
D Katauskas

Consulting Geotechnical Engineer

A division of Podrone Pty Ltd ABN 59 442 991 347

email: dkatauskas@gmail.com

127B Campbell Drive

Wahroonga NSW 2076

Phone 02 9489 6341

Fax 02 9489 5728

Mob 0409 727 831

15 July, 2009

Ref 376

Emerald Designs
Unit 7, 9a Ponderosa Pde
Warriewood NSW 2102

Attention Craig Henery

Dear Craig

Re Geotechnical Assessment & Risk Analysis
Proposed Alterations & Additions
2 Bilgola Terrace, Bilgola

Further to your instructions I completed an inspection and investigation of the subject site on 9 March 2009. The express purpose of this work was to assess the slope stability and the effect upon the same of the proposed alterations and additions to the existing residence.

I have noted Pittwater Council's *Geotechnical Risk Management Policy for Pittwater – 2007* requirements and the recommendations of *Landslide Risk Management, AGS Publication Vol 42 No 1, March 2007* and include with this report completed Forms 1 and 1a, relating to council's policy requirements.

GEOTECHNICAL HAZARD ZONE

The subject site has been identified on Council's *Geotechnical Risk Management Map* as spanning both 'H3' and 'H1' Hazard Zones. The H3 zone covers the substantial part of the site while the H1 zone affects the lower third of the area.

SITE DESCRIPTION AND GEOLOGY

The site is situated on an east facing hillslope where the changes in ground elevation vary by about 6 metres between the higher lying west boundary and lower east boundary. Past development has resulted in changes to the natural hillside slope by cut and fill, filling and retaining walls appear to be confined to the eastern or lower third of the site.

Sandstone bedrock is exposed in the subfloor areas of the existing house and at nearby locations to the east and west of the site.

Available geological information shows that Hawkesbury Sandstone comprises the regional bedrock type

PROPOSED ALTERATIONS

The proposed new works are identified on the attached Figure 2 and will involve alterations and additions to the existing house, together with a new garage and new access driveway from Bilgola Terrace

The alterations are considered to be of minima impact on the site and will have no discernible effect on the stability of the neighbouring properties

RESULTS OF INVESTIGATION

The subsurface conditions were investigated by augering and sampling 4 boreholes using a track-mounted earth boring machine which disclosed the eastern third of the site to be underlain by fill to depths of up to 2 metres, followed by natural silty and sandy clays and thereafter sandstone bedrock at depths ranging from 1.7 to 3.5 metres below existing ground level. As previously noted, sandstone bedrock was evident immediately uphill of the area investigated.

No groundwater was encountered during the investigation

QUANTITATIVE RISK ASSESSMENT TO LIFE

These calculations are based upon AGS 2007(c) Part C

$$\begin{aligned} R_{LOL} &= P_H \times P_{SH} \times P_{TS} \times V_{DT} \\ &= 10^{-5} \times 0.4 \times 0.5 \times 0.1 \\ &= 2 \times 10^{-7} \text{ pa} \end{aligned}$$

From Pittwater Council's Interim Policy Document (attached)

$$\begin{aligned} R_{LOL} &= 10^{-8} \text{ pa} \\ \text{Adopt } R_{LOL} &= 10^{-7} \text{ pa} \\ &= \text{Acceptable} \end{aligned}$$

QUALITATIVE RISK ASSESSMENT TO PROPERTY

Global hillside instability has been taken into consideration and comments and conclusions are presented as follows

- The likelihood of global instability of the hillside is NOT CREDIBLE, and therefore there are no consequences if failure cannot occur. Accordingly a VERY LOW property risk is assessed as appropriate.

QUALITATIVE RISK ASSESSMENT TO LIFE

The likelihood of loss of life resulting from landslip is BARELY CREDIBLE and accordingly the risk falls well within an ACCEPTABLE RISK level.

RECOMMENDATIONS

In my opinion the site conforms to the Acceptable Risk Management required by Council's Policy. The new works are considered to be of minimal impact on site stability and will not affect the stability of the neighbouring properties and therefore no further geotechnical input is considered necessary.

However, because old fill encroaches upon the proposed area of new works, the following specific recommendations are made:

- All new foundations should be taken to the underlying sandstone bedrock using as appropriate bored piers or strip and spread footings.
- Any new retaining walls should also be supported on foundations when carrying the load to the underlying bedrock.
- Footings taken into the sandstone bedrock may be designed using an allowable bearing pressure of up to 1000kPa.
- Good site drainage should be maintained at the site.

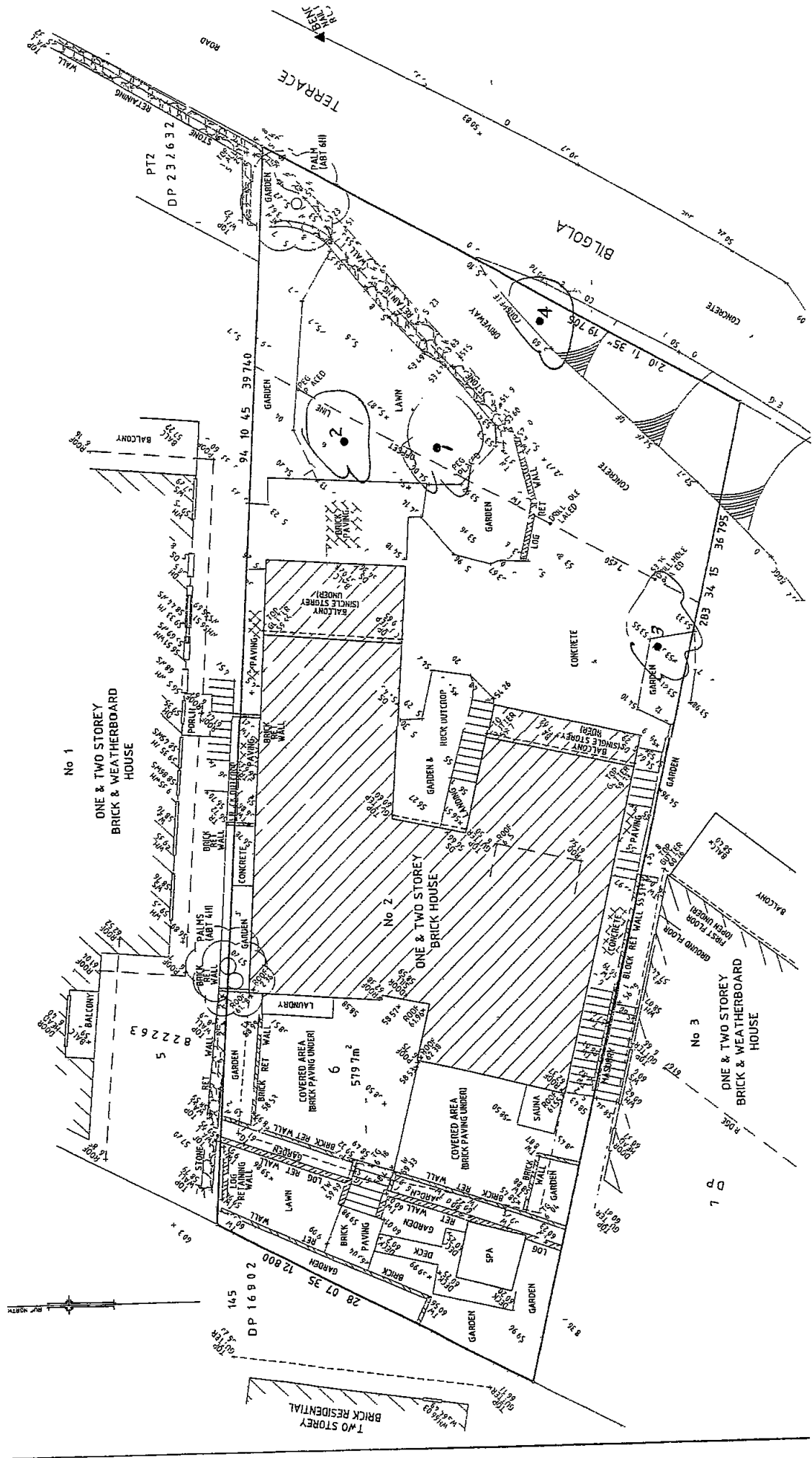
If you have any queries regarding the above, please do not hesitate to call me,

Regards



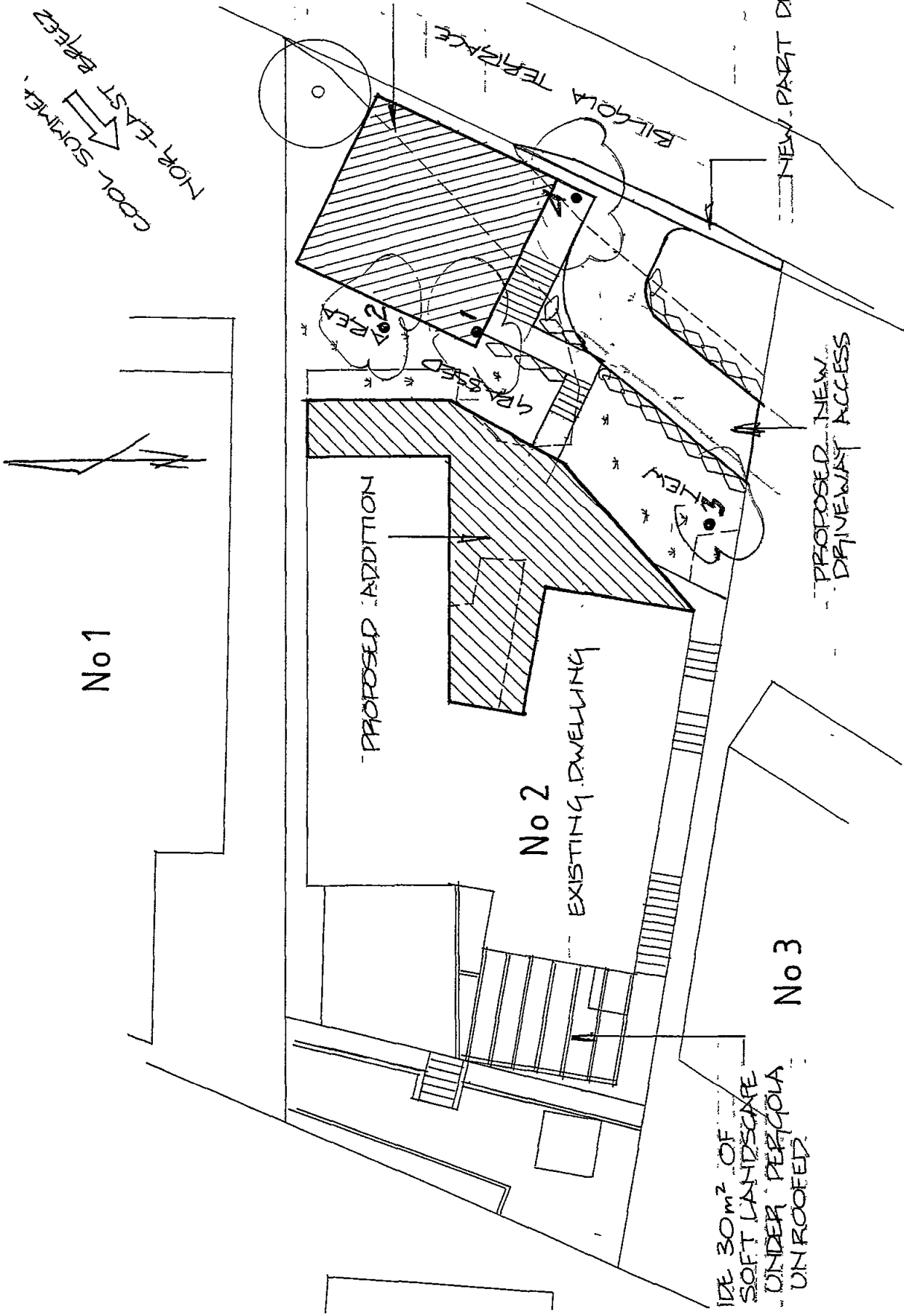
D. Katauskas

encl Forms 1 and 1a
Figure 1 Site Survey Plan
Figure 2 Location of proposed additions & alterations



D Katakas Geotechnical Engineer
 Client Emerald Designs
 Proposed Alterations & Additions
 2 Bilgola Terrace, Bilgola, NSW

JOB NO 376
 FIGURE NO 1
 SCALE 1:200



D Katauskas Geotechnical Engineer
 Client Emerald Designs
 Proposed Alterations & Additions
 2 Biggola Terrace, Biggola, NSW
 Location of Alterations

JOB NO 376
 FIGURE NO 2
 SCALE 1:200

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

Development Application for _____	Name of Applicant
Address of site <u>2 BILGOLA TR BILGOLA</u>	

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

I Don KATANSKAS on behalf of D KATANSKAS CONSULTING GEOTECHNICAL ENGINEER
 (Insert Name) (Trading or Company Name)

on this the 15 JULY 2009 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>GEOTECHNICAL ASSESSMENT & RISK ANALYSIS</u>
Report Date <u>15 JULY 2009</u>
Author <u>DON KATANSKAS</u>

Documentation which relate to or are relied upon in report preparation

<u>DRAWING Nos 1-10 To 16 S234 Preparation by EYEBROW DESIGN</u>
<u>SURVEY PLAN BY DUNCAN THORPE 16 16797</u>

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 Don KATANSKAS
 Chartered Professional Status MEMBER AGS
 Membership No _____

**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 _____	Name of Applicant _____
Address of site <u>2 BIGGIA TR. BIGGIA</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)

Geotechnical Report Details
Report Title <u>GEOTECHNICAL ASSESSMENT & RISK ANALYSIS</u>
Report Date <u>15 JULY 2009</u>
Author <u>Don KATRAKIS</u>

Please mark appropriate box

- Comprehensive site mapping conducted Not Considered Necessary
SURVEY (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
 - Yes Date conducted 9 MARCH 2009
- Geotechnical model developed and reported as an inferred subsurface type section (see FILE)
- 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 [Signature]
 Name Don KATRAKIS
 Chartered Professional Status MEMBER AGS
 Membership No _____