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

Development Application for _____
Name of Applicant

Address of site 163 McCarrs Creek Road, Church Point

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 30/9/21 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 **163 McCarrs Creek Road, Church Point**

Report Date: 30/9/21

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**

163 McCarrs Creek Road, Church Point

Minor Works Assessment

1. Proposed Development

A Geotechnical Site Inspection was carried out on the 21st September, 2021.

Details of the proposed works are shown on 5 drawings prepared by Network Design, drawing number 03-21-MCA, sheets numbered 1 to 5, dated March, 2021. The work involves the construction of an addition on the S side of the house. The drawings show the addition is to be supported off the existing footings. A structural adequacy assessment will be required by the structural engineer to confirm this is the case. Works supported off existing foundations are considered minor in scope from a geotechnical perspective.

2. Geotechnical Hazards and Risk Analysis

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

Hazard One – Qualitative Risk Assessment on Property

The property is accessed by a long winding Right of Carriageway (ROW) off the high side of McCarrs Creek Road. The ROW runs across the low side, N side, and above the property. The property has a NW aspect. It is located on the steeply graded middle reaches of a hillslope. The slope rises across the property at an average angle of ~34°. The natural slope across the property has been altered with an excavation for the stormwater tanks under the house and with filling for a driveway on the N side of the property. The cut for the stormwater tanks is supported by a stable ~1.9m high concrete block retaining wall (Photo 1). The N end of this wall merges into a natural rock face above the N driveway (Photo 2). The rock face consists of competent Medium Strength Sandstone and is interpreted to be a sandstone band through the shale-dominated profile. No significant geological defects were observed in the rock face. The fill for the driveway on the N side of the property is supported by a stable brick retaining

wall reaching ~1.4m high (Photo 3). A series of old timber retaining walls are in the slow process of collapse in the SW corner of the property (Photo 4). These walls do not retain any soil and are tilting at severe angles downslope (~33° from vertical). We recommend the walls be removed as part of the proposed works and this portion of the slope be planted out with low growing native shrubs. The slope above and below the property continues at steep angles and appears in good order as observed from the subject property. The likelihood of the land surface on, above, or below 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:

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

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

Probability of Spatial Impact

Apart from the old retaining walls in the SW corner of the property, the retaining walls on the property are in good condition. The residential property above and below appeared in good order as observed from the subject property.

$\mathbf{P_{(S:H)}}$ = 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 x 0.1 x 0.83 x 0.1

= 0.00000083

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

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The steep slope that falls across the property and continues above and below failing and significantly impacting on the existing house and proposed works.
LIKELIHOOD	'Unlikely' (10^{-4})
CONSEQUENCES TO PROPERTY	'Medium' (15%)
RISK TO PROPERTY	'Low' (2 x 10^{-5})
RISK TO LIFE	8.3 x 10^{-7}/annum
COMMENTS	This level of risk is 'ACCEPTABLE' provided the recommendations on page 4 under 'notes' are carried out.

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

Note: Where slopes approach or exceed 30°, it is prudent for the owners to occasionally inspect the slope (say annually or after heavy rainfall events, whichever occurs first). Should any of the following be observed: movement or cracking in retaining walls, cracking in any structures, cracking or movement in the slope surface, tilting or movement in established trees, leaking pipes, or newly observed flowing water, or changes in the erosional process or drainage regime, then a geotechnical consultant should be engaged to re-assess the slope. We can carry out these inspections upon request. The risk assessment in **Section 2** is subject to this site maintenance being carried out.

3. Conclusion

The property has an 'Acceptable Risk Level' in accordance with the 2009 Geotechnical Risk Management Policy for Pittwater.

4. Inspection

- Should any new foundations be required in the construction of the proposed works, the footings are to be inspected and approved by the geotechnical consultant while the excavation equipment and contractors are still onsite and before steel reinforcing is placed or concrete is poured.

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