



Civil & Structural Engineering Design Services Pty. Ltd.

ABN: 62 051 307 852 3 Wanniti Road BELROSE NSW 2085 Email: hited@bigpond.net.au

Tel: 02 9975 3899 Fax: 02 99751943 Web: www.civilandstructural.com.au

22th January 2019

Katarina McNamara 19 Mildred Avenue MANLY VALE NSW 2093

Dear Sir & Madam,

D-11-266874

Re: <u>Preliminary Geotechnical Assessment – Proposed Alterations & Additions at 19 Mildred</u> <u>Avenue, Manly Vale, NSW</u>

INTRODUCTION

I, Edward A Bennett, practicing civil, structural, geotechnical & environmental engineer, hereby confirm that I have inspected the above site for the proposed Alterations & Additions and confirm that to satisfy the requirements of E10 Landslip Risk, under the Warringah DCP 2011, Councils' Policy, it is my opinion that a full geotechnical report will **NOT** be required.

PROPOSED DEVELOPMENT

The proposed development consists of Alterations & Additions to be constructed at the front of the property as show on then architectural details prepared by the BRENCHLEY ARCHITECTS PTY LTD refer Appendix 'B'.

These works may include minor excavation, filling, and new piered/piled footing systems to be founded on underlying rock for the proposed Alterations & Additions, which includes Retaining Wall structures.

DESCRIPTION OF SITE & SURROUNDING AREA

The site of the new additions is in an area bounded by the front Northern/Western Boundary and the existing front portion of the existing dwelling structure. This work lies to the south of Mildred road with a downhill slope in the order of 5 to 10 degree (approximate) range. Council hazard mapping (Figure 1) places the property in land-slip risk class B (flanking slopes) – refer to Table 1 for risk class details.

SITE GEOLOGY

The underlying site geology consists of Wianamatta group Hawkesbury Sandstone. This is a Mesozoic era sandstone containing medium to coarse-grained quartz sandstone with very minor shale and



laminate lenses. Refer to 1:100 000 Sydney geologic mapping for more details (available via references).

From the observations from the site inspection, it was deemed unnecessary to perform any extra/special investigation of the underlying site geology.



- Area A Slope less than 5 degrees
- Area B Flanking Slopes from 5 to 25 degrees
- Area C Slopes more than 25 degrees
- Area D Collaroy Plateau Area Flanking Slopes 5 to 15 degrees
- Area E Collaroy Plateau Area Slopes more than 15 degrees

Figure 1: Land slip risk map for Mildred Avenue (site location marked in red)

Table 1: Landslip risk classes - from Warringah Council DCP Part E10 Lanslip Risk

LANDSLIP RISK CLASS					
Landslip Risk Class	Topographic Position	Slope Angle	Geology		
		(degrees)			
А	Plateau areas, ridge	< 5	At higher elevations, generally shallow residual soils developed on Hawkesbury		



	crests, major spur slopes, footslope areas; and beach, foredune and alluvial flats.		Sandstone. Hawkesbury Sandstone exposed in occasional outcrops and in near vertical <i>road</i> cuts. Some areas of <i>fill</i> . At lower elevations, unconsolidated marine and alluvial sands often overlying deep marine sediments.
В	Flanking slopes.	5 to 25	Colluvial and residual soils, possibly deeper than in Class A, developed on Hawkesbury Sandstone. Minor detached sandstone blocks, occasional exposures of sandstone in cliffs and <i>road</i> cuts. Occasional <i>fill</i> areas associated with playing fields, roads and some developments.
C	Steeper slopes, generally near coastal areas and adjacent to creeks and major gullies.	> 25	Colluvial soils and bouldery talus, with detached blocks of sandstone on steep escarpment areas, developed on Hawkesbury Sandstone. Near vertical cliffs to approximately 50m high at Dee Why Head.
D	Flanking slopes (Collaroy Plateau area)	5 to 15	Colluvial and residual soils (possibly deeper than in Class A) developed on Narrabeen Group or Hawkesbury Sandstone. Minor detached sandstone blocks, occasional exposures of sandstone in cliffs and <i>road</i> cuts. Occasional <i>fill</i> areas associated with playing fields, roads and some developments.
E	Steeper slopes (Collaroy Plateau area)	> 15	Colluvial & residual soils & bouldery talus, with detached blocks of sandstone on steeper escarpment areas, developed on Narrabeen Group or Hawkesbury Sandstone. Near vertical cliffs up to about 20m high.

OBSERVATIONS

Please refer to appendix A for the photographic record.

- The slope of the front of the property is not excessive
- Top Soil profile is residual clay overlaying sandstone, removal of unconsolidated top soil and depending on the depth to the rock layer, piering the structural footing would be required.
- No evidence of particularly high risk/hazard zones (unstable slip zones or localized areas of gradient greater than 25 degrees) across the entire site.
- The existing structure is founded on stable foundations (rock) as I observed with NO cracking of brickwork, which may have occurred if the foundations were on Swelling & Shrinking Clays

RECOMMENDATIONS

Some practices which assist to mitigate risk are as follows and should be adhered to:

- 1. CLEARING GOOD hillside practice
 - 1.1. Provide siltation fencing and proper barriers around the property at the rear boundary
 - 1.2. Provide a catch spoon drain across the site at the top of the slope to collect surface run-off and avoid localised slippage from scouring effects
 - 1.3. Cover any exposed rock faces to prevent loss of moisture and at risk to spall overnight
- 2. EXCAVATION
 - 2.1. The proposed Development does not require detailed excavation as mechanical equipment will be employed. There is always the likelihood that temporary shoring or underpinning is necessary to prevent ground loss when excavating near or adjacent to cliff faces to ensure safety to the workers at all times.
 - 2.2. The excavation for the proposed structure(s) may create a build-up of disposable material which, if not being utilised as on-site suitable fill, shall be placed in special stock piles and be protected and maintained with suitable batters and cover so as not to be transported off-site



by natural localised slippage or cause instability of existing batters through heavy rains before being used at a future date.

3. FOUNDATION MATERIALS AND FOOTINGS

- 3.1. It is recommended that all footings for the foundations to be supported on the underlying rock using reinforced concrete piers where necessary. Allow for end bearing piers to penetrate the medium strength sandstone surface by at least 150mm. The allowable bearing capacity for the piers shall be not less than 500kPa.
- 4. SUBSURFACE DRAINAGE
 - 4.1. Any retaining walls are to have adequate subsurface drains such as "strip drains" or sock covered agricultural pipes placed at the rear of the walls to prevent undue hydrostatic pressure.
- 5. INSPECTIONS
 - 5.1. It is recommended that the rock jointing be discovered and inspected by the engineer. The foundation material and pier placement is to be inspected and approved prior to casting any concrete.
 - 5.2. It is an obligation for the certifier/builder/contractor to organise the inspections noted above within 24 hours notice notwithstanding that the principal certifying authority and the structural engineer needs to be notified in advance.
- 6. ON-GOING MAINTENANCE
 - 6.1. The property is to be maintained in good order and in accordance with the guidelines set out in CSRIO BTF 18 "Foundation Maintenance and Footing Performance: A Homeowner's Guide" and the Australian Geomechanics Article "Landslide Risk Management Concepts and Guidelines" May 2002.
 - 6.2. All retaining walls are to be inspected at intervals not exceeding 20 years.

From evidence obtained during the site inspection, as well as assessment of existing geological data for the site, it has been determined that the proposed works will not adversely affect the geotechnical stability of the site.

Provided all recommendations above are adhered to, the works will be completed following good geotechnical and structural engineering practice.

The development will not cause detrimental impacts because of stormwater discharge from the land and will not cause detrimental impact on the existing subsurface flow conditions including those of other properties.

A full geotechnical report is therefore deemed unnecessary for the proposed development.

Yours faithfully,

laken at

E.A. Bennett M.I.E. Aust. Cp Eng. NPER 198230, Member AGS, BPB 0820



REFERENCES

NSW Dept. of Resourced & Energy, "Sydney 1:100 000 Geological Map", Accessed 16 July 2014 from <<u>http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/geological-maps/1-100-000/sydney-1100-000-geological-map</u>>

Warringah Council eServices, Warringah Council Development Control Plan 2011, Part E10, Accessed 16 July 2014 from http://eservices2.warringah.nsw.gov.au/ePlanning/Public/XC.Plan/Book.aspx?vid=12873

APPENDIX A

Photos from visual inspection









CIVIL & STRUCTURAL ENGINEERING DESIGN SERVICES PTY. LTD. *GEOTECHNICAL REPORT*











