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

Develop	oment Applicat	ion for	
-			Name of Applicant
Address	s of site	3 Waratah Roa	ad, Palm Beach
The follov geotechr	ving checklist co nical engineer o	overs the minimum req or engineering geolog	uirements to be addressed in a Geotechnical Risk Declaration made by gist or coastal engineer (where applicable) as part of a geotechnical report
l,	Ben White (Insert Name)	on behalf of	White Geotechnical Group Pty Ltd (Trading or Company Name)
and to de-	_	17/0/00	

on this the <u>17/8/23</u> 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 **3 Waratah Road, Palm Beach** Report Date: 17/8/23

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

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER FORM NO. 1(a) - Checklist of Requirements for Geotechnical Risk Management Report for Development Application

Develo	opment Application for
	Name of Applicant
Addres	ss of site 3 Waratah Road, Palm Beach
The follo Report.	owing checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).
Geotech	nnical Report Details:
Report	Title: Geotechnical Report 3 Waratah Road, Palm Beach
Report	Date: 17/8/23
Author	: BEN WHITE
Author	r's Company/Organisation: WHITE GEOTECHNICAL GROUP PTY LTD
Please r	mark appropriate box
\boxtimes	Comprehensive site mapping conducted 5/6/23 (date)
\boxtimes	Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)
\boxtimes	Subsurface investigation required
	□ No Justification
_	\boxtimes Yes Date conducted <u>5/6/23</u>
	Geotechnical model developed and reported as an interred subsurface type-section
	\square Above the site
	\Box Below the site
	\Box Beside the site
\boxtimes	Geotechnical hazards described and reported
\boxtimes	Risk assessment conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
	⊠ Consequence analysis
	⊠ Frequency analysis
\boxtimes	Risk calculation
\boxtimes	Risk assessment for property conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
\boxtimes	Risk assessment for loss of life conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
\boxtimes	Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk
57	Management Policy for Pittwater - 2009
	Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the
\boxtimes	Design Life Adopted
	\boxtimes 100 years
	□ Other
	specify
\boxtimes	Geotechnical Conditions to be applied to all four phases as described in the Geotechnical Risk Management Policy for Pittwater - 2009 have been specified
\boxtimes	Additional action to remove risk where reasonable and practical have been identified and included in the report.
	Risk assessment within Bushfire Asset Protection Zone.

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, as the basis for ensuring that the geotechnical risk management aspects of the proposal 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	Kelut
Name	Ben White
Chartered Professional Sta	tus MScGEOLAusIMM CP GEOL
Membership No.	222757
Company	White Geotechnical Group Pty Ltd



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GEOTECHNICAL INVESTIGATION:

Alterations and Additions at 3 Waratah Road, Palm Beach

1. Proposed Development

- **2.1** Extend the existing garage and construct a studio over.
- **2.2** Extend the house to the SE.
- **2.3** Other external additions and alterations.
- 2.4 Details of the proposed development are shown on 11 drawings prepared by Two Form Architecture, drawings numbered 22 026 AR DA 00 to 09, and 22 026 AR DA 12, all Revision A, all dated AUG 2023.

2. Site Description

3.1 The site was inspected on the 5th June, 2023.

3.2 This residential property lies between Barrenjoey Road and Waratah Road. It is on the low side of Barrenjoey Road and the entire property has been levelled to a similar elevation as Waratah Road. The slope above the property continues at gradually increasing angles. The slope below the property continues at near-level angles to the waterfront.

3.3 At the road frontage to Waratah Road, a concrete driveway runs past the SW side of the house (Photo 1) to a stable garage on the SE side of the property (Photo 2) which is the site of the proposed works. Between the road frontage and the house is a tile path flanked by level lawns. A pool has been cut into the N corner of the property (Photo 3). The water level indicates no ground movement has occurred in the shell of the pool since its construction. The two-storey house is supported on rendered brick walls (Photo 4). No significant signs of movement were observed in the supporting walls of the house. A gently sloping lawn surrounded by gardens extend off the SE side of the house to the Barrenjoey Road frontage. The cut for this lawn is supported by a

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stable ~1.1m high rendered masonry retaining wall that approximates the E boundary (Photo 5).

3. Geology

The Sydney 1:100 000 Geological Sheet indicates the site is underlain by Newport Formation of the Narrabeen Group, although the waterfront nearby shows medium to fine marine sand (Qhf) of the foredune and at a residential scale the map is not always accurate. Ground testing and observations on site indicate that the proposed works are underlain by medium to fine marine sand (Qhf).

4. Subsurface Investigation

One hand Auger Hole (AH) was put down to identify the soil materials. Three Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative densities of the soil/sands through the profile. The locations of the tests are shown on the site plan attached. It should be noted that a level of caution should be applied when interpreting DCP test results. The test will not pass through hard buried objects so in some instances it can be difficult to determine whether refusal has occurred on an obstruction in the profile or on the natural rock surface. This is not expected to be an issue for the testing on this site. However, excavation and foundation budgets should always allow for the possibility that the interpreted ground conditions in this report vary from those encountered during excavations. See the appended "Important information about your report" for a more comprehensive explanation. The results are as follows:

GROUND TEST RESULTS ON NEXT PAGE



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AUGER HOLE 1 (~RL2.6) - AH1 (Photo 6)

Depth (m)	Material Encountered
0.0 to 0.2	TOPSOIL , sandy soil, brown, Medium Dense to Dense, dry, medium to coarse grained, clay and organic material present
0.2 to 0.5	CLAYEY SOIL , dark brown, Medium Dense, dry, medium grained.
0.5 to 0.75	SAND, brown, Medium Dense, damp, medium to coarse grained.
0.75 to 1.0	SAND, yellow-brown, Medium Dense, wet, medium to coarse grained.

DCP TEST RESULTS – Dynamic Cone Penetrometer									
Equipment: 9kg ha	Equipment: 9kg hammer, 510mm drop, conical tip. Standard: AS1289.6.3.2 - 1997								
Depth(m)	DCP 1	DCP 2	DCP 3						
Blows/0.3m	(~RL2.5)	(~RL2.6)	(~RL2.5)						
0.0 to 0.3	6	8	8						
0.3 to 0.6	4	7	4						
0.6 to 0.9	3	6	8						
0.9 to 1.2	7	8	15						
1.2 to 1.5	22	14	13						
1.5 to 1.8	27	20	16						
1.8 to 2.1	34	32	16						
2.1 to 2.4	45	#	15						
2.4 to 2.7	#		20						
2.7 to 3.0			26						
3.0 to 3.3			34						
3.3 to 3.6			#						
	End of Test @ 2.4m	End of Test @ 2.1m	End of Test @ 3.3m						

End of hole @ 1.0m in Medium Dense Sand. Water table encountered at ~0.75m.

#refusal/end of test. F=DCP fell after being struck showing little resistance through all or part of the interval.

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DCP Notes:

DCP1 – End of test @ 2.4m, DCP still very slowly going down, brown sand on wet tip. DCP2 – End of test @ 2.1m, DCP still very slowly going down, brown sand on wet tip. DCP3 – End of test @ 3.3m, DCP still very slowly going down, brown sand on wet tip.

5. Geological Observations/Interpretation

In the location of the proposed works, the site is underlain by sandy soil and sands that extend to the depth of the testing. To summarise the test results, Medium Dense to Dense sandy soil occupies the top ~0.2m of the profile, these overlie Medium Dense Sands that extend to the maximum depth of the testing at ~3.3m. Rock was not encountered to the extent of the tests at ~3.3m. See the Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

The watertable was encountered in AH1 at a depth of ~0.75m below the current surface. This is expected to be below the base of the foundations for the proposed works. As such, the water table will not impact on the proposed development. However, it should be noted the watertable fluctuates with the tide and climatic changes.

7. Surface Water

No evidence of significant surface flows were observed on the property during the inspection. Normal sheet wash is expected to be quickly absorbed into the sandy soil where surfaces are unsealed.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed below and beside the property. The gently graded slope that rises across and above the property is a potential hazard (**Hazard One**).



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Risk Analysis Summary

HAZARDS	Hazard One						
ТҮРЕ	The gentle slope that rises across the site and continues above failing and impacting on the existing house and/or proposed works.						
LIKELIHOOD	'Rare' (10⁻⁵)						
CONSEQUENCES TO PROPERTY	'Minor (3%)						
RISK TO PROPERTY	'Very Low' (5 x 10 ⁻⁷)						
RISK TO LIFE	2.5 x 10 ⁻⁷ /annum						
COMMENTS	This level of risk is 'ACCEPTABLE.'						

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

9. Suitability of the Proposed Development for the Site

The proposed development is suitable for the site. No geotechnical hazards will be created by the completion of the proposed development provided it is carried out in accordance with the requirements of this report and good engineering and building practice.

10. Stormwater

Waratah Road is not guttered adjacent to the subject property. However, Northern Beaches Council mapping shows that there is an existing stormwater system running under Waratah Road. As such, it is recommended all stormwater or drainage runoff from the proposed development be piped to this stormwater system through any tanks that may be required by the regulating authorities.

11. Excavations

Apart from those for footings, no excavations are required.

12. Foundations

The proposed works can be supported on spread footings taken to a depth of no less than 0.4m into the underlying Medium Dense Sands of the natural profile. This is a suitable bearing material.



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A maximum allowable bearing pressure of 100kPa can be assumed for footings supported on the undisturbed, Medium Dense Sands of the natural profile.

The footing excavation walls in sand are to be shored with timber to prevent collapse prior to the concrete pour. The base of the footing excavations should be compacted as the excavation will loosen the upper sands. This can be carried out with a hand-held plate compactor. Water may be used to assist in compaction in sand but footing materials should be kept damp but not saturated. As a guide to the level of compaction required a density index of >85% is to be achieved, correlating to a Very Dense Sand.

13. Geotechnical Review

The structural plans are to be checked and certified by the geotechnical engineer as being in accordance with the geotechnical recommendations. On completion, a Form 2B will be issued. This form is required for the Construction Certificate to proceed.

14. Inspection

The client and builder are to familiarise themselves with the following required inspection as well as council geotechnical policy. We cannot provide geotechnical certification for the regulating authorities or the owner if the following inspection has not been carried out during the construction process.

 All 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.

Hlandner

Nathan Gardner B.Sc. (Geol. & Geophys. & Env. Stud.) Engineering Geologist and Environmental Scientist.

Reviewed By:

1/100

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



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Photo 1



Photo 2



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Photo 3



Photo 4



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Photo 5



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Photo 6: AH1 – Downhole is from bottom to top



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Important Information about Your Report

It should be noted that Geotechnical Reports are documents that build a picture of the subsurface conditions from the observation of surface features and testing carried out at specific points on the site. The spacing and location of the test points can be limited by the location of existing structures on the site or by budget and time constraints of the client. Additionally, the test themselves, although chosen for their suitability for the particular project, have their own limiting factors. The testing gives accurate information at the location of the test, within the confines of the test's capability. A geological interpretation or model is developed by joining these test points using all available data and drawing on previous experience of the geotechnical consultant. Even the most experienced practitioners cannot determine every possible feature or change that may lie below the earth. All of the subsurface features can only be known when they are revealed by excavation. As such, a Geotechnical report can be considered an interpretive document. It is based on factual data but also on opinion and judgement that comes with a level of uncertainty. This information is provided to help explain the nature and limitations of your report.

With this in mind, the following points are to be noted:

- If upon the commencement of the works the subsurface ground or ground water conditions prove different from those described in this report, it is advisable to contact White Geotechnical Group immediately, as problems relating to the ground works phase of construction are far easier and less costly to overcome if they are addressed early.
- If this report is used by other professionals during the design or construction process, any questions should be directed to White Geotechnical Group as only we understand the full methodology behind the report's conclusions.
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.
- This report should not be applied to any other project other than that outlined in section 1.0.
- This report is to be read in full and should not have sections removed or included in other documents as this can result in misinterpretation of the data by others.
- It is common for the design and construction process to be adapted as it progresses (sometimes to suit the previous experience of the contractors involved). If alternative design and construction processes are required to those described in this report, contact White Geotechnical Group. We are familiar with a variety of techniques to reduce risk and can advise if your proposed methods are suitable for the site conditions.





two form pty itd Mstina Mitkovski NSW Reg No. 7994 **Nominated Archite**

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The Contractor shall confirm on site existing dimensions and conditions before commencement of works. All discrepancies should be reported to the Architect for instructions. Two Form does not accept responsibility for the dimensional accuracy of any data contained in CAD or other attachments as it may be based on third party origin internation. All information should be verified in writing two fo ARCHITECTURE + INTERIOR DESIGN Suite 203 level 2 34 Charles Street Paramatia NSW 2150 p 02 9098 6921 e info@tecform.com.au texform.com.au

SITE ANALYSIS PLAN

STEPHEN AND SUSAN JONES

CLIENT

PROJECT

DRAWING NAME

DRAWING NUMBER 22 026 AR DA 01

REVISION

А

ALTERATIONS AND ADDITION TO EXISTING DWELLING 3 WARATAH ROAD, PALM BEACH LOT 15 DP 051513

DRAWING STAGE DEVELOPMENT ASSESSMENT 1:125 AT A2

DATE AUG 2023

SCALE

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials





NORTH - EAST ELEVATION C SCALE 1:100

EXISTING DWELLING UNALTERED SHADED AREA DENOTES NEW WORK

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REV.	DATE	DESCRIPTION	CHECKED	LEC	LEGEND						two form ply ltd	
A	16.08.2023	ISSUED FOR DEVELOPMENT APPLICATION	KM	ABI	ABBREVIATIONS MATERIALS AND FINISHES						Nominated Architect Kristina Mitkovski NSW Reg No. 7998	
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EXAMPLES OF **POOR** HILLSIDE PRACTICE

