMETER:	GT10 Drill F	Rig			EASTING: ND NORTHING: ND			INCLINAT		90° ND	
DRILLING		SAMPLING			I	FIELD MA	ATERIAL DESCRIPTION			I	
C PENERTRATION C RESISTANCE WATER DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG USC SYMBOL	s	OIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATION	s
0.0	-		8	CI-CH	FILL: sandy CLAY, medium to high plastic	ity, orange mottled grey/brown, fine to coan	rse grained, angular to subangular	St	w≈ PL	. Controlled Fill	T -
0.5	0.35		80 80 80	\$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$	silty SAND, fine to coarse grained, angula	r to subangular sand, pale grey-brown, trace	e day	L - MD	М	Inferred Inferred Alluvial Deposits	
-	0.90				silty CLAY, high plasticity, brown mottled	orange, with sand		VSt	w≈PL	Inferred Red Bluff Sandstone Residua	
1.0	1.20				sandy CLAY, high plasticity, brown mottle	d orangelgrey, fine to coarse grained, angulg	far to subangular sand, with slit	_		Soil	
Not Encountered											
2.5	2.00		2		Borehole Terminated @ 2m						
											=
PENETRATION		CONSISTENCY			DENSITY	MOISTURE CONDITION	TEST NOTES				-
1 2 3 4	refusal	Vs S F St VSt H	Very So Soft Firm Stiff Very St Hard		Fb Friable VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	D Dry M Moist W Wet w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit w > PL Moist, near plastic limit w > PL Moist, wet of plastic limit w > LL Wet, near liquid limit w > LL Wet, wet of liquid limit	PP Pocket Penetrom U50 Undisturbed Sam U63 Undisturbed Sampl Bs Bulk Sample E Environmental ss HSV Hand Shear Van Cu Undrained Shear	nple 50mm nple 63mm e ample e test	n n	Groundwater Level UTP Unable to Penetrate  Sheet 1 of	1

	Gro	undSci	en	æ		ENGINE	ERING BOREHO	LE LOG	Borehole	No	BH1	2	
	<b>G.</b>	011000	011						JOB No :		G4589.1		
CLIENT: PROJECT:		erty Group Pty Ltd state Site Classification	n - Stage	1					TEST DA		09-Dec-21 JSP		
LOCATION: TEST LOCATION:	Clyde North	olan, Appendix A							CHECKEI VANE SH		CC N/A		
DRILL METHOD:	GT10 Drill F					ND			INCLINAT		90°		
HOLE DIAMETER: DRILLING	100mm	SAMPLING			NORTHING:	ND	FIELD M	IATERIAL DESCRIPTION	SURFACE	ERL:	ND		
			П	Т									
RESISTANCE WATER DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG		\$	SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADC	ITIONAL OBSERVATIONS	5
0.0	0.05			S CI-			, angular to subangular, pale brown, low pla city, brown mottled orange/grey, fine to coar		L	M w≈PL		Controlled Fill	Τ-
0.5 — — — — — — — — — — — — — — — — — — —	0.90				sand, with silt	edium to high plasticity, bro			VSt	W ≈ PL		i Bluff Sandstone Residual Soil	
Not Encountiered	2.00				Borehole Terr	minated @ 2m							
30							Lucana ana	- Leanneau					
PENETRATION		Vs	Very :	Soft	DENSITY Fb	Friable	MOISTURE CONDITION  D Dry	TEST NOTES  PP Pocket Penetron	neter Test		<u>▼</u> G	roundwater Level	
no resistence	refusal	S F St VSt	Soft Firm Stiff Very S Hard		VL L MD D VD	Very Loose Loose Medium Dense Dense Very Dense	M Moist W Wet w < PL Moist, dry of plastic limit w = PL Moist, near plastic limit w > PL Moist, wet of plastic limit w > LL Wet, near liquid limit w > LL Wet, wet of liquid limit	U50 Undisturbed San U63 Undisturbed Samp D Disturbed Sample BS Bulk Sample E Environmental st HSV Hand Shear Van Cu Undrained Shea	nple 50mn nple 63mn e ample e test	n n		nable to Penetrate  Sheet 1 of	1

				jro	undSci	en	ce	)	ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH13	
7	L											JOB No :		G4589.1	
CLIENT: PROJECT:					erty Group Pty Ltd state Site Classificatio	ın - Stag	e 1					TEST DA		13-Dec-21 JSP	
LOCATION: TEST LOCA		l:		de North er to site r	olan, Appendix A							CHECKE VANE SH		CC N/A	
DRILL METH	IOD:		A <sup>-</sup>	TS Drill Ri					EASTING: ND			INCLINAT	TION:	90°	
HOLE DIAM		RILLIN		00mm	SAMPLING				NORTHING: ND	FIELD MA	ATERIAL DESCRIPTION	SURFAC	E RL:	ND	
z	T	Т	Т		TEST		П								
C PENERTRATION C RESISTANCE	4	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	S	OIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY	MOISTURE	ADDITIONAL OBSERVATIONS	S
	Т	0	1.0	0.05						angular to subangular, pale brown, low plas city, brown mottled orange/grey, fine to coars		L St - VSt	M w≈PL	Controlled Fill	-
			1						sand, with silt, trace gravel						
	١														
	١	0	1.5		S4	U63									-
	١		_												] =
	١		1												
П		1	.0	0.95			***	SM	silty SAND, fine to coarse grained, angula	r to subangular, grey, low plasticity silt, trace	e clay	L - MD	М	Inferred Inferred Alluvial Deposits	+=
Ш	١		1	1.00			# %%	011				1/0			] ]
	١		-	1.20			9%2 9%2 9%2	СН	sandy CLAY, nigh plasticity, brown mottle trace gravel	d orange/grey/red, fine to coarse grained, ar	ngular to subangular sand, with siit,	VSt	w≈PL	Inferred Red Bluff Sandstone Residual Soil	
	١		=				*** *** ***								-
	١	1	.5				9% 9% 9%								
		Not Encountered	-				993 993								
	1	Not End	1				% % %								-
	┨	2	1.0	2.00			992		Borehole Terminated @ 2m						+
	١		-												
	١		=												=
	١		=												=
	١	2	.5												
	1		4				П								=
	1		7				П								-
	١		1				П								=
	١	L					П								-
	١	]3	1.0				П								=
	١		=				П								-
$  \   \   \  $			$\dashv$												=
$  \   \   \  $			-												-
															-
PENETRATI	ON	3	1.5		CONSISTENCY		ш		DENSITY	MOISTURE CONDITION	TEST NOTES			<u> </u>	
		2 .	,		Vs	Very	Soft		Fb Friable	D Dry	PP Pocket Penetrom			Groundwater Level	
>		2 3	_		S F	Soft Firm			VL Very Loose L Loose	M Moist W Wet	U50 Undisturbed San U63 Undisturbed San			UTP Unable to Penetrate	
		_			St	Stiff			MD Medium Dense	w < PL Moist, dry of plastic limit	D Disturbed Sample				
no re	esister	nce			VSt H	Very Hard			D Dense VD Very Dense	w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit	Bs Bulk Sample E Environmental sa	ample			
			refuse	al						w ≈ LL Wet, near liquid limit	HSV Hand Shear Van	e test			
HAN	I_LO	G_6.0	2019							w > LL Wet, wet of liquid limit	Cu Undrained Shear	orrength		Sheet 1 of	1

		irot	ındSci	en	ce		ENGINEE	RING BOREHOI	LE LOG	Borehole		BH14 G4589.1	
CLIENT: PROJECT: LOCATION: TEST LOCATION:	Five Clyc Refe	Farms Est de North er to site pla	ty Group Pty Ltd late Site Classification an, Appendix A	n - Stage	e 1					TEST DA' LOGGED CHECKEI	BY: D BY: EAR:	13-Dec-21 JSP CC N/A	
DRILL METHOD: HOLE DIAMETER:	10	S Drill Rig 0mm					EASTING: ND NORTHING: ND			SURFACE		90° ND	
RESISTANCE WATER WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	so	FIELD MA	ATERIAL DESCRIPTION	CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIO	NS
	0.0	0.90	9			SM CI-CH	FILL: sithy SAND, fine to medium grained, a FILL: sandy CLAY, medium to high plasticit sand, with still, trace gravel  sithy SAND, fine to coarse grained, angular sithy CLAY, high plasticity, grey mottled oras sandy CLAY, medium to high plasticity, bro sand, with still, trace gravel	y, brown mottled orange/grey, fine to coan by the coan of the coan	se grained, angular to subangular	L - MD	M   w≈P	Controlled Fill  Interred Interned Alluvial Deposits  Interned Red Bluff Sandstone Residt Soil	
Not	225	c c	ONSISTENCY VS S F	Very: Soft Firm	Soft		Borehole Terminated @ 2m  DENSITY  Fb Friable  VL Very Loose L Loose	MOISTURE CONDITION D Dry M Moist W Wet	TEST NOTES PP Pocket Penetron U50 Undisturbed San U63 Undisturbed San	nple 50mn	n	Groundwater Level UTP Unable to Penetrate	
no resistence	refusa	1	St VSt H	Stiff Very Hard	Stiff		MD Medium Dense D Dense VD Very Dense	w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit w ≈ LL Wet, near liquid limit w > LL Wet, wet of liquid limit	D Disturbed Sampl Bs Bulk Sample E Environmental se HSV Hand Shear Van Cu Undrained Shear	e ample e test		Sheet 1 c	.£ 1

<b>(</b> 1			Gro	undSci	en	ce		ENGINE	ERING BOREHOI	LE LOG	Borehole	No	BH15		
7											JOB No :		G4589.1		_
CLIENT: PROJECT:				erty Group Pty Ltd Estate Site Classificatio	ın - Stage	1					LOGGED	BY:	13-Dec-21 JSP		Ì
LOCATION: TEST LOCAT	ION:		Clyde North Refer to site	plan, Appendix A							VANE SH		CC N/A		
DRILL METH	OD:		ATS Drill R					EASTING: ND NORTHING: ND			INCLINAT		90° ND		П
HULE DIAME	DRILL	LING	10011===	SAMPLING		L,			FIELD M/	ATERIAL DESCRIPTION	SURFACE	KL:	NU		
C PENERTRATION C RESISTANCE	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL		SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL (	OBSERVATIONS	
	1 >	0.0			1		_	FILL: silty SAND, fine to coarse grained,	angular to subangular, grey, low plasticity silf	It, with gravel	L-MD	D	Controlled	ı Fill	=
		0.5	0.10				СН	silly SAND, fine to coarse grained, angul	iar to subangular, grey, low plasticity slit, trace	e day	VSt	M ™ ≈ PL	Interned Interned All,	_	
	Not Encountered	1.0	1.40					sandy CLAY, medium to high plasticity, b sand, with slit, trace gravel	orown mottled orangel/grey/red, fine to coarse	s grained, angular to subangular			John		
PENETRATIC	DDN	2.5		CONSISTENCY	Very	Soft		DENSITY	MOISTURE CONDITION  D Dry	TEST NOTES PP Pocket Penetron	neter Test		▼ Groundwa	ater Level	
	1 2	T.	fusal	Vs S F St VSt H	Very Soft Firm Stiff Very Hard			Fb Friable VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	D Dry M Moist W Wet w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit w = LL Wet, near liquid limit w > LL Wet, wet of liquid limit	PP Pocket Penetrom U50 Undisturbed San U63 Undisturbed San D Disturbed Sampl Bs Bulk Sample E Environmental ss HSV Hand Shear Van Cu Undrained Shear	nple 50mn nple 63mn e ample e test	n	UTP Unable to	Penetrate	
HAM,	LOG_6	i.0 2019												Sheet 1 of 1	

Ground Science						en	ICE	•	ENGINEERING BOREHOLE LOG			Borehole	No			
	<u> </u>											JOB No :		G4589.1		
CLIENT:					erty Group Pty Ltd Estate Site Classification	on - Stag	je 1					TEST DA		13-Dec-21 JSP		
LOCATI TEST LO		ON:		Clyde North Refer to site	plan, Appendix A							CHECKEI VANE SH		CC N/A		
DRILL N				ATS Drill R					EASTING: ND NORTHING: ND			INCLINAT		90° ND		
HOLED	IAME		LING	100mm	SAMPLING		Π		Northing. No	FIELD MA	ATERIAL DESCRIPTION	SURFACE	E KL:	NU		
NO					D TEST											
2 PENERTRATION	& RESISTANCE	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	s	OIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDI	ITIONAL OBSERVATIONS	3
		Τ	0.0	-			<b>**</b>	CL-CI	rootlets	ty, brown, fine to coarse grained, angular to		VSt	D	(	Controlled Fill	-
				0.10			<b>***</b>	SM	FILL: silty SAND, fine to coarse grained, a	ingular to subangular, grey, low plasticity silt	It, with clay	L - MD	М			$\mid \exists$
			-	1			<b>***</b>									-
				0.30			<b>***</b>		FILL: sandy CLAY, medium to high plastic subangular sand, with silt	city, brown mottled orange/grey/red, fine to c	coarse grained, angular to	St - VSt	w≈PL			=
		l		-		_	▩	1								
		l	0.5	_	S5	U63	***									
		l		_			88									
		l	-	1												
		l		_			▒									
		l	1.0	1			<b>**</b>									H
		l		1			<b>888</b>	1								
		l		-			**************************************									
		l	-	1.25			**************************************	СН	silty CLAY, high plasticity, grey mottled or	ange/brown, with sand		VSt		Inferred Red	Bluff Sandstone Residual Soil	17
		l		1											0011	
		l	1.5	-												$\vdash$
				-												
		ntered		1.65			%2 %2		sandy CLAY, high plasticity, brown mottle trace gravel	d orange/grey/red, fine to coarse grained, ar	ngular to subangular sand, with silt,					=
		Not Encountered		}			% %									$\exists$
		Not		}			%2 %2									$\mid \exists$
Н	٠	┨	2.0	2.00		$\vdash$	<b>1992</b>		Borehole Terminated @ 2m							+
				_			l									
		l	١_	_			l									
		l		_			l									
		l		1			l									
		l	2.5	1			l									=
		l		1			l									
		l	-	1			l									-
$\  \ $				1												
				-												
			3.0	7												
$\  \ $				]												
$\  \ $			-	-												7
$\  \ $				-												=
$\  \ $			_	-												$\mid \exists$
PENETR	ATIO	N_	3.5		CONSISTENCY		_	<u> </u>	DENSITY	MOISTURE CONDITION	TEST NOTES			<u> </u>		
		1 2	3 4		Vs S	Very Soft	Soft		Fb Friable VL Very Loose	D Dry M Moist	PP Pocket Penetrom U50 Undisturbed Sam				roundwater Level nable to Penetrate	
		F	L		F	Firm			L Loose	W Wet	U63 Undisturbed Sam	ple 63mn		J 01		
	no rec	istence		5	St VSt	Stiff Very	Stiff		MD Medium Dense D Dense	w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit	D Disturbed Sample  Bs Bulk Sample	9				
	res	var108			н	Hard			VD Very Dense	w > PL Moist, wet of plastic limit w ≈ LL Wet, near liquid limit	E Environmental sa HSV Hand Shear Vane					
				efusal						w ≈ LL Wet, near liquid limit w > LL Wet, wet of liquid limit	Cu Undrained Shear					
1	HAM_	LOG_	6.0 2019	)											Sheet 1 of	1

Gn Gn	oundScience	ENGINEERING BOREHOLE LO	OG Borehole No BH17  JOB No: G4589.1
PROJECT: Five Farm  LOCATION: Clyde Nor	Property Group Pily Ltd ns Estate Site Classification - Stage 1 rth site plan, Appendix A		TEST DATE: 13-Dec-21 LOGGED BY: JSP CHECKED BY: CC VANE SHEAR: N/A
DRILL METHOD: ATS Dril HOLE DIAMETER: 100mm	ill Rig	EASTING: ND NORTHING: ND	INCLINATION: 90° SURFACE RL: ND
DRILLING	SAMPLING	FIELD MATERIAL DESC	
DEPTH (RL)	SAMPLE OR FIELD TEST RECOVERED GRAPHIC LOG USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION	ADDITIONAL OBSERVATIONS ADDITIONAL OBSERVATIONS ADDITIONAL OBSERVATIONS ADDITIONAL OBSERVATIONS ADDITIONAL OBSERVATIONS ADDITIONAL OBSERVATIONS
1 2 3 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	CI-CI	H FILL: sandy CLAY, medium to high plasticity, brown mottled orange/grey/red, fine to coarse grained, subangular sand, with silt  silty CLAY, high plasticity, grey mottled orange/brown, with sand	
2.0 2.00 2.0 2.00 2.1 2.00 2.5 3.0 2.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3	CONSISTENCY  VS Very Soft S Soft F Firm St Ssiff VSt Very Stiff H Hard	VL         Very Loose         M         Moist         U50         I           L         Loose         W         Wet         U63         I           MD         Medium Dense         w < PL Moist, dry of plastic limit	s Pocket Penetrometer Test Undisturbed Sample 50mm Undisturbed Sample Builk Sample Environmental sample  Groundwater Level Unable to Penetrate Unable to Penetrate Unable to Penetrate

Sheet 1 of 1

HAM\_LOG\_6.0 2019

	Ground Science						)	ENGINE	ENGINEERING BOREHOLE LOG			No	BH18		
7											JOB No :		G4589.1		
CLIENT: PROJECT:				erty Group Pty Ltd state Site Classification	on - Stag	e 1					TEST DA		13-Dec-21 JSP		
LOCATION: TEST LOCATION	N:		Clyde North Refer to site p	plan, Appendix A							CHECKE VANE SH		CC N/A		
DRILL METHOI HOLE DIAMETI			ATS Drill Ri 100mm	ig				EASTING: ND NORTHING: ND			INCLINAT SURFACE		90° ND		
	DRILL	.ING		SAMPLING	Π	$\vdash$			FIELD MA	ATERIAL DESCRIPTION	_				
c PENERTRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL		OIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE		DITIONAL OBSERVATION	s
1 2 3 4	Not Encountered   Wax	0.0	1.20	We5			SM CH	subengular sand, with silt	ity, brown mottled orange/grey/red, fine to c			\(\frac{1}{2} \text{w} < PL \)	Inferred	Controlled Fill  Inferred Alluvial Deposits and Bluff Sandstone Residua Soll	
PENETRATION	1 2	3.0		CONSISTENCY VS S	Very	Soft		DENSITY Fb Friable VL Very Loose	MOISTURE CONDITION  D Dry  M Moist	TEST NOTES PP Pocket Penetro U50 Undisturbed Sc				Groundwater Level Inable to Penetrate	
no resis	5	_	fusal	F St VSt H	Firm Stiff Very Hard	Stiff		L Loose MD Medium Dense D Dense VD Very Dense	w Wet  W Wet  W < PL Moist, dry of plastic limit  w ≈ PL Moist, near plastic limit  w > PL Moist, wet of plastic limit  w ≈ LL Wet, near liquid limit  w > LL Wet, wet of liquid limit	U63 Undisturbed Sa D Disturbed Sam Bs Bulk Sample E Environmental HSV Hand Shear Va Cu Undrained She	ample 63mr ple sample ane test	n	J., (	O O O O O O O O O O O O O O O O O O O	
HAM_L	OG_6	.0 2019												Sheet 1 of	1

			Gro	undSci	en	ce	)	ENGINE	ERING BOREHO	LE LOG	Borehole		BH19	
1											JOB No :		G4589.1	
CLIENT: PROJECT:				erty Group Pty Ltd Estate Site Classificatio	ın - Stag	e 1					TEST DA		13-Dec-21 JSP	
LOCATION: TEST LOCA				plan, Appendix A							VANE SH	EAR:	CC N/A	
DRILL METH HOLE DIAM	ETER:		ATS Drill R 100mm	lig				EASTING: ND NORTHING: ND			SURFACE		90° ND	
	DRI	LLING	Π	SAMPLING	Т				FIELD M.	ATERIAL DESCRIPTION				
C PENERTRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	\$	SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIO	INS
	Ī	0.0	0.05				CI-CH	FILL: sandy CLAY, medium to high plasti subangular sand, with silt	city, brown mottled orange/grey/red, fine to o	coarse grained, angular to		w < PL w≈ PL	Controlled Fill	Τ:
						₩								
		-	0.30			‱ %⁄2	СН	sandy CLAY, high plasticity, brown mottle trace gravel	ed orange/grey/red, fine to coarse grained, a	ingular to subangular sand, with silt,	VSt	1	Inferred Red Bluff Sandstone Reside	ual _
						%% %% %%		nace graver					Join	=
		0.5	]			% %								
			-			9922 9923 9923 9923								-
		-				900 900 900								
			-			9923 9923 9923 9923								=
		1.0				% %								
						9923 9923 9923								=
		-	]			// ///								$\exists$
						*** ***								
		1.5	=			% %								
	ered					<b>***</b>								
	Not Encountered					// /// ///								
	Not					%% %%								
П	1	2.0	2.00			220		Borehole Terminated @ 2m						†
		-	-											
			]											
		2.5												
		-												
			]											
		3.0	-											-
		-												
			-											+
DEVISE		3.5	1	CONCIONATION				DENOITY	MOINTING COMPINE	TEST NOTES				
PENETRATI				Vs	Very	Soft		DENSITY  Fb Friable	MOISTURE CONDITION  D Dry	PP Pocket Penetrom			▼ Groundwater Level  ■ The state of the	
	1 2	3 4		S F	Soft Firm			VL Very Loose L Loose	M Moist W Wet	U50 Undisturbed Sam U63 Undisturbed Sam	ple 63mr		UTP Unable to Penetrate	
no re	esistence			St VSt	Stiff Very			MD Medium Dense D Dense	w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit	D Disturbed Sample  Bs Bulk Sample				
		r	efusal	Н	Hard			VD Very Dense	w > PL Moist, wet of plastic limit w ≈ LL Wet, near liquid limit	E Environmental sa HSV Hand Shear Vane	etest			
HAN	_LOG_	_6.0 2019	ı	I					w > LL Wet, wet of liquid limit	Cu Undrained Shear	Strength		Sheet 1 c	of 1

	Ground Science							ENGINE	ENGINEERING BOREHOLE LOG			No	BH20	
7	_										JOB No :		G4589.1	
CLIENT: PROJECT:				perty Group Pty Ltd Estate Site Classification	on - Stag	e 1					TEST DAT		13-Dec-21 JSP	
LOCATION: TEST LOCAT	ION-		Clyde North	plan, Appendix A							CHECKED		CC N/A	
DRILL METH	OD:		ATS Drill R					EASTING: ND NORTHING: ND			INCLINAT	ION:	90° ND	
HOLE DIAME		ILLING	100mm	SAMPLING				TOWNS TO	FIELD MA	ATERIAL DESCRIPTION	SURFACE	: KL:	ND	
NOI H				LD TEST										
c PENERTRATION RESISTANCE	4 A	OCOTON DECEMBER	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	s	SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATI	IONS
	Τ	0.0	1						n, fine to coarse grained, angular to subang		L	D-M	Controlled Fill	
			0.10			<b>**</b>	CL	FILL: sandy CLAY, low plasticity, brown, f	fine to coarse grained, angular to subangula	r sand, with silt, trace gravel	VSt	w≈PL		=
			0.25	1		<b>**</b>	CI-CH	FILL: sandy CLAY, medium to high plastic sand, with silt, trace gravel	city, brown mottled orange/grey, fine to coars	se grained, angular to subangular	St - VSt			
			1											
		0.5	1			IXXXX								$\mathbb{H}$
			0.55			9% 9% 9%	СН	sandy CLAY, high plasticity, brown mottle	ed orange/grey/red, fine to coarse grained, a	ngular to subangular sand, with silt	VSt		Inferred Red Bluff Sandstone Resi Soil	dual
			_			**** ****								_
			1			27.02 57.02 57.02 57.03								=
			1			922 922								
		1.0	-			%% %%								
			1			900 900 900								
			-			9962 9962 6978								
			1			*** ***								
		1.5	1.50	-		%% %%		increased sand content with depth						$\mathbb{H}$
			]			922 922								$\exists$
	ntoro		-			*** ***								
	Not Encountered	3	1			9742 972 667								
			1			%X %X								
	1	2.0	2.00			Γ		Borehole Terminated @ 2m						
			1											
			-											
			1											
		2.5	-											-
			]											13
			_											
			1											
			1											
		3.0	-											]
			]											]
			_											
$  \   \   \  $			1											
		3.5	-											_  =
PENETRATIO	N			CONSISTENCY	Very	Soft		DENSITY Fb Friable	MOISTURE CONDITION D Dry	TEST NOTES  PP Pocket Penetrom	eter Teet		▼ Groundwater Level	
	1 2	3	4	S	Soft			VL Very Loose	M Moist	U50 Undisturbed Sam	ple 50mn		UTP Unable to Penetrate	
		4		F St	Firm Stiff			L Loose  MD Medium Dense	W Wet w < PL Moist, dry of plastic limit	U63 Undisturbed Sam D Disturbed Sample		1		
no re	sistenc	e		VSt H	Very			D Dense VD Very Dense	w ≈ PL Moist, near plastic limit w > PL Moist, wet of plastic limit	Bs Bulk Sample E Environmental sa	mple			
			refusal	"				13.750100	w ≈ LL Wet, near liquid limit	HSV Hand Shear Vane	etest			
HAM	LOG	_6.0 20	119	L				<u> </u>	w > LL Wet, wet of liquid limit	Cu Undrained Shear	otrength		Sheet 1	of 1

	Gro	undSci	end	e	ENGINEERING BOREHOLE LOG	Borehole		BH21 G4589.1
CLIENT: PROJECT: LOCATION: TEST LOCATION:	Five Farms E Clyde North	erty Group Pty Ltd Estate Site Classificatio	n - Stage 1			TEST DA' LOGGED CHECKEI	BY: D BY:	13-Dec-21 JSP CC N/A
DRILL METHOD:	ATS Drill R				EASTING: ND NORTHING: ND	INCLINAT	ΓΙΟΝ:	90°
HOLE DIAMETER: DRILLIN	100mm	SAMPLING			FIELD MATERIAL DESCRIPTION	SURFACE	ERL:	ND
2 C PENERTRATION RESISTANCE WATER	DEPTH (metres) DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION	CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS
	1.0		8	SM	FILL: silty SAND, fine to coarse grained, angular to subangular, pale brown	L - MD	D-M	Controlled Fill
<u>-</u>	0.20		8	CI-CH	FILL: sandy CLAY, medium to high plasticity, brown mottled orange/grey, fine to coarse grained, angular to subangular sand, with sill, trace gravel	St - VSt	w≈PL	-
	0.75			CH	sifty CLAY, high plasticity, brown mottled orange/grey/red, with sand	VSt		Inferred Red Bluff Sandstone Residual Soil
	1.30				sandy CLAY, high plasticity, brown mottled orangelgrey/red, fine to coarse grained, angular to subangular sand, with silt	_		-
Not Encountered	-							- - - - - - - - -
	2.00				Borehole Terminated @ 2m			
	-							
3	.0 -							
	1.5		Ш					-
PENETRATION  1 2 3 no resistence  HAM_LOG_6.0	refusal	Vs S F St VSt H	Very So Soft Firm Stiff Very St Hard		DENSITY         MOISTURE CONDITION         TEST NOTES           Fb         Friable         D         Dry         PP         Pocket Penetror           VL         Very Loose         M         Moist         U50         Undisturbed Sair           L         Loose         W         Wet         U63         Undisturbed Sair           MD         Medium Dense         w < PL Moist, dry of plastic limit	nple 50mn nple 63mn le ample se test	n n	Groundwater Level UTP Unable to Penetrate  Sheet 1 of 1

1			Gro	undSci	ien	ce	)	ENGINEERING BOREHOLE LOG	Borehole		BH22	
CLIENT: PROJECT: LOCATION: TEST LOCA		Fi Ci Ri	ve Farms E lyde North efer to site p	erty Group Pty Ltd Estate Site Classification	on - Stag	e 1		FIGURE. In	TEST DA' LOGGED CHECKEI	BY: D BY: EAR:	13-Dec-21 JSP CC N/A	
DRILL METH HOLE DIAME	TER:		ATS Drill Ri 100mm					EASTING: ND NORTHING: ND	SURFACE		90° ND	
	DRILI	LING		SAMPLING	Τ	Н		FIELD MATERIAL DESCRIPTION	1	Π	Ι	
DENERTRATION S RESISTANCE	WATER	DEPTH (metres)	DEPTH (RL)	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION	CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS	
		0.0		S8	U63		CI-CH	FILL: sandy CLAY, medium to high plasticity, brown mottled orange/grey, fine to coarse grained, angular to subangular sand, with sitt, trace gravel	St	w≈PL	Controlled Fill	
		†	0.60		$\dagger$		SM	silty SAND, fine to coarse grained, angular to subangular, grey, low plasticity silt, trace clay	L - MD	М	Inferred Inferred Alluvial Deposits	=
	Not Encountered	1.0	1.30					silly CLAY, high plasticity, brown mottled orangelgrey/red, with sand	VSt	w≈PL	Inferred Red Bluff Sandstone Residual Soil	
		2.5	2.00			***		Borehole Terminated @ 2m				
	1 2	refu		VS S F St VSt H	Very Soft Firm Stiff Very Hard	Stiff		DENSITY         MOISTURE CONDITION         TEST NOTES           Fb         Friable         D         Dry         PP         Pocket Penetror           VL         Very Loose         M         Moist         U50         Undisturbed Sar           L         Loose         W         Wet         U53         Undisturbed Sar           MD         Medium Dense         w < PL Moist, dry of plastic limit	nple 50mm nple 63mm e ample e test	n n	Groundwater Level UTP Unable to Penetrate  Sheet 1 of 1	

	<b>GroundScien</b>	nce EN	ENGINEERING BOREHOLE LOG			No	BH23
					JOB No :		G4589.1
	Frasers Property Group Pty Ltd Five Farms Estate Site Classification - Stag	ge 1			TEST DAT		13-Dec-21 JSP
	Clyde North Refer to site plan, Appendix A				CHECKED VANE SHE		CC N/A
DRILL METHOD: HOLE DIAMETER:	ATS Drill Rig 100mm	EASTING: ND NORTHING: ND			INCLINATI		90° ND
DRILLING	SAMPLING		FIELD MA	TERIAL DESCRIPTION			
C PENERTRATION C RESISTANCE DEPTH (metres)	DEPTH (RL) SAMPLE OR FIELD TEST RECOVERED	GRAPHIC LOG USC SYMBOL	SOIL / ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	MOISTURE	ADDITIONAL OBSERVATIONS
1 2 3 4 4 W	0.65	CI-CH FilL: sandy CLAY, medium sand, with sit, trace gravel sand, with sit trace gravel sand. Sit sand sand sand sand sand sand sand sand	n to high plasticity, brown mottled orange/grey, fine to coars rained, angular to subangular, grey, low plasticity silt, trace brown mottled orange/grey/red, with sand	ı day	St L - MD	SOW W≈PL	Inferred Inferred Allovial Deposits
PENETRATION  1 2 3 4  no resistence  HAM_LOG_6.0 2019	CONSISTENCY  VS Very S Soft F Firm St Suff VSt Very H Hard	VL         Very Loo           L         Loose           MD         Medium           VStiff         D         Dense	D Dry se M Moist W Wet  Dense w < PL Moist, dry of plastic limit w ≈ PL Moist, near plastic limit	PP Pocket Penetrom U50 Undisturbed Sam U63 Undisturbed Sample Bs Bulk Sample E Environmental sa HSV Hand Shear Vane Cu Undrained Shear	ple 50mm ple 63mm e mple e test		Groundwater Level UTP Unable to Penetrate  Sheet 1 of 1

# APPENDIX C

Laboratory Test Results

## **Material Test Report**

Report Number: G4589.1-1

Issue Number:

Date Issued: 13/01/2022

Client: Frasers Property Australia c/- Beveridge Williams

1 Glenferrie Road, Malvern VIC 3144

Contact: Craig Muse Project Number: G4589.1

Project Name: Five Farms Residential Development - Stage 1

Clyde North Project Location: Work Request: 6393 Sample Number: 4589.1-S4 Date Sampled: 15/12/2021

Dates Tested: 15/12/2021 - 11/01/2022

Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling

Sample Location: BH13 (0.5 - 0.75m)

Material: CLAY, low plasticity, brown

Atterberg Limit (AS1289 3.1.2 & 3.2	2.1 & 3.3.1)	Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	34		
Plastic Limit (%)	12		
Plasticity Index (%)	22		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	8.0		
Cracking Crumbling Curling	Cracking & C	Curling	



Ground Science Pty Ltd Ground Science Laboratory 13 Brock Street Thomastown Victoria 3074 Phone: (03) 9464 4617

Email: pelin@groundscience.com.au Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Pelin Erden

gs-pelin

NATA Accredited Laboratory Number: 15055

## **Material Test Report**

Report Number: G4589.1-1

Issue Number:

Date Issued: 13/01/2022

Client: Frasers Property Australia c/- Beveridge Williams

1 Glenferrie Road, Malvern VIC 3144

Contact: Craig Muse Project Number: G4589.1

Project Name: Five Farms Residential Development - Stage 1

 Project Location:
 Clyde North

 Work Request:
 6393

 Sample Number:
 4589.1-S7

 Date Sampled:
 15/12/2021

**Dates Tested:** 15/12/2021 - 11/01/2022

Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling

Sample Location: BH20 (1 - 1.5m)

Material: CLAY, medium plasticity, brown

Atterberg Limit (AS1289 3.1.2 & 3.2	2.1 & 3.3.1)	Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	38		
Plastic Limit (%)	18		
Plasticity Index (%)	20		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	9.5		
Cracking Crumbling Curling	Cracking		



Ground Science Pty Ltd Ground Science Laboratory 13 Brock Street Thomastown Victoria 3074 Phone: (03) 9464 4617

Email: pelin@groundscience.com.au Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Pelin Erden

gs-pelin

NATA Accredited Laboratory Number: 15055

## **Material Test Report**

Report Number: G4589.1-1

Issue Number:

**Date Issued:** 13/01/2022

Client: Frasers Property Australia c/- Beveridge Williams

1 Glenferrie Road, Malvern VIC 3144

Contact: Craig Muse Project Number: G4589.1

Project Name: Five Farms Residential Development - Stage 1

Project Location: Clyde North Work Request: 6393

Dates Tested: 15/12/2021 - 17/12/2021



Ground Science Pty Ltd Ground Science Laboratory 13 Brock Street Thomastown Victoria 3074 Phone: (03) 9464 4617 Email: pelin@groundscience.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Pelin Erden gs-pelin

NATA Accredited Laboratory Number: 15055

Shrink Swell Index AS 1289 7.1.1 & 2.1.					
Sample Number	4589.1-S1	4589.1-S2	4589.1-S3	4589.1-S5	
Date Sampled	15/12/2021	15/12/2021	15/12/2021	15/12/2021	
Date Tested	16/12/2021	16/12/2021	16/12/2021	17/12/2021	
Material Source	**	**	**	**	
Sample Location	BH2 (0.5 - 1m)	BH6 (1 - 1.4m)	BH9 (1 - 1.3m)	BH16 (0.5 - 0.9m)	
Inert Material Estimate (%)	2	0	2	3	
Pocket Penetrometer before (kPa)	110	150	150	175	
Pocket Penetrometer after (kPa)	110	160	140	220	
Shrinkage Moisture Content (%)	16.8	31.6	26.7	16.1	
Shrinkage (%)	2.0	6.8	4.9	5.8	
Swell Moisture Content Before (%)	17.5	32.5	17.0	8.6	
Swell Moisture Content After (%)	19.8	33.2	25.4	15.9	
Swell (%)	-0.1	1.0	2.8	-0.2	
Shrink Swell Index Iss (%)	1.1	4.0	3.5	3.2	
Visual Description	sandy CLAY, medium plasticity, brown, trace gravel	silty CLAY, medium to high plasticity, brown, mottled grey, orange	sandy CLAY, medium to high plasticity, brown, mottled grey, orange	sandy CLAY, low to medium plasticity, brown, trace gravel	
Cracking	MC	SC	SC	SC	
Crumbling	No	No	No	No	
Remarks	**	**	**	**	

Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.

Cracking Terminology: UC Uncracked, SC Slightly Cracked, MC Moderately Cracked, HC Highly Cracked, FR Fragmented.

NATA Accreditation does not cover the performance of pocket penetrometer readings.