

**PRELIMINARY GEOTECHNICAL ASSESSMENT
FOR
PROPOSED ALTERATIONS AND ADDITIONS
AT
44 BALLYSHANNON ROAD, KILLARNEY HEIGHTS**

1.0 INTRODUCTION.

1.1 This assessment has been prepared to accompany an application for development approval.

1.2 The site is located in land that is subject to Area B on the Landslip Risk Map. The methods used in this Assessment are based on those described in Landslide Risk Management March 2007, published by the Australian Geomechanics Society. Also Council checklist contained within Clause E10 of Warringah DCP and the WLEP Map identifying the Landslip Risk Class as highlighted (red) below:-

	<i>LANDSLIP RISK CLASS (Highlight indicates Landslip Risk Class of property)</i>
<input type="checkbox"/>	<i>A Geotechnical Report not normally required</i>
<input checked="" type="checkbox"/>	<i>B Geotechnical Engineer (Under Council Guidelines) to decide if Geotechnical Report is required</i>
<input type="checkbox"/>	<i>C Geotechnical Report is required</i>
<input type="checkbox"/>	<i>D Council officers to decide if Geotechnical Report is required</i>
<input type="checkbox"/>	<i>E Geotechnical Report required</i>

1.3 The experience of Hodgson Consulting Engineers spans some 25 years in Northern Beaches and the Greater Sydney area.

2.0 PROPOSED DEVELOPMENT

2.1 Construct new first floor addition over the existing residence with various ground floor level s internal changes and a new swimming pool and covered patio area

2.2 Details of the proposed development are shown on a series of architectural drawings prepared by JJ Drafting Job No: 819/20 Dwg No: DA.01 to DA.21, revision A and dated 15th April, 2021.

3.0 SITE LOCATION

3.1 The site was inspected for this assessment on the 28th April, 2021.

3.2 This average sized residential block has a north westerly aspect. From the road frontage the site rises steeply towards the north east at 10 to 20 degrees flattening out to a moderate slope near the rear boundary. The subject property is located near the crest of the slope that rises from the waters of Middle Harbour. A cross fall slope that is moderately steep and falling to the north is present at the front of the subject property with average slope angles of approximately 5 to 10 degrees.

4.0 SITE DESCRIPTION

4.1 From the road frontage a concrete driveway crossing starts near the north western corner of the property heading north east towards the attached garage under the front northern corner of the existing residence. The driveway is cut into the exposed Hawkesbury Sandstone rock shelves. Small landscaped stone retaining walls support shallow garden beds on top the exposed rock either side of the driveway. Pedestrian access to the main entrance is via a set of stairs on the south west side of the driveway. A gentle sloping lawn area is in front of the existing residence on top of the exposed rock shelf. The north western side of the existing residence has been excavated due to the severe rain event at the beginning of the year causing drainage issues to the existing residence. Exposed rock was observed on the side of the cut originally excavated for the existing residence. A small amount of top soil is left exposed on top the rock. We are told this will be filled in when drainage and waterproofing works have been carried out. Access to the rear of the property is via a pathway on the south western side of the existing residence. At the rear of the existing residence is a gently sloping lawn area.

4.2 The existing residence is of brick veneer construction supported on a raft slab, strip and pad footings. At the time of our inspection no significant geotechnical hazards were identified and the existing residence was in good condition with no signs of significant movement due to geotechnical instability.

5.0 RECOMMENDATIONS

5.1 The proposed alterations and additions may require minimal excavation for any new footings that are required. The depth to the underlying bedrock is approximately 0.0 to 1.0 metres. We recommend that any new foundations required are to be taken to the underlying bedrock.

5.2 The swimming pool will be excavated to approximately 1.5 metres below the existing ground level. It is our opinion that this excavation will be predominately into competent rock material. Given the bulk excavations required through competent sandstone and their proximity to both the neighbouring occupied residential buildings and the existing dwelling. Low energy hand held equipment such as jack hammers or alike are to be used. If large equipment is to be used then it may be considered prudent to monitor and limit vibration effects on the adjacent structures. The Australian Standard AS2670.2-1990 "Evaluation of human exposure to whole-body vibrations — continuous and shock induced vibrations in buildings (1-80 Hz)" suggests a day time limit of 8 mm/s component PPV for human comfort is acceptable. We would suggest allowable vibration limits be set at 5mm/s PPV. It is expected that rock hammers with an approximate weight of 600-800kg will be adequate to operate within these tolerances. We recommend that any excavation through rock that cannot be readily achieved with a bucket excavator or ripper should be carried out initially using a rock saw to minimise the vibration impact and disturbance on the adjoining properties. Any rock breaking must be carried out only after the rock has been sawed and in short bursts (2-5 seconds) to prevent the vibration amplifying. The break in the rock from the saw must be between the rock to be broken and the closest adjoining structure. The use of hand tools is most likely due to limited access to the rear of the site.

5.3 The proposed alterations, additions and existing site conditions were considered and applied to the Council Flow Chart for class B area as contained within Clause E10 of Warringah DCP and the WLEP. Based on this preliminary assessment, the proposed development works would be considered satisfactory from a Geotechnical and landslip perspective subject to the application of good engineering practice for the structural design and construction methods. As it is not proposed to undertake any major excavation for the future works it is therefore recommended that no further geotechnical assessment is required.

HODGSON CONSULTING ENGINEERS PTY LTD



Garth Hodgson MIE Aust
Member No. 2211514
Civil/Geotechnical & Structural
Engineer