Lot 3102 Terrapee Street Strathfieldsaye

Geotechnical Investigation for Villawood Properties

Report 24C 0686
August 2024

GTS
GEOTECHNICAL TESTING SERVICES

www.gts.com.au

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Geotechnical Investigation
for
Villawood Properties

Revision

Revision	Authorised	Date
24C 0686	SEH	20/08/2024

Distribution (this version only)

Recipient	Format	Date
GTS	On file	20/08/2024
Villawood Properties Attn: Andrea Smith	Email PDF andrea@villawoodproperties.com	20/08/2024

1 INTRODUCTION

Villawood Properties commissioned Geotechnical Testing Services (GTS) to conduct a geotechnical investigation for the proposed development at Lot 3102 Terrapee Street, Strathfieldsaye.

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 16th of August 2024 using a vehicle mounted drill rig to drill 3 boreholes to depths of 1.0 to 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 medium fall to the front right and is currently vacant. At the time of the investigation, the surface of the site was moist and lacked grass cover. There are no trees across 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, drainage, vegetation including trees and known details of the proposed development, the site has been classified as **Class S.**

Class S sites have an expected characteristic surface movement (y_s) of 0 to 20mm.

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:

- Silty CLAY, medium plasticity, brown, stiff.
  At depth below 0.1 metres in the region of BH2 and BH3 and at depths below 0.4 metres in the region of BH1.

  Or

- SILTSTONE/SANDSTONE, distinctly weathered, pale brown, orange/brown, low strength rock.
  At depth below 0.5 metres in the region of BH3 and at depths below 0.6 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 silty clays, and an allowable bearing pressure of 300kPa is available for edge beams, strips and stump footings founded in the weathered siltstone/sandstone rock. All foundations should extend a minimum of 100mm into the above foundation material.

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

The base of all footing excavations must be free of tree roots.

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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Reviewed by

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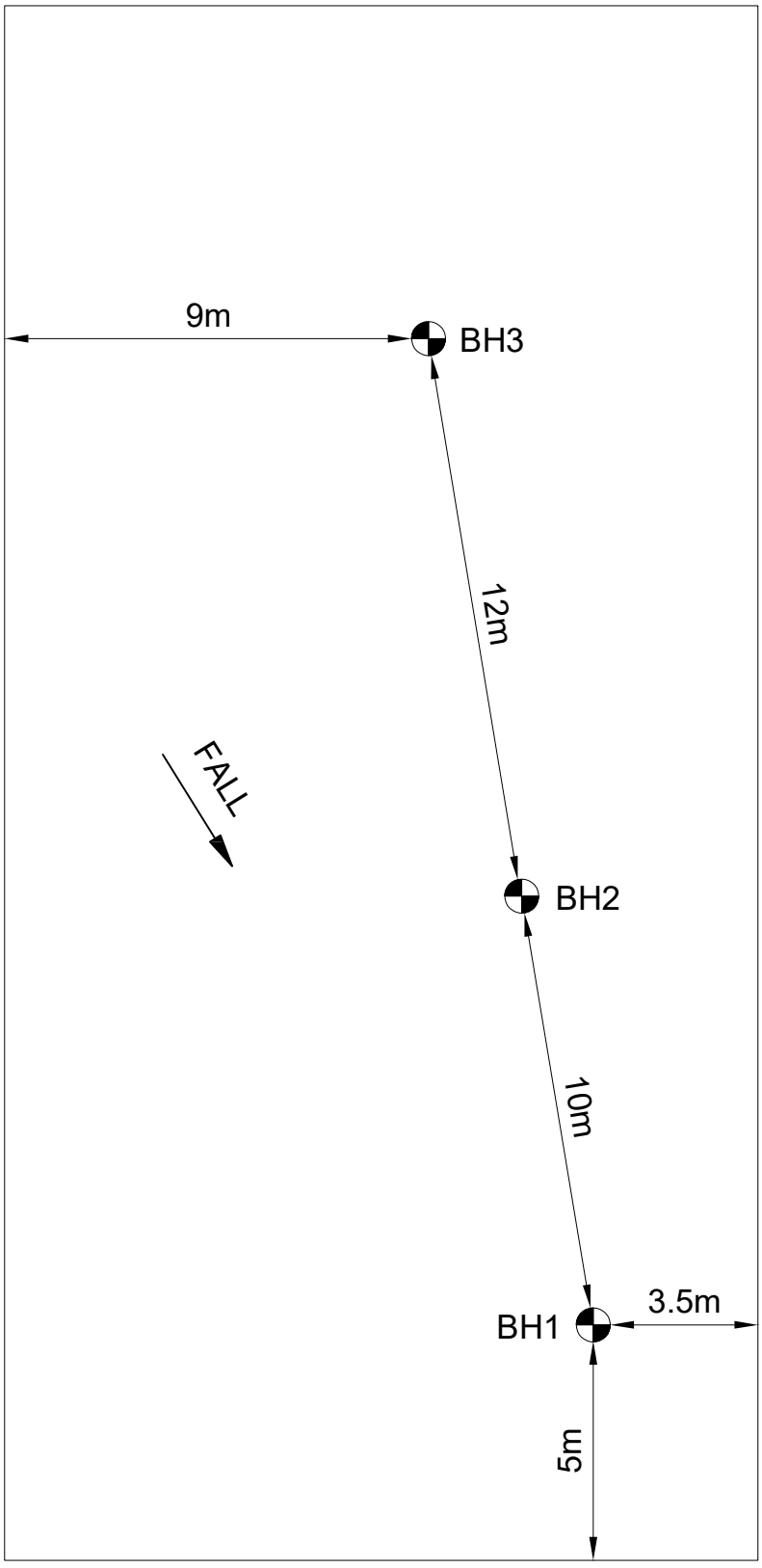
Principal Geotechnical Engineer



GTS GEOTECHNICAL TESTING SERVICES

GEOTECHNICAL INVESTIGATION

APPROXIMATE LOCATIONS
NOT TO SCALE

CLIENT: VILLAWOOD PROPERTIES
PROJECT: LOT 3102 TERRAPEE STREET, STRATHFIELDSAYE

GTS REF: 24C 0686
CLIENT REF:

DRAWN BY: CP
DATE: 20 AUGUST 2024

GTS - Bendigo
13 Alstonvale Court East Bendigo VIC 3550
Phone: 03 5441 4881

Geotechnical Log - Borehole

1

UTM	:	Drill Rig	: Gemco HS7 - Landcruiser Mount	Job Number	: 24C 0686
Easting (m)	: 0.00	Driller Supplier	:	Client	: Villawood Properties
Northing (m)	: 0.00	Logged By	: RC	Project	: Proposed new build
Ground Elevation	: Not Surveyed	Reviewed By	: CP	Location	: Lot 3102 Terrapee Street Strathfieldsaye
Total Depth	: 1.5 m BGL	Date	: 16/08/2024	Loc Comment	:

Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Weathering	Consistency	Testing: DCP	Testing: PP (kPa)	Testing: SPT	Remarks
		Fill		CI	Silty CLAY CI: medium plasticity, brown and dark brown, stiff, moist.	M		St				
	0.4	Natural		CI	Silty CLAY CI: stiff, medium plasticity, brown, moist.	M		St				
	0.6	Rock		SLT	SILTSTONE: distinctly weathered, low strength, pale brown, grained, dry.	D	DW	LS				
					1 Terminated at 1.5m							

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Geotechnical Log - Borehole

2

UTM	:	**Drill Rig**	: Gemco HS7 - Landcruiser Mount	**Job Number**	: 24C 0686
Easting (m)	: 0.00	**Driller Supplier**	:	**Client**	: Villawood Properties
Northing (m)	: 0.00	**Logged By**	: RC	**Project**	: Proposed new build
Ground Elevation	: Not Surveyed	**Reviewed By**	: CP	**Location**	: Lot 3102 Terrapee Street Strathfieldsaye
Total Depth	: 1.5 m BGL	**Date**	: 16/08/2024	**Loc Comment**	:

Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Weathering	Consistency	Testing: DCP	Testing: PP (kPa)	Testing: SPT	Remarks
		Fill		ML	Sandy SILT ML: low plasticity, dark brown, stiff, fine to medium grained sand, moist.	M		St				
	0.1	Natural		CI	Silty CLAY CI: stiff, medium plasticity, brown, moist.	M		St				
	0.6	Rock		SLT	SILTSTONE: distinctly weathered, low strength, pale brown, grained, dry.	D	DW	LS				
					2 Terminated at 1.5m							

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Geotechnical Log - Borehole

3

UTM	:	**Drill Rig**	: Gemco HS7 - Landcruiser Mount	**Job Number**	: 24C 0686
Easting (m)	: 0.00	**Driller Supplier**	:	**Client**	: Villawood Properties
Northing (m)	: 0.00	**Logged By**	: RC	**Project**	: Proposed new build
Ground Elevation	: Not Surveyed	**Reviewed By**	: CP	**Location**	: Lot 3102 Terrapee Street Strathfieldsaye
Total Depth	: 1 m BGL	**Date**	: 16/08/2024	**Loc Comment**	:

Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Weathering	Consistency	Testing: DCP	Testing: PP (kPa)	Testing: SPT	Remarks
		Fill		ML	Sandy SILT ML: low plasticity, pale brown, stiff, fine to medium grained sand, dry.	D		St				
	0.1	Natural		CL-CI	Silty CLAY CL-CI: very stiff, low to medium plasticity, brown and pale brown, moist.	M		VSt				
	0.5	Rock		SST	SANDSTONE: distinctly weathered, low to medium strength, pale brown and orange brown, grained, dry.	D	DW	LS-MS				
					3 refusal at 1m (Refusal on Sandstone Rock)							

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