



Mr. Patrick Hill

49 Tristram Road

Beacon Hill NSW

Attention: Mr Patrick Hill

Project: Proposed Garage Addition

Site Location: 49 Tristram Road Beacon Hill NSW

Reference: 10044-GR-1-1

Report Type: Site Classification for the Proposed Garage Addition

Report Date: 22th November 2019

1. INTRODUCTION

Mr. Patrick Hill (the client), engaged Alliance Geotechnical (AG) to undertake a site classification investigation of No. 49 Tristram Road, Beacon Hill, NSW (the site) on 15th November 2018. The geotechnical investigation was to provide a lot classification report, in accordance with AS 2870, for the proposed development which includes the construction of a garage addition.

AG were supplied with the following documents:

- Identification Survey plan No. 0531Q ID-01 Rev A by ICD Asia Pacific Pty Ltd dated 22/03/2016
- Contour and Detail Survey plan No. 0531Q_DET_A_A Rev A by ICD Asia Pacific Pty Ltd dated 06/11/2019
- Architectural Plans No. DA 00 to DA 10 (7 sheets) by Paul Salvarinas dated 31/10/2019

The objectives of the investigation were to assess the subsurface conditions and provide geotechnical engineering comments and recommendations relating to:

- Geotechnical and groundwater conditions;
- Site classification;
- Allowable bearing pressures for the footing design.

2. SITE DESCRIPTION AND REGIONAL GEOLOGY

The site is limited to the following:

North: Tristram Road

East: No. 47 Tristram Road, two storey brick residential building

West: No. 51 Tristram Road, single storey brick residential building

South: No. 6 Oxford Falls Road, single storey brick residential building

The 1:100,000 NSW Department of Mineral Resources Geological Map of the Sydney Region indicates the soils within the site to be underlain by The Hawkesbury Sandstone and described as “medium to coarse grained quartz sandstone, very minor shale and laminite lenses.”

3. FIELDWORK

3.1 Methods

AG's geotechnical investigation was carried out on 15th November 2019. Select site photographs taken during the fieldwork are enclosed in attachment.

Prior to undertaking the borehole drilling and Dynamic Cone Penetrometer (DCP) tests, the locations of the site investigations were checked against DBYD plans and with site supervisors, to confirm they were clear of underground services.

The boreholes were drilled using a TDLR690 ute-mounted drilling rig operated by AG. The rig was advanced with a 110mm diameter solid flight auger, fitted with a TC (Tungsten Carbide) drill bit.

During the investigation, AG drilled one (1) borehole to a depth of 0.9m (due to TC refusal) and undertook three (3) DCP tests. The locations of the boreholes and DCPs are shown on the Geotechnical Investigation Location Plan presented in the attachment (Drawing No. 10044-GR-1-A).

During the site investigation, the subsurface strata encountered was logged by an AG geotechnical engineer in accordance with AS 1726-2016 – Geotechnical Site Investigations. The in-situ strength of subsurface soils and rock at borehole locations were estimated by visual assessment and DCP testing.

The borehole log and PSP test report is presented in the attachment.

3.2 Results

The inferred subsurface soil and rock profile at the borehole location are summarised in Table 1 below.

Table 1 - Description of sub-surface units.

Unit	Description	Depth to top of layer (m)	Consistency/compaction	Moisture
Unit 1 Topsoil	Silty Sand, fine grained, brown, trace fine to coarse gravel, organics.	0	-	Dry
Unit 2 Alluvial Soil	SAND, fine to medium grained, yellow-orange and brown, trace medium sandstone gravel.	0.1	Dense	Dry to Moist
Unit 3 Bedrock	SANDSTONE, fine to medium grained, red-pink and pale grey, very low strength, highly to moderately weathered.	0.6	-	-

3.3 Groundwater

Groundwater was not observed during drilling of the boreholes. However, groundwater conditions may vary subject to seasonal/climatic conditions.

4. COMMENTS AND RECOMMENDATIONS

4.1 Site Classification

Based on the soil profile, site classification in accordance with AS 2870-2011 for the proposed development is determined. Based on the encountered geotechnical condition, the site is classified as **Class A**.

Class A sites are defined as 'Most sand and rock sites with little or no ground movement from moisture changes.

4.2 Foundation Parameters

For sites classified **A** an engineered slab or standard footing appropriate to the site classification may be used. It is envisaged that the building loads can be catered by shallow footings or slab founded within the fill material. An allowable bearing capacity of 200 kPa is recommended for shallow strip footings of 1.0m width placed 0.5m below ground level.

If higher bearing capacity is required, piers footings founded on sandstone bedrock can be designed for an allowable end bearing capacity of 1000kPa. Pier footings should be embedded minimum 0.3m into the bedrock.

It is recommended that footings for the proposed garage are founded on the same material unit, below any topsoil, loose or deleterious material, to minimise the potential for differential settlement.

The recommendation provided above is based on limiting the settlement of the footing to 25mm.

Before placement of framework, reinforcement and pouring concrete, the excavations for the installation of footings should be inspected by a geotechnical engineer to confirm that the founding material and the base of the footings are clean, dry and free of soft, loose soil/debris.

4.3 Groundwater Control

Based on AG's site investigation, a groundwater table is not present within the garage addition foundation. However, groundwater seepage and run-off is still anticipated to occur, particularly at the interface between the soil and bedrock and would be expected to increase following extended rainfall periods.

Groundwater seepage tends to fluctuate with seasonal weather patterns. As such, the construction should be planned to manage seepage and surface runoff in the excavations and earthworks. It is recommended that prior to commencement of the excavation, the ground areas surrounding the required excavation for the garage foundation be prepared with temporary drainage to divert and control surface runoff.

It is recommended that a site drainage plan be prepared so that both temporary and permanent drainage provisions are made on the site, to ensure surface run-off water is captured and drained away from the site.

5. LIMITATIONS

Alliance Geotechnical Pty Ltd (AG) has prepared this report for the site located at 49 Tristram Road Beacon Hill NSW in accordance with AG's fee proposal and Terms of Engagement. This geotechnical report has been prepared for Mr. Patrick Hill for this project and for the purposes outlined in this report. This report cannot be relied on for other projects, other parties on this site or any other site. The comments and recommendations provided in this report are based on the assumption that the geotechnical recommendations contained in this report will be fully complied with during the design and construction of the proposed site development

The borehole investigation and testing results provided in this report are indicative of the subsurface conditions at the site only at the specific sampling and testing locations, and to the depths drilled at the time of the investigation. Subsurface conditions can change significantly due to geological and human processes. Where variations in conditions are encountered further geotechnical advice should be sought from AG.

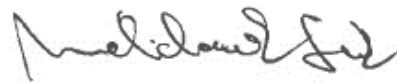
Regards,

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REFERENCES

AS1726-2017 - Geotechnical Site Investigations
AS 2870-2011 – Residential Slabs and Footings
AS 3798-2007 – Guidelines on Earthworks for residential and commercial developments
1:100,000 NSW Department of Mineral Resources Geological Map of the Penrith Region

ATTACHMENTS

Select site photos
Drawing No. 10044-GR-1-A (Geotechnical Investigation Location Plan)
Test Report for PSP-1 to PSP-3 (Perth Sand Penetrometer test results)
Borehole log BH1 and Explanatory notes on terms and symbols

Attachment: Select site photos

Figure 1: the approximate location of the garage to be constructed

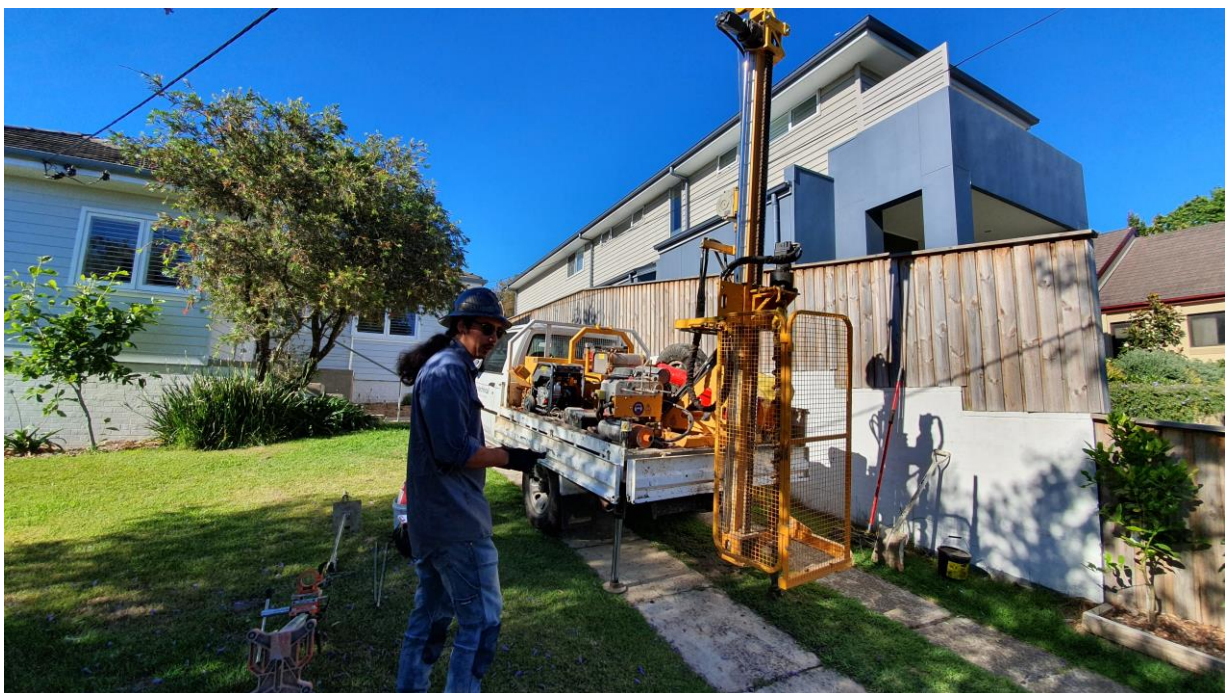
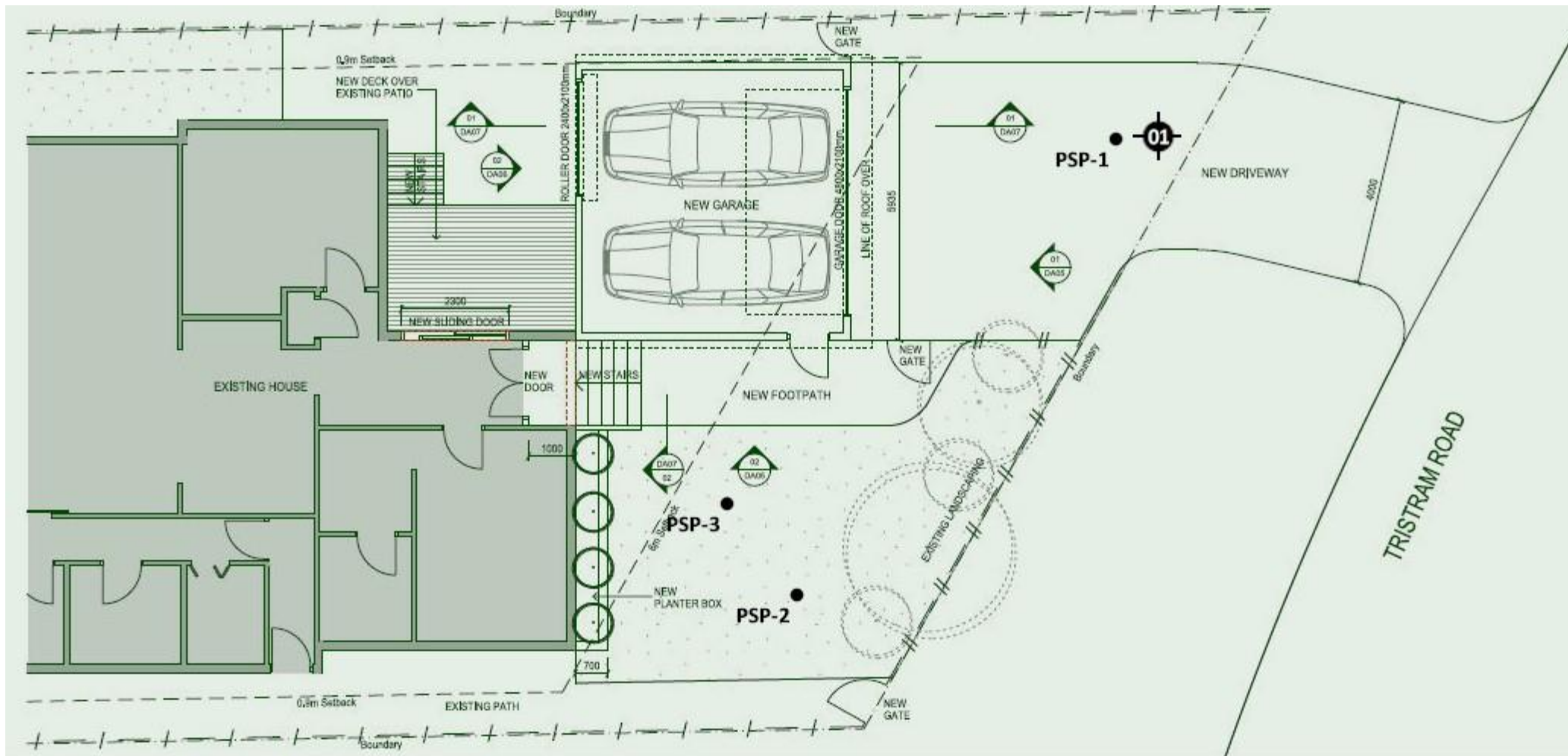


Figure 2: AG drilling rig set up at the site



LEGEND:

- - DCP Test Location
- ⊙ - Borehole Location

SCALE:



Borehole & PSP Test Location Plan

Client Name:	Mr. Patrick Hill
Project Name:	Proposed Garage Addition
Project Location:	49 Tristram Road, Beacon Hill NSW 2100



Figure / Drawing Number:	10044-GR-1-A
Figure / Drawing Date:	22/11/2019
Report Number:	10044-GR-1-1

Perth Sands Penetrometer (PSP) Test Report

Client:	Mr. Patrick Hill	Report Number:	10044-GR-1-1
Project Name:	Proposed Garage Addition	Project Number:	10044
Project Location:	49 Tristram Road, Beacon Hill NSW	Date Tested:	15/11/2019
Test Method:	AS 1289.6.3.2		

Test Number	PSP-1	PSP-2	PSP-3
Test Locations	Refer to Drawing No. 10044-GR-1-A		
Surface Material	Silty Sand	Silty Sand	Silty Sand
Surface R.L (m)			
Depth (metres)			
0.00 – 0.15	10	3/80mm	4
0.15 – 0.30	6	Solid Refusal	9
0.30 – 0.45	19		15
0.45 – 0.60	>25/100mm		11
0.60 – 0.75	Solid Refusal		>25/80mm
0.75 – 0.90			Solid Refusal
0.90 – 1.05			
1.05 – 1.20			
1.20 – 1.35			

Notes:

1. This penetrometer test report is intended to be read in conjunction with the geotechnical report by Alliance Geotechnical (ref: 10044-GR-1-1).



Test Pit Log

Client: Patrick Hill						Started: 15-11-19				
Project: Proposed Garage Addition						Finished: 15-11-19				
Location: 49 Tristram Road, Beacon Hill NSW						Test Pit Size: 110mm				
Rig Type: TDLR690		Hole Location: Refer Drawing 10044-GR-1-A		Excavator: DN		Logged: KT				
RL Surface:		Contractor: AG Pty Ltd		Bearing: ---		Checked: LM				
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
ADT	No Groundwater Encountered		0.5		--	TOPSOIL: Silty Sand, fine grained, brown, trace fine to coarse gravel, organics.		D	--	TOPSOIL
					SP	SAND, fine to medium grained, yellow-orange and brown, trace medium sandstone gravel.		D-M	D	ALLUVIUM
					--	SANDSTONE, fine to medium grained, red-pink and pale grey, very low strength, highly to moderately weathered.		--	--	BEDROCK
					Test Pit BH 1 terminated at 0.9m					
			1.0							
			1.5							
			2.0							