

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER**  
**FORM NO. 1 – To be submitted with Development Application**

Development Application for \_\_\_\_\_  
Name of Applicant  
Address of site 171D Barrenjoey Road, Newport

**Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report**

I, Ben White on behalf of White Geotechnical Group Pty Ltd  
(Insert Name) (Trading or Company Name)

on this the 28/6/21 certify that I am a geotechnical engineer or engineering geologist or coastal engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2009 and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$10million.

I:

**Please mark appropriate box**

- ☐ have prepared the detailed Geotechnical Report referenced below in accordance with the Australia Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007) and the Geotechnical Risk Management Policy for Pittwater - 2009
- ☐ am willing to technically verify that the detailed Geotechnical Report referenced below has been prepared in accordance with the Australian Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007) and the Geotechnical Risk Management Policy for Pittwater - 2009
- ☐ have examined the site and the proposed development in detail and have carried out a risk assessment in accordance with Section 6.0 of the Geotechnical Risk Management Policy for Pittwater - 2009. I confirm that the results of the risk assessment for the proposed development are in compliance with the Geotechnical Risk Management Policy for Pittwater - 2009 and further detailed geotechnical reporting is not required for the subject site.
- ☒ have examined the site and the proposed development/alteration in detail and I am of the opinion that the Development Application only involves Minor Development/Alteration that does not require a Geotechnical Report or Risk Assessment and hence my Report is in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009 requirements.
- ☐ have examined the site and the proposed development/alteration is separate from and is not affected by a Geotechnical Hazard and does not require a Geotechnical Report or Risk Assessment and hence my Report is in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009 requirements.
- ☐ have provided the coastal process and coastal forces analysis for inclusion in the Geotechnical Report


**Geotechnical Report Details:**

Report Title: Geotechnical Report 171D Barrenjoey Road, Newport  
Report Date: 25/6/21  
Author: BEN WHITE  
Author's Company/Organisation: WHITE GEOTECHNICAL GROUP PTY LTD

**Documentation which relate to or are relied upon in report preparation:**

Australian Geomechanics Society Landslide Risk Management March 2007.  
White Geotechnical Group company archives.

I am aware that the above Geotechnical Report, prepared for the abovementioned site is to be submitted in support of a Development Application for this site and will be relied on by Pittwater Council as the basis for ensuring that the Geotechnical Risk Management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature   
Name Ben White  
Chartered Professional Status MScGEOLAusIMM CP GEOL  
Membership No. 222757  
Company White Geotechnical Group Pty Ltd

## **171D Barrenjoey Road, Newport**

### **Minor Works Assessment**

#### **1. Proposed Development**

A geotechnical site inspection was carried out on the 23<sup>rd</sup> June, 2021.

Details of the proposed works are shown on 25 drawings prepared by Drafting Help, drawings numbered CV, SP, 1 to 9, NP, S1 to S3, SA, N1, N2, and B1, with two drawings numbered 10, two drawings numbered 11, and two drawings numbered 12, all drawings are Revision A, dated 12/6/21. The work involves the construction of a new studio over the existing garage. The works are considered minor in scope from a geotechnical perspective.

#### **2. Geotechnical Hazards and Risk Analysis**

No geotechnical hazards were observed above or beside the property. The gentle to moderately graded land surface that falls across the property and continues below is a potential hazard (**Hazard One**).

##### **Hazard One – Qualitative Risk Assessment on Property**

The property is accessed by a Right of Carriageway (ROW) off Barrenjoey Road and has a SW aspect. It is located on the gentle to moderately graded upper reaches of a hillslope. The slope falls across the property at an average angle of  $\sim 12^\circ$ . The natural slope around the house has been altered with excavations for the house and for the pool and with filling for landscaping across the downhill side of the property. The cut for the uphill side of the house is supported by a stable mortared stack rock retaining wall reaching  $\sim 1.1\text{m}$  high (Photo 1). Another excavation for the lower ground floor of the house is supported by a stable timber retaining wall  $\sim 1.4\text{m}$  high within the foundation space of the house (Photo 2). The water level of the pool indicates no ground movement has occurred in the shell of the pool since its construction (Photo 3). Additionally, no cracking was observed in the exposed portion of the pool shell on its downhill side. The downhill side of the property is terraced with a series of timber retaining

walls reaching a maximum height of ~1.1m (Photo 4). Filling has been placed on the N side of the pool for a tile-paved area. The fill is supported by a concrete block retaining wall ~1.0m high (Photo 5). See **Section 3** for recommendations regarding this wall. The slope above the property eases to the crest of the slope. The slope below the property eases to more gentle angles and appears in good order as observed from the subject property. The likelihood of the land surface on or above the property failing and impacting on the house is assessed as 'Unlikely' ( $10^{-4}$ ). The consequences to property of such a failure are assessed as 'Medium' (15%). The risk to property is 'Low' ( $2 \times 10^{-5}$ ).

### **Hazard One – Quantitative Risk Assessment on Property**

For loss of life risk can be calculated as follows:

$$R_{(LoI)} = P_{(H)} \times P_{(S: H)} \times P_{(T: S)} \times V_{(D: T)} \text{ (See Aust. Geomech. Jnl. Mar 2007 Vol. 42 No 1, for full explanation of terms)}$$

#### **Annual Probability**

No evidence of significant movement was observed on the property or on the slope immediately below.

$$P_{(H)} = 0.0001/\text{annum}$$

#### **Probability of Spatial Impact**

Apart from the retaining wall supporting the fill for the tile-paved area on the N side of the pool, the retaining walls on the property are in good condition.

$$P_{(S: H)} = 0.1$$

#### **Possibility of the Location Being Occupied During Failure**

The average household is taken to be occupied by 4 people. It is estimated that 1 person is in the house for 20 hours a day, 7 days a week. It is estimated 3 people are in the house 12 hours a day, 5 days a week.

For the person most at risk:

$$\frac{20}{24} \times \frac{7}{7} = 0.83$$

$$P_{(T:s)} = 0.83$$

### Probability of Loss of Life on Impact of Failure

Based on the volume of land sliding and its likely velocity when it hits the house, it is estimated that the vulnerability of a person to being killed when a landslide occurs is 0.1.

$$V_{(D:T)} = 0.1$$

### Risk Estimation

$$R_{(LoI)} = 0.0001 \times 0.1 \times 0.83 \times 0.1 \\ = 0.000000083$$

$$R_{(LoI)} = 8.3 \times 10^{-7}/\text{annum} \quad \text{NOTE: This level of risk is 'ACCEPTABLE'}$$

### Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The gentle to moderately sloping land surface that falls across the property and continues below failing and impacting on the house and/or proposed works.
LIKELIHOOD	'Unlikely' ( $10^{-4}$ )
CONSEQUENCES TO PROPERTY	'Medium' (15%)
RISK TO PROPERTY	'Low' ( $2 \times 10^{-5}$ )
RISK TO LIFE	$8.3 \times 10^{-7}/\text{annum}$
COMMENTS	'ACCEPTABLE' level of risk provided the recommendations in <b>Section 3</b> are followed.

(See Aust. Geomech. Jnl. Mar 2007 Vol. 42 No 1, for full explanation of terms)

### 3. Recommendations and Conclusion

The retaining wall supporting the tile-paved fill on the N side of the pool was observed to be tilting slightly downslope. The wall appears to have been remediated in the past with two concrete block buttresses. The N buttress has separated from the wall and is tilting downslope. To be prudent, we recommend the retaining wall be inspected by the owners on an annual basis or after heavy prolonged rainfall, whichever occurs first, keeping a photographic record of the inspections. We can carry out these inspections upon request. Should any new movement be observed, the retaining wall is to be remediated or rebuilt to current engineering standards.

Provided the above recommendation is followed, the property has an 'Acceptable Risk Level' in accordance with the 2009 Geotechnical Risk Management Policy for Pittwater.

White Geotechnical Group Pty Ltd.



Ben White M.Sc. Geol.,  
AusIMM., CP GEOL.  
No. 222757  
Engineering Geologist.





Photo 1



Photo 2



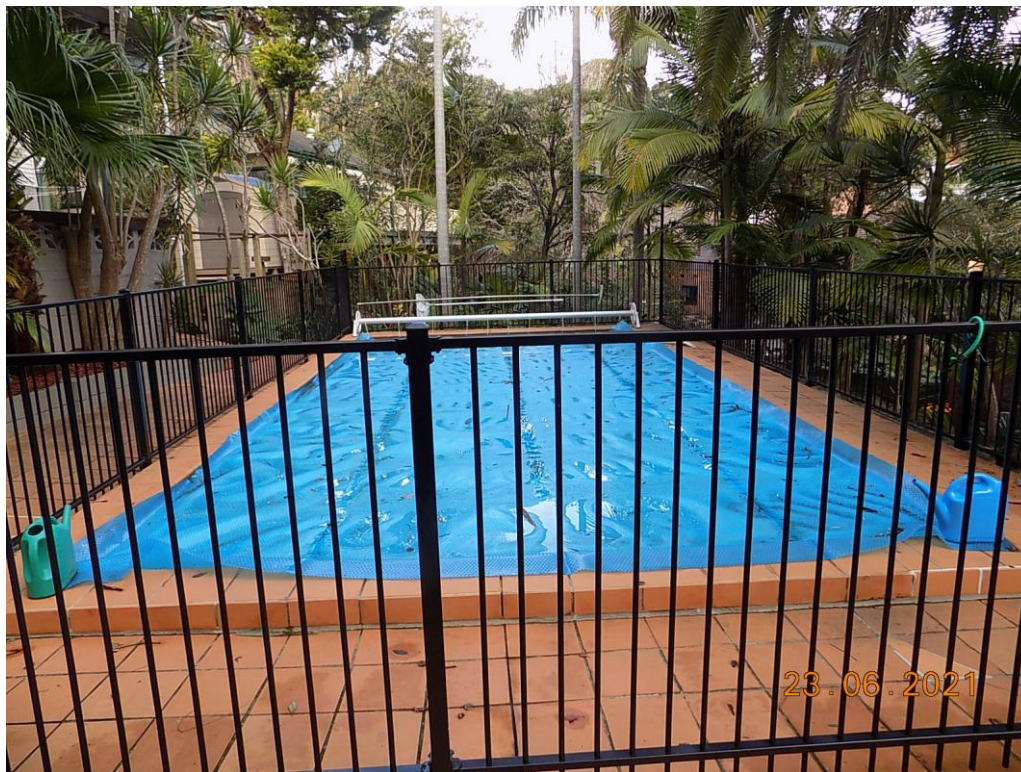


Photo 3



Photo 4





Photo 5