


Preliminary Geotechnical Assessment

For Alterations and Additions at
16 Stephen Street, Beacon Hill NSW

Document Status			Approved for Issue	
Version	Author	Reviewer	Signature	Date
1	Ben Morgan	Karen Allan		18/12/2019
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Limitations

This report has been prepared for the property owners c/- Peter Princi Architects, in accordance with Ascent Geotechnical Consulting's (Ascent) Fee Proposal, dated 10th December, 2019.

The report is provided for the exclusive use of the property owners, Peter Princi Architects, and their nominated agents, for the specific development and purpose as described in this report. This report must not be used for purposes other than those outlined in the report or applied to any other projects.

The information contained within this report is considered accurate at the time of issue with regard to the current conditions onsite as identified by Ascent and the documentation provided by others.

The report should be read in its entirety and should not be separated from its attachments or supporting notes. It should not have sections removed or included in other documents without the express approval of Ascent.

Overview

Background

This report presents the findings of a preliminary geotechnical assessment carried out at 16 Stephen Street, Beacon Hill NSW, (the “Site”), by Ascent Geotechnical Consulting Pty Ltd (Ascent). This assessment has been prepared to meet Northern Beaches Council lodgement requirements for Development Application.

Proposed Development

Details of the development are outlined in a series of architectural design plans prepared by Peter Princi Architects, yet to be provided: -

The works comprise the following:

- Construction of new garage and deck,
- Modification to existing pool,

Relevant Instruments

This geotechnical assessment has been prepared in accordance with the following relevant guidelines and standards:

- Northern Beaches Council – Warringah Local Environment Plan (WLEP) 2011 & Warringah Development Control Plan (WDCP) 2011.
- Australian Geomechanics Society’s Landslide Risk Management Guidelines (AGS 2007).
- Australian Standard 1726:2017 Geotechnical Site Investigations.
- Australian Standard 2870:2011 Residential Slabs and Footings.

WDCP & WLEP Landslip Risk Class

The site is mapped as **Area B** on the Warringah Landslip Risk Map (**Image 1**, below).



WARRINGAH LANDSLIP RISK MAP

- 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

Site Description

Summary

A summary of site conditions identified at the time of our assessment is provided in the table below (Table 1.).

Table 1: Summary of site conditions.

Parameter	Description
Site Assessment	Ben Morgan - Ascent Geotechnical – 18/12/2019
Site Address	16 Stephen Street, Beacon Hill NSW – Lot 22 Sec I in D.P. 19657.
Site Area m ² (approx.)	464.50m ² (by Calc.)
Existing development	Double storey rendered brick residence, in-ground swimming pool.
Aspect	South
Average gradient	<10 degrees

Vegetation	Small established lawns area, with medium to large shrubs and trees.
Retaining Structures	N/A
Neighbouring environment	Residentially developed to the north, and west. Stephen Street to the south. Native bushland to the east.
Geology	The Sydney 1:100,000 Geological Sheet 9130 (NSW Dept. Mineral Resources, 1983) indicates that the site is underlain by the Middle Triassic Hawkesbury Sandstones of the Wianamatta Group (Rh), which outcrops as a large escarpment, to the east of the subject site.
Geotechnical observations	As observed from the subject site and adjacent areas, the Hawkesbury sandstone escarpment, situated to the east of the subject site, is free of any significant geological defects that may affect its stability.



Image 2: Site location. 16 Stephen Street, Beacon Hill NSW – Red Polygon (© NBC Maps)

Recommendations

With reference to the Australian Geomechanics Societies definitions, the existing site conditions and proposed development are considered to constitute an **'ACCEPTABLE'** risk to

life and a '**LOW**' risk to property provided that the recommendations outlined in **Table 3** are adhered to.

Table 3: Geotechnical Recommendations.

Recommendation	Description
Soil Excavation	<p>Minor soil excavations may be required to establish pad levels and footings for the proposed works. It is anticipated that these excavations will encounter shallow fill/sandy top soil and minor clayey sand overlying weathered bedrock. An accurate depth to weathered bedrock in the area of the works is currently unknown, however is expected to be found at relatively shallow depths across the Site.</p> <p>Provided the shallow sandy soils are battered back to form a slope not steeper than 35 degrees, they should stand unsupported for a short period until permanent support is in place. Unsupported batter slopes in sandy soil will be prone to erosion in inclement weather.</p> <p>If permanent batters are proposed, the unsupported batter must not be steeper than 30 degrees, and should be protected from erosion by geotextile fabric, pinned to the slope and planted with soil binding vegetation.</p>
Rock Excavation	No significant rock excavations should result from the construction of the proposed works.
Vibrations	No significant vibrations will result from completion of the proposed works.
Fill	<p>Any new fill on the Site is to be comprised of local sand, clays and weathered rock. Existing organic topsoil should be cleared and stockpiled for later use, prior to the placement of any new fill.</p> <p>All fill material is to be placed in layers not more than 250 mm thick and compacted to not less than 95% of Standard Optimum Dry Density at plus or minus 2% of Standard Optimum Moisture Content.</p> <p>All fill is to be placed in accordance with AS 3798 – 2007 – Guidelines on earthworks for commercial and residential developments.</p>
Excavation Support	No requirement for excavation support is anticipated for the proposed works.
Retaining Structures	Any retaining structures to be constructed as part of the site works are to be backfilled with suitable free-draining materials wrapped in a non-woven

	geotextile fabric (i.e Bidim A34 or similar), to prevent the clogging of the drainage with sediment.
Sediment and Erosion Control	Appropriate design and construction methods shall be required during site works to minimise erosion and provide sediment control. In particular, any stockpiled soil will require erosion control measures, such as siltation fencing and barriers, to be designed by others.
Footings	We would recommend that all new footings are taken to and founded directly upon the underlying weathered sandstone bedrock. It may be necessary to excavate small level pads if fixing footings directly to bedrock.
Stormwater	All stormwater collected from the small increase to hard surfaces is to be collected and piped to the existing stormwater system for the property, in accordance with all relevant Australian Standards, and the detailed stormwater management plan by others.
Inspections	It is recommended that the foundation materials of any new footing excavations be inspected and approved by Ascent before steel reinforcement and concrete is placed.

Should you have any queries regarding this report, please do not hesitate to contact the author of this report, undersigned.

For and on behalf of, **Ascent Geotechnical Consulting Pty Ltd,**



Ben Morgan BSc Geol.
Engineering Geologist



Karen Allan CPEng MIEAust
Senior Geotechnical Engineer

References

NSW Department of Mineral Resources (1983), Sydney Australia 1: 100,000 Geological Series Sheet 9130.

Australian Geomechanics Society (March 2007), *Landslide Risk Management*, Australian Geomechanics 42 (1).

Australian Standard 1726:2017 Geotechnical Site Investigations.

Australian Standard 2870:2011 Residential Slabs and Footings.

Australian Standard 1289.6.3.2:1997 Methods of Testing Soils for Engineering Purposes.

Australian Standard 3798:2007 Guidelines for earthworks for commercial and residential developments.

Australian Standard AS2670.2:1990 Evaluation of Human Exposure to Whole-Body Vibrations – Continuous and Shock Induced Vibrations in Buildings (1-80 Hz).