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

Development Application for _____
Name of Applicant

Address of site 61 Dress Circle Road, Avalon Beach

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 30/7/19 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 **61 Dress Circle Road, Avalon Beach**

Report Date: 26/7/19

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**

61 Dress Circle Road, Avalon Beach

Minor Works Assessment

1. Proposed Development

A geotechnical site inspection was carried out on the 24th July, 2019.

Details of the proposed works are shown on 5 drawings prepared by Shimdesign, drawing number 1719, sheets numbered 1/5 to 5/5, dated July 2019. The work involves minor internal and external alterations. The drawings show the alterations are supported off the existing footings. As such the works are considered minor in scope from a geotechnical perspective.

2. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The moderately sloping land surface that rises across the property and extends above and below is a potential hazard (**Hazard One**).

Hazard One – Qualitative Risk Assessment on Property

The property is on the high side of both Dress Circle Road and Bellevue Avenue and has a SE aspect. It is located on the moderately graded middle reaches of a hillslope. The slope rises across the property from the road at an average angle of ~13°. The natural slope around the house has been altered with excavations for the pool and house and with filling used for landscaping across the property. The water level of the pool indicates no ground movement has occurred in the shell of the pool since its construction (Photo 1). The cut for the house is supported by a stable concrete retaining wall reaching ~2.3m high (Photo 2). The slope around the house has been terraced with a series of stable treated timber retaining walls (Photos 3 & 4). The slope above the property continues at moderate angles and appears in good order as observed from the subject property. The slope below the property gradually eases. 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' (2×10^{-5}).

Hazard One – Quantitative Risk Assessment on Property

For loss of life risk can be calculated as follows:

$$R_{(LoI)} = P_{(H)} \times P_{(S:H)} \times P_{(T:S)} \times V_{(D:T)}$$

(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 above.

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

Probability of Spatial Impact

The retaining walls on the property are in good condition. The residential property above appeared in good order as observed from the subject property.

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

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

$P_{(T:S)}$ = 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

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

$= 0.000000083$

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

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The land surface across and above the property failing and impacting on the house.
LIKELIHOOD	'Unlikely' (10^{-4})
CONSEQUENCES TO PROPERTY	'Medium' (15%)
RISK TO PROPERTY	'Low' (2×10^{-5})
RISK TO LIFE	8.3×10^{-7}/annum
COMMENTS	'**Acceptable**' level of risk.

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

3. Conclusion

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

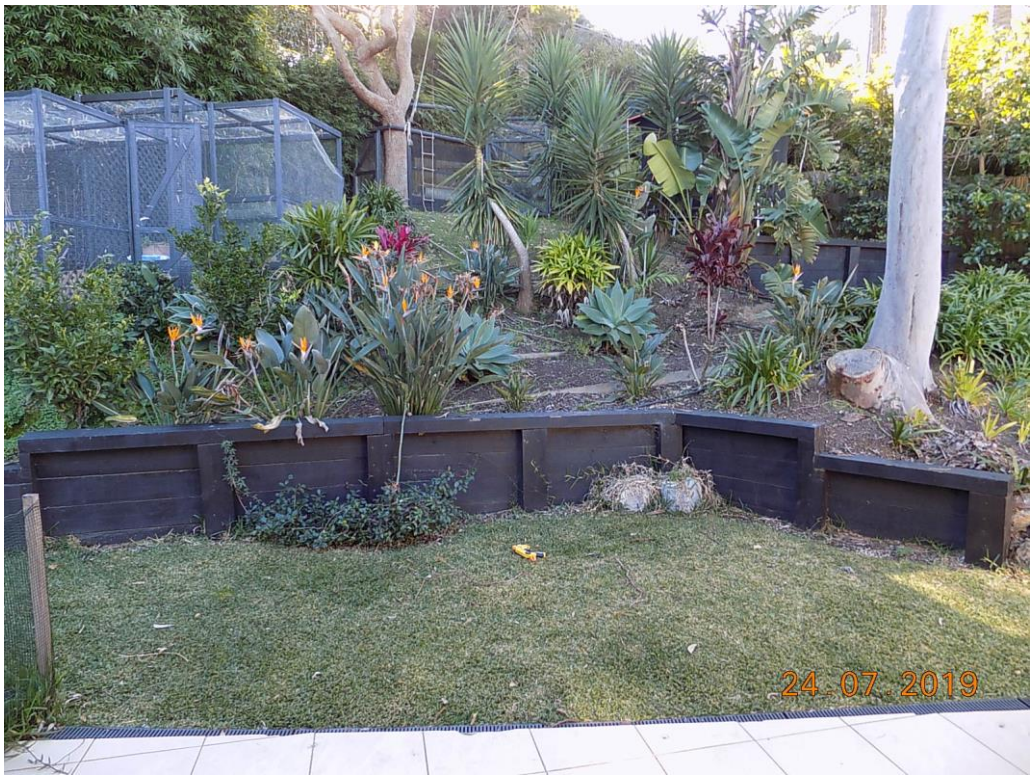

Photo 4