GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER - 2009
FORM NO. 4 (As per Pittwater Council's Geotechnical Risk Management Policy) – To be submitted with Application for a Building Certificate/Response to an Order

Building Certificate Application
for _____
Name of Applicant

Address of Site **188 McCarrs Creek Road, Church Point**

Declaration made by geotechnical engineer in relation to the submission of an application for a Building Certificate

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

on this the 22/5/20 (Date)

certify that I am a geotechnical engineer as defined by the Geotechnical Risk Management Policy for Pittwater 2009. I am authorised by the above organization/company to issue this document and to certify that the organization/company has a current professional indemnity policy of at least $10 million.

☒ I have inspected the site and the existing development and am satisfied that both the site and the development achieves at least the "Tolerable Risk Management" requirement of the Geotechnical Risk Management Policy for Pittwater - 2009. The attached report provides details of the assessment in accordance with the Geotechnical Risk Management Policy for Pittwater – 2009. The report also contains recommendations as to any reasonable and practical measures that can be undertaken to remove foreseeable risk. I am aware the Council will rely on this certification as the basis for ensuring that the geotechnical risk management aspects of the site and the development have been adequately addressed to achieve at least a "Tolerable Risk Management" level for the life of the structure taken as 100 years unless otherwise stated and justified in the Report.*

or

☐ I have inspected the site of the existing development. The attached report details the remedial actions required to be undertaken prior to me being prepared to certify that the site and the development achieves at least the "Tolerable Risk Management" criteria required in accordance with the Policy.

Geotechnical Report Details:

Report Title: Geotechnical Assessment **188 McCarrs Creek Road, Church Point**

Report Date: 22/5/20

Author : BEN WHITE

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

* Note: If life of structure taken as less than 100 years, please indicate ..... years

GEOTECHNICAL ASSESSMENT:

In response to unauthorised works at **188 McCarrs Creek Road, Church Point**

1. Unauthorised Works

1.1 Demolish an old deck and construct a new deck on the downhill side of the house.

1.2 Underpin the existing downhill side of the house.

1.3 Construction of a new retaining wall below the reconstructed deck.

1.4 Apart from those for footings, no excavations were required and no fills were required.

2. Site Description

2.1 The site was inspected on the 29th April, 2020 and previously on the 26th November, 2019 during an initial assessment of the site.

2.2 This waterfront residential property is on the low side of the road and has a W aspect. It is located on the moderate to steeply graded lower reaches of a hillslope. The grade above the property continues at similar steep angles. The downhill side of the house was supported on uncontrolled fill that resulted in significant settlement in the downhill side of the house and movement in the deck that extended off the downhill side of the house. The unauthorised works were carried out to reduce further movement, better stabilise the site and reinstate the deck. We note the original deck concrete piers had tilted downslope, probably shortly after the construction of the deck at least 20 years ago. The original piers were then supported laterally with rock anchors to stop the movement. The details of the work are unknown but from visual inspection the work appears sound and is considered to be contributing to slope stability on the site. The new deck was constructed off the existing anchored piers that are considered suitable foundations.

Below the unauthorised works the steep slope to the water front is densely covered in weeds and exotic creeper at the time of the inspection, so the slope surface was not visible (Photo 1 & 2). A large She Oak had toppled over recently on the steep portion of the slope during a heavy down pour. See Recommendations for additional slope stabilisation works on this portion of the slope.

3. Unauthorised Structures

Underpinning downhill wall of Existing House

The downhill side of the house had settled and the existing downhill supporting concrete block wall supporting the house was underpinned without authorisation (Photo 4). We did not inspect the works. The underpinning was designed by a structural engineer. They also carried out the foundation inspections during the underpinning installation and provided certification of the works upon completion. We rely on this documentation in regards to the geotechnical certification of the underpinning.

New Deck

A new deck has been constructed on the downhill side of the house to replace an old deck. The posts for the deck are supported on the existing rock bolted concrete piers (Photo 3). We consider these footings adequate to support the likely loads from the structure. The structural engineer has confirmed the structural adequacy of the deck and has provided structural certification of the works.

New Retaining Wall

A new soldier pile retaining wall has been constructed immediately below the new deck that is ~1.0m high (Photo 5). The soldier piles are steel posts embedded into the slope. The whalers are concrete lintels at ~1.5m centres. We did not carry out any site inspections during the wall construction. The builder has signed a statutory declaration stating that the reinforced concrete footings were taken to solid rock and has informed us the supporting posts were taken to depths of 3.0m below the surface. The structural engineer has confirmed the structural adequacy of the retaining wall and has provided structural certification of the

works. We rely on this documentation from the builder and structural engineer for the geotechnical certification of the wall.

4. Geology

The Sydney 1:100 000 Geological sheet indicates the site is underlain by the Newport Formation of the Narrabeen Group. It is described as interbedded laminite, shale and quartz to lithic quartz sandstone.

5. Geological Interpretation

The slope materials are colluvial at the near surface and residual at depth. Ground testing done by this firm on nearby properties show that the ground materials consist of a thin silty topsoil over firm to hard clays. The clays merge into the underlying weathered rock at depths of between 0.9 to 1.2m below the current surface. The weathered zone is interpreted to be Extremely Low Strength Shale.

6. Groundwater

Normal ground water seepage is expected to move over the buried surface of the rock and through the cracks. Due to the slope and elevation of the block, the water table is expected to be many metres below the base of the works.

7. Surface Water

No evidence of significant surface flows were observed on the property during the inspection. Normal sheet wash from the slope above will be intercepted by the street drainage system for McCarrs Creek Road above.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards that could impact on the subject property were observed below or beside the property. The steep slope that extends from the downhill side of the house, below the recently constructed works, to the waterfront is a potential hazard (**Hazard One & Two**).

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The steep slope that extends from below the recent works to the waterfront failing and impacting on the house and development.	The steep slope that extends from below the recent works to the waterfront (Photos 1 & 2) failing and impacting on the lower slope/ waterfront.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (15%)	'Medium' (15%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})
RISK TO LIFE	9.6×10^{-7}/annum	7.5×10^{-6}/annum
COMMENTS	'ACCEPTABLE' level of risk.	'TOLERABLE' level of risk. To move risk to Acceptable levels see recommended remedial works.

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

9. Remedial Works

It is recommended the slope below the recent works be planted out in deep-rooted native ground cover and native shrubs. A horticulturalist will be able to advise on suitable native plants for the aspect, that have deep root systems that essentially anchor the soil to the underlying bedrock. The planting should be carried out in stages so that only a small portion of the slope surface is de-vegetated at any time. The lower slope is currently obscured by creeper and other exotic ground cover. Once this is cleared we will be able to assess the lower slope. We think it likely engineered landscaped walls will be required around the toe and upper toe of the slope. We envisage small walls that step up the slope with tie backs to the wall above will be suitable in this location.

10. Conclusion

The unauthorised house alterations, deck and retaining wall construction to date achieve an 'Acceptable' Risk Level in accordance with the 2009 Geotechnical Risk Management Policy for Pittwater.

On completion of the recommended remedial works on the slope below, this portion of the land will achieve an 'Acceptable' Risk Level in accordance with the 2009 Geotechnical Risk Management Policy for Pittwater.

White Geotechnical Group Pty Ltd.

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Engineering Geologist.

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5