



26/10/2016

CLIENT: Summit Group

JOB DESCRIPTION: Provide limited site investigation & site classification for the allotment.

PROJECT: Lot 5 Hennessy Place, Hamilton Valley

JOB NO.: 43448-7

REPORT SUMMARY:

The site classification is '**M-D' Moderately Reactive in the Dry Temperate Zone**, provided load bearing footings are founded beyond filling.

1.0 SITE DESCRIPTION:

1.1 The allotment is part of the "Sienna Ridge Estate" Hamilton Valley, Stages 1 and 2. At the time of the investigation there was a light cover of vegetation across the surface and site was clear of trees. This particular block is positioned on the side of a hill and as part of the subdivision earthworks separate platforms have been formed across the allotment. The area allocated for the house has steep fall across the block, sloping towards the front and northern boundaries. The land slope of the building footprint is the order of 1 in 5, however to create a level building pad site conditions may need to be altered. Site drainage should be further enhanced with landscaping works at the completion of construction.



Existing site conditions for proposed dwelling.

1.2 Geological Survey Maps for Victoria (Sheet SJ 55-2) of 1:250,000 scale show that the area is within Recent Quaternary fine grained alluvium of the Shepparton Formation. These are deposits of varying clay, silt and sand content laid down in discontinuous lens-like structures. There can be varying combinations and layer thicknesses of these soil types across small areas.

2.0 SITE INVESTIGATION:

2.1 Boreholes of 3000mm and 2000mm were mechanically drilled using 100mm diameter continuous flight auger at two locations across the site. Their locations and logs are shown on the attached borehole log sheet.

2.2 **Borehole Description:** There is **uncontrolled** clayey sand / sand **filling** to depths down to 300mm. After the filling, there is sandy clay, clayey sand and silty clay soils varying in colour extend to the end of the boreholes. Soils were observed in the field to be uniform over the depth of the profile. Soils were moist in the upper layers and become dry in the lower layers. Ground water was not encountered in the boreholes.

2.3 Selected filling has been spread over the site as part of the subdivisional earthworks. Testing for density and moisture content during construction has been performed across random layers of the allotments. The surface filling is not considered as controlled fill and has been assessed as rolled fill in accordance with AS 2870 - 2011. Load bearing elements of the footing systems must be founded through this filling and into undisturbed natural soils.

2.4 The underlying natural soils are of low to medium plasticity and there is potential for seasonal ground movement between 20mm and 40mm.

2.5 The natural soils, located immediately below the filling (i.e. 300mm below the surface), have an estimated bearing capacity of at least **120kpa**. Soil bearing capacities have been estimated for the underlying soils and these values are listed below:

Depth	Allowable Bearing Capacity
300mm	120 kPa
1000mm	150 kPa
1500mm	180 kPa

2.6 The site classification is '**M-D**' in accordance with AS 2870 - 2011 with conditions regarding the filling.

3.0 FOOTING DESIGN RECOMMENDATIONS:

The recommended footing system is designed for at least an '**M-D**' site with all external and internal beams of the footing system extending through the filling using additional concrete. Design and construction should comply with AS 2870 – 2011 and AS 3600.

3.1 The construction envelope is to have the surface stripped and cleared nominally 50mm to 100mm of all grass, vegetation and any top soil across the surface. Proof roll prior to construction and prepare the site as per section 6 of AS 2870 – 2011. (Proof rolling refers to thorough trafficking of the area by the earthmoving equipment until there are no indentations left by the wheel tracks)

3.2 To create a level building pad site conditions may be needed to be altered and excess soil may be removed over the site. It is recommended the design engineer be contacted should soft spots or areas of undetected fill be encountered during footing excavation. If site conditions are altered in the course of construction then this report may require review.

3.3 The use of brickwork articulation joints to TN61 is recommended throughout.

3.4 The following are recommended founding levels for articulated masonry veneer construction below cleared surface:

<u>Stiffened Raft Load Bearing Beams:</u>	Nominally 300mm below stripped surface i.e. Through filling or disturbed ground and into light brown clayey sand. (Unless clause 3.2 applies)
<u>Internal Beams:</u>	Nominally 300mm below stripped surface i.e. Through filling or disturbed ground and into light brown clayey sand. (Unless clause 3.2 applies)
<u>Waffle Raft:</u>	225mm minimum void formers supported on bored concrete piers, which are founded through filling and a minimum of 400mm into natural undisturbed soils.
<u>Strip Footings:</u>	650mm minimum and at least 300mm into natural underlying soils.
<u>Stump - Pad Footings:</u>	800mm minimum and at least 200mm into natural underlying soils.

Note: Where cut/fill earthworks are carried out to form a level platform, extend beams through filling and found in natural ground or support beams in filled zone on bored concrete piers, founded through the imported filling and extending a minimum depth of 400mm into natural ground.

3.5 The planting of trees close to the building should be avoided. Minimum distance from the building should be at least three quarters of the mature height. Where the building is to be positioned such that trees are planted or any existing trees located at an offset distance that is less than three quarters of the mature height, the design engineer will need to consider additional measures to protect the footing system from trees impacting the stability of the soils within the zone of influence.

4.0 LIMITATIONS OF REPORT:

The frequency of borehole sites and the intensity of the testing program have been formulated to reflect the significance of the proposed structure. The testing and reporting is considered reasonable and comprehensive for this project and results correlate to other testing carried out by this company in the region. It is possible that there may be variations in the geotechnical conditions from those described in this report, as no geotechnical investigation can be considered exhaustive. The results and recommendations are therefore a reasonable platform upon which to base subsequent design decisions with flexibility to change course should there be variations in the conditions at the time of construction.

5.0 SITE MAINTENANCE:

In addition to the following, reference should be made to the CSIRO information sheet "Guide to Home Owners On Foundation Maintenance and Performance."

5.1 During the works, provide a drainage system as soon as the footings are constructed. It must prevent ponding against, near or beneath the footings in order to maintain stable moisture content within the foundation. Grading the surfaces (1 in 20 for at least 2.0 metres) away from footings and their excavations to collection points will be necessary.

At the completion of the construction the drainage system must also prevent ponding against, near or beneath the finished building. Interception of moisture flow paths toward and under the building is critical.

5.2 Preferably pave or grade the natural surface away from the building at a slope of 50mm in 1.0m.

5.3 Plumbing trenches should be sloped away from the building. The first 1.5m of trench from the building should be backfilled with clay in the top 300mm.

5.4 Subsurface drains near footings should be avoided. If they are necessary, the trench must be capable of providing drainage if blockage occurs.

5.5 Plumbing problems that could cause changes to foundation's moisture content should be rectified immediately.

5.6 The planting of trees close to the building should be avoided. Minimum distance from the building should be equal to three quarters of their mature height.



Anthony Kruse



B.M.
CIVIL ENGINEERS

Date: 26/10/2016

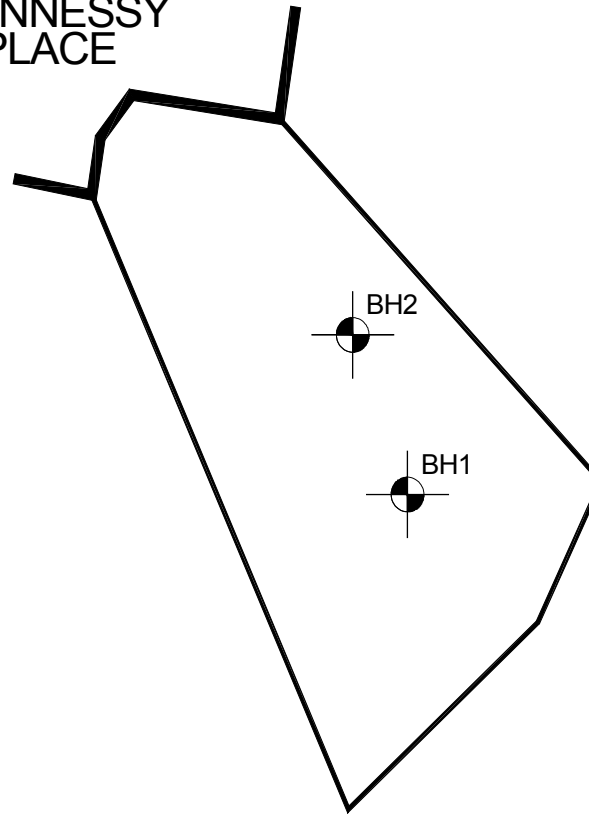
Location: Lot 5 Hennessy Place,
Hamilton Valley

Client: Summit Group

Job No.: 43448-7

SITE
INVESTIGATION
BORELOG
LOCATION
PLAN

HENNESSY
PLACE



NOT TO SCALE



Job No.: 43448-7
Location: Lot 5 Hennessy Place, Hamilton Valley
Client: Summit Group

Date: 26/10/2016
Borehole No.: **1**

Depth	Description	Plasticity	Cohesion Density	Moisture	
100	FILLING brown clayey sand / sand mix				
200					
300					
400	light brown clayey SAND	LP	MD	M	
500					
600	light brown sandy CLAY	LP - MP	F	M	
700					
800					
900	orange silty CLAY	MP	F	D - M	
1000					
1100					
1200					
1300	light orange sandy CLAY	LP - MP	F	M	
1400					
1500					
1600					
1700					
1800					
1900	light brown clayey SAND	LP	MD	D	
2000					
2100					
2200					
2300					
2400					
2500					
2600					
2700					
2800					
2900					
3000					
3100	EOB				
3200					
PLASTICITY		LP- LOW	MP- MEDIUM	HP- HIGH	
CONSISTENCY		COHESIVE SOILS VS- very soft S-soft F-firm ST - stiff VST - very stiff H-hard			
		NON COHESIVE SOILS VL very loose L- loose MD-medium dense DS-dense VD-very dense			
MOISTURE CONDITION		D-dry M- moist W-wet SA-saturated			
DRILLING METHOD		continuous flight auger	<input checked="" type="checkbox"/>	hand auger	<input type="checkbox"/>



B.M

CIVIL ENGINEERS

SITE INVESTIGATION LOG

Job No.: 43448-7

Location: Lot 5 Hennessy Place, Hamilton Valley

Client: Summit Group

Date: 26/10/2016

Borehole No.: **2**

Depth	Description	Plasticity	Cohesion Density	Moisture																																																																			
100	FILLING brown clayey sand / sand mix																																																																						
200					300	light brown sandy CLAY	LP - MP	F	M	400	500	600	700	800	900	1000	brown sandy CLAY	LP - MP	F	D - M	1100	1200	1300	1400	light brown clayey SAND	LP	MD	D - M	1500	1600	1700	1800	1900	2000	2100	EOB				2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	PLASTICITY		LP- LOW	MP- MEDIUM	HP- HIGH	CONSISTENCY		COHESIVE SOILS VS- very soft S-soft F-firm ST - stiff VST - very stiff H-hard					NON COHESIVE SOILS VL very loose L- loose MD-medium dense DS-dense VD-very dense			MOISTURE CONDITION		D-dry M- moist W-wet SA-saturated			DRILLING METHOD
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