Lot 2, 1 Stephen Court Maiden Gully

Geotechnical Investigation for Halifax Properties Pty Ltd

Report 23C 0330
May 2023

GTS
GEOTECHNICAL TESTING SERVICES

www.gts.com.au

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Maiden Gully

Geotechnical Investigation
for
Halifax Properties Pty Ltd

Revision

Revision	Authorised	Date
23C 0330	SEH	5/05/2023

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Recipient	Format	Date
GTS	On file	5/05/2023
Halifax Properties Pty Ltd Attn: Chris Smith	Email PDF chris@lansellhomes.com.au	5/05/2023

1 INTRODUCTION

Halifax Properties Pty Ltd commissioned Geotechnical Testing Services (GTS) to conduct a geotechnical investigation for the proposed development at Lot 2, 1 Stephen Court, Maiden Gully.

The investigation has been conducted for the purpose of assessing general subsurface conditions at the site and consequently assigning a Site Classification in accordance with *AS2870 – 2011 Residential Slabs and Footings*.

2 INVESTIGATION

The investigation was conducted on the 26th of April 2023 using a trailer mounted drill rig to drill 3 boreholes to depths of 1.5 metres within the designated area. The soil profiles and borehole locations are presented at the end of this report.

At the time of this investigation, the type of development proposed is understood by GTS to be a new residential building. If the actual construction varies from this, then changes may be necessary to this classification report.

3 SITE CONDITION

The site has a slight to medium fall to the north and is currently vacant. At the time of the investigation, the surface of the site was dry with sparse coverage of natural grass. There are multiple medium sized trees along the northern and southern boundaries of the site. There was no visual evidence of surface cracking or surface rock. No groundwater seepage was encountered over the investigated depths.

Full details of the soil conditions are presented in the borehole logs.

4 SITE CLASSIFICATION

After allowing due consideration to the site geology, soil conditions with shallow rock, drainage, vegetation including trees and known details of the proposed development, the site has been classified as **Class M.**

Foundations designed in accordance with this classification are to be subject to the overriding conditions of Section 5.

5 DISCUSSION

Particular attention should be paid to the design of footings as required by *AS2870 – 2011.*

In addition to the normal founding requirements arising from the above classification, particular conditions at the site dictate that the founding medium and minimum depth below existing surface levels for all footings should be as follows:

- Gravelly Silty CLAY, low to medium plasticity, brown, fine to medium gravel, with fine to coarse sand, stiff to very stiff.
  At depth below 0.1 metres in the region of BHs 1 to 3.

  Or

- SILTSTONE, distinctly weathered, pale brown, low strength rock.
  At depth below 0.4 metres in the region of BH3 and at depths below 0.5 metres in the region of BHs 1 and 2.

An allowable bearing pressure of 100kPa is available for edge beams, strips and stump footings founded in the natural gravelly silty clays, and an allowable bearing pressure of 300kPa is available for edge beams, strips and stump footings founded in the weathered siltstone rock. All foundations should extend a minimum of 100mm into the above foundation material. The base of all footing excavations must be free of tree roots.

If founding on the siltstone rock, bored or screw piers may be considered. Blinding concrete (minimum strength 15MPa) may be used to bring the excavations up to design levels.

6 IMPORTANT NOTES ABOUT THIS REPORT

- The site classification presented in Section 4 assumes that the current natural drainage and infiltration conditions at the site will not be markedly affected by the proposed site development work. Care should therefore be taken to ensure that surface water is not permitted to collect adjacent to the structure and that significant changes to seasonal soil moisture equilibria do not develop as a result of service trench construction or tree root action.

- Attention is drawn to Appendix B of AS2870 and CSIRO document *BTF 18 – Foundation Maintenance and Footing Performance: A Homeowner's Guide* as a guide to maintenance requirement for the proposed structure.

- This is not a comprehensive investigation nor is it economic or practical to determine every subsurface feature on the site. Although this investigation indicates that soil conditions are relatively uniform across the site, it is recommended that the base of all footing excavations be inspected to ensure that the founding medium meets the requirements referenced herein with respect to type and strength of founding materials. If further variations in

descriptions in soil types, colour or depths are discovered during construction, this office should be notified immediately so that potential influence on the footings may be assessed.

- The soil colours provided in the borehole logs attached may vary with soil moisture content and individual interpretation, therefore colour alone should not be used to identify these soils.

- Strength characteristics of soils often exhibit a large variation between wet and dry conditions. Soil characteristics of a soil profile are given on the soil conditions at the time of the investigation.

- In the event of significant earthworks being undertaken on the site after this investigation, this report may require an amendment if appropriate.

- If FILL is found during this investigation, it is an indication of what was found during the investigation and it may vary over the site. It may be in the best interest of the buyer/seller to undertake a more detailed investigation, in this instance.

Should you have any further queries concerning these results, please do not hesitate to contact GTS on 03 5441 4881.

Prepared by

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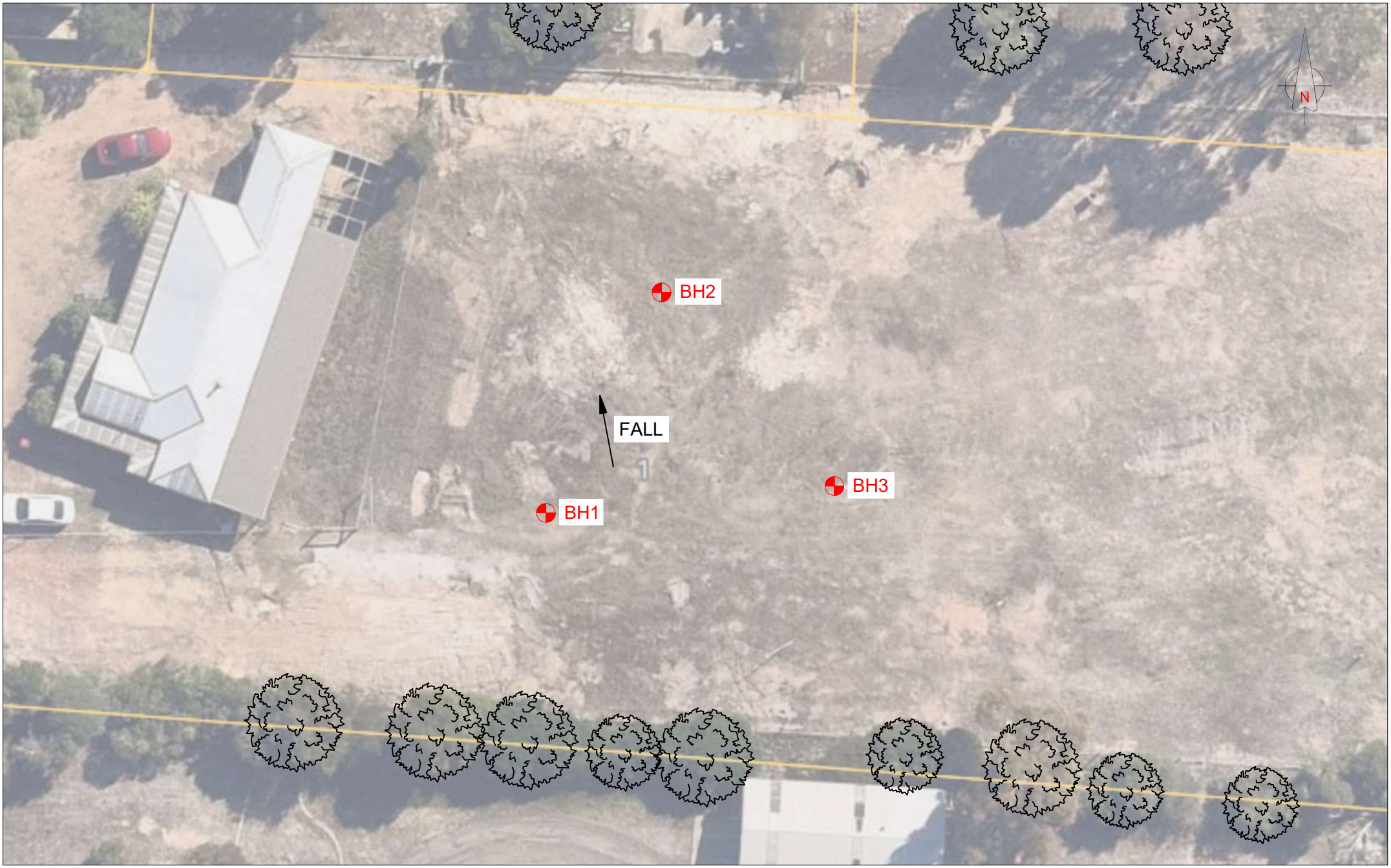
Principal Geotechnical Engineer



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GEOTECHNICAL TESTING SERVICES

GEOTECHNICAL INVESTIGATION

APPROXIMATE LOCATIONS
NOT TO SCALE

CLIENT: HALIFAX PROPERTIES
PROJECT: LOT 2 1 STEPHEN COURT, MAIDEN GULLY

GTS REF: 23C 0330
CLIENT REF:

DRAWN BY: CP
DATE: 28 APRIL 2023

GTS - Bendigo

13 Alstonvale Court East Bendigo VIC 3550

Phone: 03 5441 4881

Engineering Log - Borehole

Borehole No: 1

UTM	:	**Driller Rig**	: Honda SCR - Trailer Mount	**Job Number**	: 23C 0330
Easting	: 0.0	**Driller Supplier**	: Geotechnical Testing Services	**Client**	: Halifax Properties Pty Ltd
Northing	: 0.0	**Logged By**	: PB	**Project**	: Proposed new build
RL	: N/A	**Reviewed By**	: CP	**Location**	: lot 2/1 Stephen Court, Maiden Gully VIC
Total Depth	: 1.5m	**Date**	: 26/04/2023		

Drilling Method	Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Weathering	Moisture	Consistency	Testing
100mm SFA		0.1	TOPSOIL		CL-CI	Silty CLAY (CL-CI) : firm, low to medium plasticity, brown, trace fine sized gravel, trace fine to coarse grained sand, dry.		D	F	
		0.5	Natural		CL-CI	Silty to gravelly CLAY (CL-CI) : stiff to very stiff, low to medium plasticity, brown, fine to medium sized gravel, with fine to coarse grained sand, dry.		D	St-VSt	
		1	Rock		SLT	SILTSTONE: distinctly weathered, low strength, pale brown, fine grained, dry.	DW		LS	
		1.5				**1 Terminated at 1.5m**				
		2								

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Engineering Log - Borehole

Borehole No: 2

UTM	: -	**Driller Rig**	: Honda SCR - Trailer Mount	**Job Number**	: 23C 0330
Easting	: 0	**Driller Supplier**	: Geotechnical Testing Services	**Client**	: Halifax Properties Pty Ltd
Northing	: 0	**Logged By**	: PB	**Project**	: Proposed new build
RL	: N/A	**Reviewed By**	: CP	**Location**	: lot 2/1 Stephen Court, Maiden Gully VIC
Total Depth	: 1.5m	**Date**	: 26/04/2023		

Drilling Method	Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Weathering	Moisture	Consistency	Testing
100mm SFA		0.1	TOPSOIL		CL-CI	Silty CLAY (CL-CI) : firm, low to medium plasticity, brown, trace fine sized gravel, trace fine to coarse grained sand, dry.		D	F	
		0.5	Natural		CL-CI	Silty to gravelly CLAY (CL-CI) : stiff to very stiff, low to medium plasticity, brown, fine to medium sized gravel, with fine to coarse grained sand, dry.		D	St-VSt	
		1	Rock		SLT	SILTSTONE: distinctly weathered, low strength, pale brown, fine grained, dry.	DW		LS	
		1.5				**2 Terminated at 1.5m**				
		2								

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Engineering Log - Borehole

Borehole No: 3

UTM	: -	Driller Rig	: Honda SCR - Trailer Mount	Job Number	: 23C 0330
Easting	: 0	Driller Supplier	: Geotechnical Testing Services	Client	: Halifax Properties Pty Ltd
Northing	: 0	Logged By	: PB	Project	: Proposed new build
RL	: N/A	Reviewed By	: CP	Location	: lot 2/1 Stephen Court, Maiden Gully VIC
Total Depth	: 1.5m	Date	: 26/04/2023		

Drilling Method	Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Weathering	Moisture	Consistency	Testing
100mm SFA		0.1	TOPSOIL		CL-CI	Silty CLAY (CL-CI) : firm, low to medium plasticity, brown, trace fine sized gravel, trace fine to coarse grained sand, dry.		D	F	
		0.4	Natural		CL-CI	Silty to gravelly CLAY (CL-CI) : stiff to very stiff, low to medium plasticity, brown, fine to medium sized gravel, with fine to coarse grained sand, dry.		D	St-VSt	
		0.5	Rock		SLT	SILTSTONE: distinctly weathered, low strength, brown, fine grained, dry.	DW		LS	
		1								
		1.5				**3 Terminated at 1.5m**				
		2								

DESCRIPTIVE TERMS
BOREHOLE/EXCAVATION LOG

Classification Symbol & Soil Name

Classification of material and its description is based on the Unified Classification System as referenced in AS1726 – 1993 Geotechnical Site Investigations, Appendix A. A summary of the more common terms is included within.

Particle Size Descriptive Terms

Name	Subdivision	Size
Boulders		>200mm
Cobbles		63 – 200mm
Gravel	Coarse	20 – 63mm
	Medium	6 – 20mm
	Fine	2.36 – 6mm
Sand	Coarse	0.6 – 2.36mm
	Medium	200 – 600 micron
	Fine	75 – 200 micron
Silt		2 – 75 micron
Clay		< 2 micron

Consistency of Cohesive Soils

Term	Undrained shear strength, s_u (kPa)	Field Guide
Very Soft (VS)	<12	A finger can be pushed well into the soil with little effort
Soft (S)	12 – 25	A finger can be pushed into the soil to about 25mm depth
Firm (F)	25 – 50	The soil can be indented about 5mm with the thumb
Stiff (St)	50 – 100	The surface of the soil can be indented with the thumb
Very Stiff (VSt)	100 – 200	The surface of the soil can be indented by thumb nail
Hard (H)	>200	The surface of the soil can be marked only with the thumbnail
Friable (F)	-	Crumbles or powders when scraped by thumbnail

Density of Granular Soils

Term	Density Index (%)
Very Loose (VL)	< 15
Loose (L)	15 – 35
Medium Dense (MD)	35 – 65
Dense (D)	65 – 85
Very Dense (VD)	> 85

Minor Components

Term	Field Guide	Proportion of Minor Component In:
Trace of	Presence just detectable by feel or eye	Coarse grained soils: <5% Fine grained soils: <15%
Some	Presence easily detectable by feel or eye	Coarse grained soils: 5-12% Fine grained soils: 15-30%

Moisture Condition

Dry (D) — Looks & feels dry. Cohesive soils are usually hard, powdery or friable. Granular soils run freely through the hand.

Moist (M) — Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere. Free water does not form.

Wet (W) — As for moist, but with free water forming on hands when remoulded.

Method

S Auger Screwing
D Auger Drilling
R Roller/tricone
W Washboring
N Natural Exposure
E Existing Excavation
B Blade/bucket
C Coring
H Hammer Drill

Support

***** Nil
C Casing
M Mud/polymer

Water

* Not observed
Observed water level (date shown)
Observed water inflow
Observed water outflow
R Refer to report for details

Notes, Samples, Tests

U63 Undisturbed sample, 63mm diameter
D Disturbed sample
N* Standard Penetration Test, (*) Sample Figure = results

Structures, Additional Observations

PP Pocket Penetrometer test (kPa)
DCP Dynamic Cone Penetrometer test (blows/100mm)

Surface

_____ Known boundary
- - - - - - - - - - Probably boundary
-?-?-?-?-?-?- Possible boundary