

10 October 2008

Eberts Developments Pty Ltd  
PO Box 1245  
Lavington NSW 2640

Due to a Certification of Fill being issued, this site has been re-classified as 'Class M'

**Attention: Mr Terry Davidson**

Dear Sir

**RE: Site Classification, Lot 5, Centaur Park Estate - Stage 1 (35 Lots), Lavington NSW**

## 1 INTRODUCTION

In accordance with your request, Coffey Geotechnics Pty Ltd (Coffey) conducted geotechnical testing to classify the above site in general accordance with AS2870-1996 "Residential slabs and footings - Construction".

## 2 GEOTECHNICAL TESTING

One borehole was drilled to a depth of 3m below the existing surface level. A senior geotechnician from Coffey logged the encountered subsurface soils and conditions within the borehole and collected subsurface soil samples for further assessment in our NATA accredited laboratory in Albury.

The laboratory tests comprised liquid limit and linear shrinkage tests, the results of which are included in the borehole log. The engineering log of the borehole together with explanation sheets outlining the terms and symbols used in its preparation are attached.

## 3 SITE CONDITIONS

The subsurface conditions encountered within the borehole in the site during our fieldwork are summarised in Table 1.

**Table 1: Summary of Subsurface Conditions**

Interpreted Geological Unit	Thickness of Soil Unit (m)	Soil Type	Additional Description
Fill	0.6	Sandy Clay	Low to medium plasticity
Natural	1.3	Clayey Silty Sand	Low plasticity clay
	Not penetrated	Clayey Sand, Silty Sand	Low plasticity clay

A standing groundwater level or seepage was not observed within the borehole during our fieldwork. Note that a groundwater table may be present at other times and fluctuations in its level and seepage could occur due to rainfall, change in temperature and other factors.

#### **4 SITE CLASSIFICATION**

Based on the results of the geotechnical testing, the foundation soils encountered within the site have been classified as "Class P" due to the presence of fill. The site classification has been undertaken in accordance with Section 2, Site Classification, AS2870-1996 "Residential Slabs and Footings".

If the fill have been placed, compacted, tested and certified as controlled fill in accordance with AS2870, 1996 Section 6.4.2a *Residential Slabs and Footing - Construction* the site can be reclassified as "Class M" and footings may be founded within the certified controlled fill or within the natural soils based on allowable bearing pressures of up to 50kPa for raft slab beams and 100kPa for strip footings. The designer/owner should obtain the certification of the fill prior to the design of the building for confirmation. Coffey will not take the responsibility of certification of the fill undertaken by others.

If certification of the fill is not proven, the classification of the site would be Class P and the following options are suggested:

Remove the fill, discard any deleterious material and then replace the clean fill in loose layers not exceeding 250mm in thickness, moisture condition to its approximate optimum moisture content, uniformly compact to at least 95% of Standard compaction (AS1289 5.4.1, 5.1.1) and have it tested and certified as controlled fill. If this is carried out the site can be reclassified as "Class M" and footings can be found within the fill based on allowable bearing pressures of up to 50kPa for raft slab beams and 100kPa for strip footings.

OR

Use strip footings and a suspended floor supported on either stumps or piers with the footings, stumps or piers all extended to found on the natural soils below the fill and based on a "Class M" site classification.

OR

Remove the fill and found the whole building on the natural soils based on a "Class M" classification.

OR

Use an engineer designed suspended slab support on pads or piers found below the fill and into the natural soil based on a "Class M" site classification.

The effect of past and future vegetation and additional cutting and filling should be considered in the selection of a design value for differential movement. Footings for the proposed development should be designed and constructed in accordance with AS2870-1996.

If more than 800mm of 'sand' fill or 400mm of 'other' fill is placed in addition to the existing fill the above site classification must be reassessed.

Where footings are constructed adjacent to underground service trenches (sewer, storm water, etc), the service trenches should not extend below a line extending out and down at 45° for clays and 30° for sands from the outer bottom corner of the footings and raft slab beams.

#### **5 FURTHER RECOMMENDATIONS**

The soil moisture around the building should be maintained and extremes of wetting and drying should be avoided. The following general measures are recommended to reduce the potential for footing and building damage caused by abnormal moisture variations within the site:

- Tree planting adjacent to the buildings should be restricted.

- Irregular or excessive watering of the gardens adjacent to the house should be avoided.
- Any leaking or damaged underground services should be repaired promptly.
- Provide paving (graded away from the building) to the edge of the building.

The site classification presented in Section 3 of the report is provided on the basis that the performance expectations set out in Appendix B of AS2870-1996 are acceptable and that site maintenance complies with the provisions of CSIRO Sheet BTF 18, "Foundation Maintenance and Footing Performance: A Homeowner's Guide", a copy of which is attached. It is important that the CSIRO document is passed on to the homeowners so that they are aware of the guidelines.

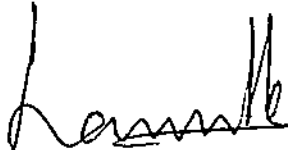
## 6 APPLICABILITY

This site classification report has been prepared for the particular brief given to us and the data and opinions included in this report should not be used in other contexts or for any other purpose without our prior review and agreement. No other type of geotechnical assessment, such as slope stability, was undertaken as part of the site classification.

The site classification is based upon the field tests at specific point locations. The nature and continuity of the subsoils away from the field test locations are inferred and it must be appreciated that actual conditions could vary from the assumed subsurface conditions. Occasionally it is not possible to distinguish fill from natural soils during the field testing. Footing excavations must be examined carefully and if soil conditions encountered in footing excavations differ from those described in this report, further geotechnical advice must be sought.

The attached "Important information about your Coffey Report" provides additional information in the uses and limitations of this report.

For and on behalf of Coffey Geotechnics Pty Ltd



**Lani Cheenikal**

Senior Geotechnical Engineer

**Attachments:** Important information about your Coffey report  
Borehole log and soil description explanation sheets  
CSIRO Sheet BTF 18

# Engineering Log - Borehole

Borehole No. **BH1 Lot 5**  
 Sheet 1 of 1  
 Project No: **GEOTALBU02716AA**  
 Date started: **17.9.2008**  
 Date completed: **17.9.2008**  
 Logged by: **DNH**  
 Checked by:

Client: **Ebert Developments Pty Ltd**  
 Principal:  
 Project: **Centaur Park Estate Stage 1 (35 Lots)**  
 Borehole Location: **centre of lot**

drill model and mounting: GEMCOHS7 Easting: slope: -90° R.L. Surface:  
 hole diameter: 100 mm Northing bearing: datum:

drilling information				material substance											
method	penetration			notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material soil type; plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/density index	pocket penetrometer			structure and additional observations
	1	2	3									100 kPa	200 kPa	300 kPa	
ADV						0.5			FILL: Sandy Clay, low to medium plasticity, red, brown, fine to medium grained sand.	M					FILL
				U <sub>50</sub>		1.0		SM	CLAYEY SILTY SAND: Fine grained sand, brown, orange, low plasticity.		MD / D				NATURAL Liquid Limit = 20% Linear Shrinkage = 1.2%
				U <sub>20</sub>		1.5									Liquid Limit = 24% Linear Shrinkage = 2.4%
						2.0		SC	CLAYEY SAND: Fine grained sand, white, grey, low plasticity, with some silt.		D				
						2.5		SM	SILTY SAND: Fine grained sand, brown, orange.						
						3.0									
						3.5									
						4.0									
Borehole BH1 Lot 5 terminated at 3m															

BOREHOLE A2716AA.GPJ COFFEY.GDT 1.0.08

<b>method</b> AS auger screwing* AD auger drilling* RR roller/tricone W washbore CT cable tool HA hand auger DT diatuba B blank bit V V bit T TC bit *bit shown by suffix e.g. ADT	<b>support</b> M mud N nil C casing penetration 1 2 3 4 no resistance ranging to refusal water 10/1/98 water level on date shown water inflow water outflow	<b>notes, samples, tests</b> U <sub>50</sub> undisturbed sample 50mm diameter U <sub>20</sub> undisturbed sample 63mm diameter D disturbed sample N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone V vane shear (kPa) P pressuremeter Bs bulk sample E environmental sample R refusal	<b>classification symbols and soil description based on unified classification system</b>  <b>moisture</b> D dry M moist W wet Wp plastic limit W <sub>L</sub> liquid limit	<b>consistency/density index</b> VS very soft S soft F firm St stiff VS <sub>t</sub> very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Form GEO 5.3 Issue 3 Rev.2