



Jack Hodgson Consultants Pty Limited

CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS

ABN: 94 053 405 011

RISK ANALYSIS & MANAGEMENT FOR THE PROPOSED ADDITIONS AT 143 PRINCE ALFRED PARADE, NEWPORT



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

Development Application for <u>MR & MRS WILLS</u>	Name of Applicant
Address of site <u>143 PRINCE ALFRED PARADE, NEWPORT</u>	

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

I, J Hodgson on behalf of Jack Hodgson Consultants Pty Ltd
(insert name) (Trading or Company Name)

on this the 2/10/07 certify that I am a geotechnical engineer or engineering geologist or coastal engineer as defined by the Geotechnical Risk Management Policy for Pittwater 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 \$2million. I have:

Please mark appropriate box

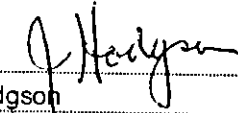
- Prepared the detailed Geotechnical Report referenced below in accordance with the Australia Geomechanics Society's Geotechnical Risk Management Guidelines and the Pittwater Council Policy
- Am willing to technically verify that the detailed Geotechnical Report referenced below has been prepared in accordance with the Australian Geomechanics Society's Geotechnical Risk Management Guidelines and the Pittwater Council Policy
- Have examined the site and the proposed development/alteration in detail and am of the opinion that the Development Application only involves Minor Development/Alterations that do not require a Detailed Geotechnical risk Assessment and hence my report is in accordance with the Policy requirements for Minor Development/Alterations.
- Provided the coastal process and coastal forces analysis for inclusion in the geotechnical report

Geotechnical Report Details:

Report Title: <u>RISK ANALYSIS & MANAGEMENT FOR PROPOSED ADDITIONS AT 143 PRINCE ALFRED PARADE, NEWPORT</u>
Report Date: <u>2/9/07</u>
Author: <u>BEN WHITE</u>

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

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 Jack Hodgson
 Chartered Professional Status MEngSc FIEAust
 Membership No. 149 788



**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1(a) - Checklist Of Requirements For Geotechnical Risk Management Report for
Development Application or Part V assessment**

Development Application for	<u>MR & MRS WILLS</u>
	Name of Applicant
Address of site	<u>143 PRINCE ALFRED PARADE, NEWPORT</u>

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical Report. This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).

<p align="center">Geotechnical Report Details:</p> <p>Report Title: RISK ANALYSIS & MANAGEMENT FOR PROPOSED ADDITIONS AT 143 PRINCE ALFRED PARADE, NEWPORT</p> <p>Report Date: 2/9/07</p> <p>Author: BEN WHITE</p>
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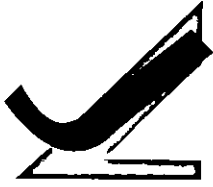
Please mark appropriate box

- Comprehensive site mapping conducted 19/2/07,
(date)
- Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)
- Subsurface investigation required
 - No Justification SEE REPORT
 - Yes Date conducted
- Geotechnical model developed and reported as an inferred subsurface type-section
- Geotechnical hazards identified
 - Above the site
 - On the site
 - Below the site
 - Beside the site
- Geotechnical hazards described and reported
- Risk assessment conducted in accordance with Council's Policy
 - Consequence analysis
 - Frequency analysis
- Risk calculation
- Risk assessment for property conducted in accordance with Council's Policy
- Risk assessment for loss of life conducted in accordance with Council's Policy
- Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater
- Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.
- Design Life Adopted:
 - 100 years
 - Other
specify
- Development Conditions to be applied to all four phases as described in Pittwater Geotechnical Risk Management Policy have been specified
- Additional action to remove risk where reasonable and practical have been identified and included in the report.

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 *J Hodgson*
 Name Jack Hodgson
 Chartered Professional Status MEngSc FIEAust
 Membership No. 149 788





**RISK ANALYSIS & MANAGEMENT
FOR
PROPOSED ADDITIONS
AT
143 PRINCE ALFRED PARADE, NEWPORT**

1. INTRODUCTION.

1.1 This assessment has been prepared to accompany an application for development approval. The requirements of the Interim Geotechnical Risk Management Policy for Pittwater, June 2003 have been met.

1.2 The definitions used in this Report are those used in the Interim Geotechnical Risk Management Policy for Pittwater, June 2003.

1.3 The methods used in this Assessment are based on those described in Landslide Risk Management Concepts and Guidelines, March 2000, published by the Sub-Committee on Landslide Risk Management of the Australian Geomechanics Society and as modified by the Interim Geotechnical Risk Management Policy for Pittwater, June 2003.

1.4 The experience of Jack Hodgson spans some 50 years in many areas of Australia and in the Pittwater area, particularly in the last 30 years as Principal of Jack Hodgson Consultants Pty Limited.

2. PROPOSED DEVELOPMENT.

2.1 Add an upper floor to the existing house.

2.2 Various other external and internal alterations.

2.3 Details of the proposed development are shown on two drawings prepared by All Walls Building Design numbered 07040-1 to 2 and dated July 07.



3. DESCRIPTION OF SITE & SURROUNDING AREA.

3.1 The site was inspected on the 19th September 2007.

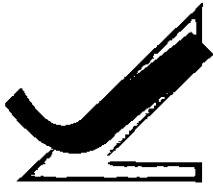
3.2 The property is on the high side of the road and has an easterly aspect (Photo 1). The original land surface sloped up from the road at angles of some 20 to 25 degrees. The surface has since been modified. At the road frontage a garage runs up the northern boundary to a garage under the house. To the south of the driveway a series of retaining walls provide a level fill that forms a lawn (Photo 2). The supporting concrete block retaining walls are in excellent condition. A path cuts across the front of the house and runs up the southern side providing access to the back yard. A concrete block wall that rises beyond the lawn marking the edge of the path is cracked (Photo 3). The wall is stable in its present state. A platform has been excavated in the slope to form a level patio area that runs along the uphill side of the house (Photo 4). The toe of the cut batter for this excavation is supported by a low concrete block wall in good condition. The upper area of the cut is battered back at an angle of some 45 degrees and is supported by a stack rock wall in stable configurations. Beyond the cut the surface of the block has been terraced in a series of low stack rock walls (Photo 5). The surface is grass covered.

3.3 The part two level rendered brick and fibreboard house is in good condition. It is supported on brick walls that display no evidence of ground movement.

3.4 Observation of the adjacent properties indicates that they do not present a risk of instability to the subject property.

4. GEOLOGY OF THE SITE.

4.1 The site is underlain by interbedded sandstones, siltstones and shales of the Narrabeen Group that do not outcrop on the site. The Narrabeen Group Rocks are Late Permian to Middle Triassic in age with the early rocks not outcropping in the area under discussion. The materials from which the rocks were formed consist of gravels, coarse to fine sands, silts and clays. They were deposited in a riverine type environment with larger floods causing fans of finer materials. The direction of deposition changed during the period of formation. The lower beds are very variable with the variations decreasing as the junction with the Hawkesbury Sandstones is approached. This is marked by the highest of persistent shale beds over thicker sandstone beds which are similar in composition to the Hawkesbury Sandstones.



4.2 They consist of sandy loam topsoil over sandy clays and clays with rock fragments and some floaters through out the profile. The sandy clays and clays merge into the weathered zone of the under lying rocks at depths expected to be in the range 0.6 to 3.0 metres.

4.3 Due to the nature of the work no type section is considered necessary.

5. SUBSURFACE INVESTIGATION.

The cut batter on the southern boundary in the back yard exposes the subsurface profile. The log of this profile is as follows:

CUT BATTER 1

0.0 to 0.2 Grey brown sandy loam topsoil

0.2 to 0.5 Yellow brown firm to stiff clay with iron stone & shale gravel

0.5 to 1.2 Mottled grey to maroon firm to stiff clays with shale fragments

6. DRAINAGE OF THE SITE.

6.1 ON THE SITE.

The site is well drained with no natural watercourses.

6.2 SURROUNDING AREA.

No natural drainage channels were observed entering the site from the neighbouring properties.

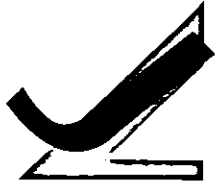
7. GEOTECHNICAL HAZARDS.

7.1 ABOVE THE SITE.

No geotechnical hazards likely to adversely affect the subject property were observed above the site.

7.2 ON THE SITE.

7.2.1 The cut batter at the rear of the house is a potential hazard (Photo 4, HAZARD ONE).



7.3 BELOW THE SITE.

No geotechnical hazards likely to adversely affect the subject property were observed below the site.

7.4 BESIDE THE SITE.

No geotechnical hazards likely to adversely affect the subject property were observed beside the site.

8. RISK ASSESSMENT.

8.1 ABOVE THE SITE.

As no geotechnical hazards likely to adversely affect the subject site were observed above the site, no risk analysis is required.

8.2 ON THE SITE.

8.2.1 HAZARD ONE The cut batter is supported at the toe by a low stable concrete block wall. The batter is angled back at some 45 degrees and is supported by a stack rock wall in stable configurations. The likelihood of the batter failing is assessed as 'Unlikely' ($>10^{-4}$). The consequences to property of such a failure are assessed as 'Medium' ($>1\%$). The consequences to life of such a failure are assessed as 'Medium' ($>10^{-3}$). The risk to property is 'Low' (10^{-6}). The risk to life is 'Low' (10^{-6}).

8.3 BELOW THE SITE.

As no geotechnical hazards likely to adversely affect the subject site were observed below the site, no risk analysis is required.

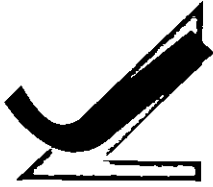
8.4 BESIDE THE SITE.

As no geotechnical hazards likely to adversely affect the subject site were observed beside the site, no risk analysis is required.

9. SUITABILITY OF DEVELOPMENT FOR SITE.

9.1 GENERAL COMMENTS.

The proposed development is suitable for the site.



9.2 GEOTECHNICAL COMMENTS.

No geotechnical hazards will be created by the completion of the proposed development in accordance with the requirements of this Report and good engineering and building practice.

9.3 CONCLUSIONS.

The site and the proposed development can achieve the Acceptable Risk Management criteria outlined in the Pittwater Interim Geotechnical Risk Policy provided the recommendations given in **Section 10** are undertaken.

10. RISK MANAGEMENT.

10.1. TYPE OF STRUCTURE.

The proposed structure is suitable.

10.2. EXCAVATIONS.

No excavations are required for the proposed development.

10.3. FILLS.

No fills are shown on the plans.

10.4. FOUNDATION MATERIALS AND FOOTINGS.

10.4.1 It is recommended that any additional footings that may be required for the proposed development are to be supported on the underlying weathered rock using piers as necessary. The design ultimate bearing pressures are 1.2 MPa for spread footings or shallow piers.

10.5. STORM WATER DRAINAGE.

All storm water runoff from the proposed development is to be collected and stored for domestic use and/or piped to the stormwater system for the house through any On Site Detention System that may be required by council.



10.6. SUBSURFACE DRAINAGE.

All retaining walls are to have adequate drainage such as those fitted with standpipes to permit flushing of the system.

10.7. INSPECTIONS.

10.7.1 It is recommended that the foundation materials of all footing excavations be inspected and approved before concrete is placed.

10.8 MAINTENANCE.

10.8.1 The property is to be maintained in good order and in accordance with the guidelines set out in CSIRO BTF 18 "Foundation Maintenance and Footing Performance: A Homeowner's Guide" and the Australian Geomechanics Article "Landslide Risk Management Concepts and Guidelines" May 2002.

10.8.2 No special maintenance is required.

11. GEOTECHNICAL CONDITIONS FOR ISSUE OF CONSTRUCTION CERTIFICATE.

It is recommended that the following geotechnical conditions be applied to the Development Approval:-

The work to be completed is to be carried out in accordance with the Risk Management Report VS 24688 dated 2nd October 2007.

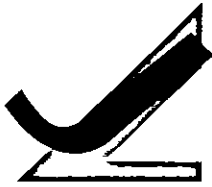
The Geotechnical Engineer is to inspect and approve the foundation materials of all footing excavations before concrete is placed.

12. GEOTECHNICAL CONDITIONS FOR ISSUE OF OCCUPATION CERTIFICATE.

The Geotechnical Engineer is to certify the following geotechnical aspects of the development:-

The work has been carried out in accordance with the Risk Management Report VS 24688 dated 2nd October 2007.

The foundation materials of all footing excavations were inspected and approved before concrete was placed.



13. RISK ANALYSIS SUMMARY.

HAZARDS	Hazard One
TYPE	The cut batter at the rear of the house failing.
LIKELIHOOD	'Unlikely' ($>10^{-4}$)
CONSEQUENCES TO PROPERTY	'Medium' ($>1\%$)
CONSEQUENCES TO LIFE	'Medium' ($>10^{-3}$)
RISK TO PROPERTY	'Low' (10^{-6})
RISK TO LIFE	'Low' (10^{-6})
COMMENTS	'Acceptable'

JACK HODGSON CONSULTANTS PTY. LIMITED.

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Director.



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5