

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-D'

**Attention: Mr Terry Davidson**

Dear Sir

**RE: Site Classification, Lot 21, 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	0.9	Sandy Clay	Medium plasticity
Natural	1.7	Clayey Silt	Low plasticity clay
	Not penetrated	Silty Sand	

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-D" 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-D" 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-D" site 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-D" 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

Borehole No. **BH1 Lot 21**  
 Sheet 1 of 1  
 Project No: **GEOTALBU02716AA**  
 Date started: **17.9.2008**  
 Date completed: **17.9.2008**  
 Logged by: **DNH**  
 Checked by:

# Engineering Log - Borehole

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	support	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material	moisture condition	consistency/density index	pocket penetrometer	structure and additional observations
	1 2 3							soil type: plasticity or particle characteristics, colour, secondary and minor components.			100 200 300 400 kPa	
ADV		N			0.5			FILL: Sandy Clay, low to medium plasticity, red, brown, fine to medium grained sand.	M			FILL
					1.0		ML	CLAYEY SILT: Low plasticity, grey, brown.		St		NATURAL
			D		1.5		ML	CLAYEY SILT: Low plasticity, brown, yellow.		SV/VSt		Liquid Limit = 22% Linear Shrinkage = 2.0%
		None Observed			2.0							
					2.5							
					3.0		SM	SILTY SAND: Fine grained sand, black, grey, low plasticity.		D		
					3.5			Borehole BH1 Lot 21 terminated at 3m				
					4.0							

BOREHOLE A2716AA.GPJ COFFEY.GDT 1...08

Form GEO 5.3 Issue 3 Rev.2

<b>method</b> AS auger screwing* AD auger drilling* RR roller/tricone W washbore CT cable tool HA hand auger DT dialtube B blank bit V V bit T TC bit *bit shown by suffix e.g. ADT	<b>support</b> M mud N nt C casing penetration 1 2 3 4 no resistance ranging to refusal <b>water</b> 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>63</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 W <sub>p</sub> plastic limit W <sub>L</sub> liquid limit	<b>consistency/density Index</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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