

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

Development Application for _____
Name of Applicant

Address of site 87 Wallumatta Road, Newport

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk 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 25/6/20 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 87 Wallumatta Road, Newport

Report Date: 25/6/20

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

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

| | |
|-----------------------------|------------------------------------|
| Development Application for | Name of Applicant |
| Address of site | <u>87 Wallumatta Road, 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).

Geotechnical Report Details:

| |
|--|
| Report Title: Geotechnical Report <u>87 Wallumatta Road, Newport</u> |
| Report Date: <u>25/6/20</u> |
| Author: <u>BEN WHITE</u> |
| Author's Company/Organisation: <u>WHITE GEOTECHNICAL GROUP PTY LTD</u> |

Please mark appropriate box

- ☒ Comprehensive site mapping conducted 28/2/20
(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 28/2/20
- ☒ 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 the Geotechnical Risk Management Policy for Pittwater - 2009
 - ☒ Consequence analysis
 - ☒ Frequency analysis
- ☒ Risk calculation
- ☒ Risk assessment for property conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
- ☒ Risk assessment for loss of life conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
- ☒ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater - 2009
- ☒ 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
- ☒ Geotechnical Conditions to be applied to all four phases as described in the Geotechnical Risk Management Policy for Pittwater - 2009 have been specified
- ☒ 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 _____
Name Ben White
Chartered Professional Status MScGEOLAusIMM CP GEOL
Membership No. 222757
Company White Geotechnical Group Pty Ltd

GEOTECHNICAL INVESTIGATION:

Alterations and Additions at 87 Wallumatta Road, Newport

1. Proposed Development

- 1.1** Extend the W and downhill sides of the house onto the existing balcony.
- 1.2** Construct a new deck off the downhill side of the house.
- 1.3** Details of the proposed development are shown on 16 drawings prepared by Marika Jarv, Job number 39, drawings numbered FG01-DA to FG16-DA, dated 5/6/20.

2. Site Description

- 2.1** The site was inspected on the 28th February, 2020.
- 2.2** This residential property is on the low side of the road and has a S aspect. The block is located on the moderately graded middle reaches of a hillslope. From the road frontage to the lower boundary, the natural slope falls at an average angle of ~15°. The slope above and below the property continues at similar angles.
- 2.3** A small gravel parking area extends off the road frontage. The fill for the road and parking area is battered to stable angles (Photo 1). The fill batter is well-vegetated and falls to the top of a ~1.2m high stable sandstone block retaining wall that approximates the upper boundary (Photo 2). Between this wall and the house is stepped stable brick retaining wall ~1.0m high (Photo 3). The part two-storey brick house is supported on brick walls (Photo 4). No significant signs of movement were observed in the supporting brick walls. Some of the supporting walls were observed to be supported directly off outcropping competent Medium Strength Sandstone. A stormwater pipe discharges immediately below the house into a creek channel that runs down the centre of the downhill side of the property to and beyond the lower

boundary (Photos 5 & 6). Medium Strength Sandstone bedrock was observed to be outcropping within the creek bed. Some sandstone boulders were also observed in the creek bed. The slope has been terraced on the E side of the creek with two stable sandstone block retaining walls reaching ~1.5m high (Photo 7). The slope around the creek is well-vegetated (Photo 8).

3. Geology

The Sydney 1:100 000 Geological sheet indicates the contact of the Hawkesbury Sandstone and the Newport Formation of the Narrabeen Group cuts through the property. It is interpreted from the ground test results that the site is underlain by Hawkesbury Sandstone. The outcropping sandstone within the creek beds confirms this.

4. Subsurface Investigation

Two Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to bedrock. The locations of the tests are shown on the site plan. 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 and the results are as follows:

| DCP TEST RESULTS – Dynamic Cone Penetrometer | | |
|---|------------------------|-------------------------------|
| Equipment: 9kg hammer, 510mm drop, conical tip. | | Standard: AS1289.6.3.2 - 1997 |
| Depth(m) Blows/0.3m | DCP 1 (~RL44.1) | DCP 2 (~RL46.2) |
| 0.0 to 0.3 | 3 | 3 |
| 0.3 to 0.6 | # | 5 |
| 0.6 to 0.9 | | 6 |
| 0.9 to 1.2 | | 10 |
| 1.2 to 1.5 | | 6 |
| 1.5 to 1.8 | | # |
| | Refusal on Rock @ 0.2m | Refusal on Rock @ 1.3m |

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

DCP Notes:

DCP1 – Refusal on rock @ 0.2m, DCP bouncing off rock surface, white impact dust on dry tip.

DCP2 – Refusal on rock @ 1.3m, DCP bouncing off rock surface, white impact dust on dry tip.

5. Geological Observations/Interpretation

The surface features of the block are controlled by the underlying sandstone bedrock that steps down the property forming sub-horizontal benches between the steps. Where the grade is steeper, the steps are larger and the benches narrower. Where the slope eases, the opposite is true. The rock is overlain by a thin sandy topsoil over firm to stiff sandy clays that fill the bench step formation. Filling has been placed on the E side of the creek channel for terracing. In the test locations, rock was encountered at depths of 0.2 and 1.3m below the current surface on either side of the creek channel. The deeper test (DCP2) was taken through the fill on the E side of the channel. The sandstone underlying the property is estimated to be medium strength or better as the DCP bounced at the end of every test and similar strength rock is expected to underlie the entire site. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

Ground water seepage is expected to move over the buried surface of the rock and through the cracks. As a creek flows down the centre of the block (Photos 5 & 6), we expect groundwater seepage to be slightly higher across the block as slope seepage will move toward the creek. Due to the slope and elevation of the block, the water table is expected to be many metres below the base of the proposed works.

7. Surface Water

A creek is piped down the centre of the site and under the house where it flows into a natural channel immediately below the deck on the downhill side of the house. This will have design implications for the proposed deck in terms of positioning of the supporting posts.

8. Geotechnical Hazards and Risk Analysis

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

Risk Analysis Summary

| HAZARDS | Hazard One |
|--------------------------|--|
| TYPE | The moderate slope that falls across the property and continues above and below failing and impacting on the property. |
| LIKELIHOOD | 'Unlikely' (10^{-4}) |
| CONSEQUENCES TO PROPERTY | 'Medium' (20%) |
| RISK TO PROPERTY | 'Low' (2×10^{-5}) |
| RISK TO LIFE | 8.3×10^{-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

There is fall to the creek that runs down the property (Photos 5 & 6). Roof water from the development is to be piped to the creek through any tanks that may be required by the regulating authorities. A diffuser is to be installed at the outlet of any new stormwater pipes that divert stormwater to the creek channel.

11. Excavations

Apart from those for footings, no excavations are required.

12. Foundations

The proposed deck is to be supported on piers taken into the underlying Medium Strength Sandstone. The supporting deck posts are to be positioned beyond either side of the creek channel. The sandstone is expected at depths of 0.2 and 1.3m below the current surface on either side of the creek channel. The piers are to be potted 0.3m into rock or attached to the rock with suitable bar (reo) grouted into the rock. A maximum allowable bearing pressure of 1000kPa can be assumed for footings on Medium Strength Sandstone.

Naturally occurring vertical cracks (known as joints) commonly occur in sandstone. These are generally filled with soil and are the natural seepage paths through the rock. They can extend to depths of several metres and are usually relatively narrow but can range between 0.1 to 0.8m wide. If a footing falls over a joint in the rock the construction process is simplified if with the approval of the structural engineer the joint can be spanned or alternatively the footing can be repositioned so it does not fall over the joint.

NOTE: If the contractor is unsure of the footing material required, it is more cost-effective to get the geotechnical consultant on site at the start of the footing excavation to advise on footing depth and material. This mostly prevents unnecessary over-excavation in clay-like shaly-rock but can be valuable in all types of geology.

REQUIRED INSPECTION IS ON THE NEXT PAGE

13. 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 owner or the regulating authorities 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 is 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



Photo 5



Photo 6



Photo 7

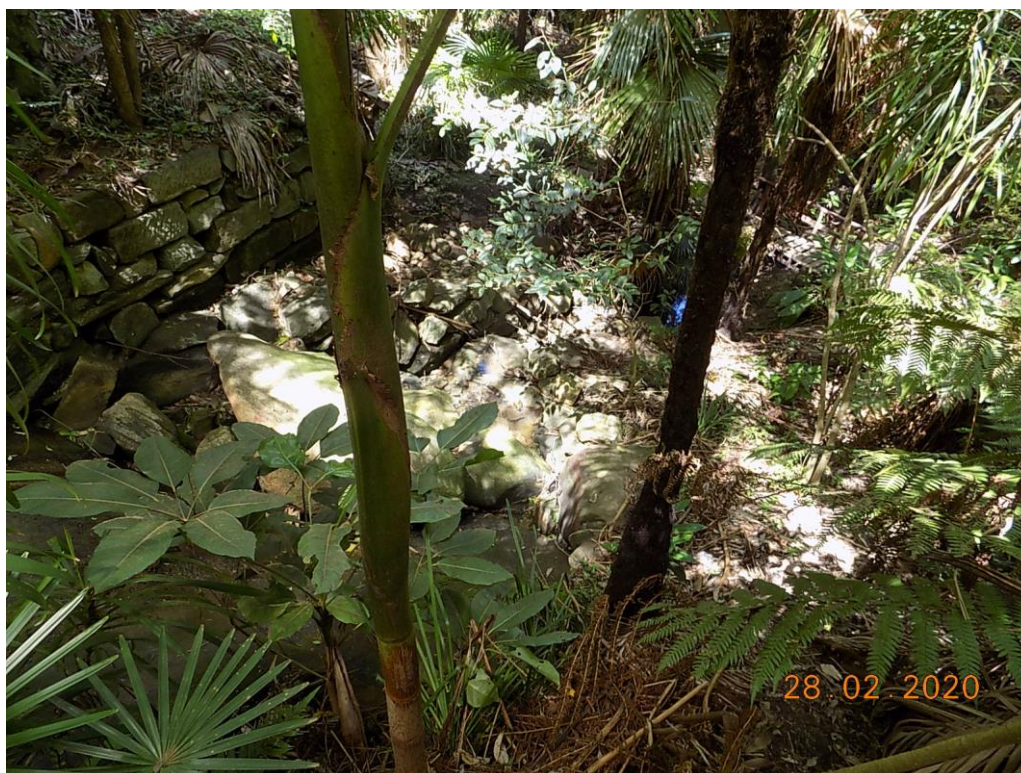


Photo 8

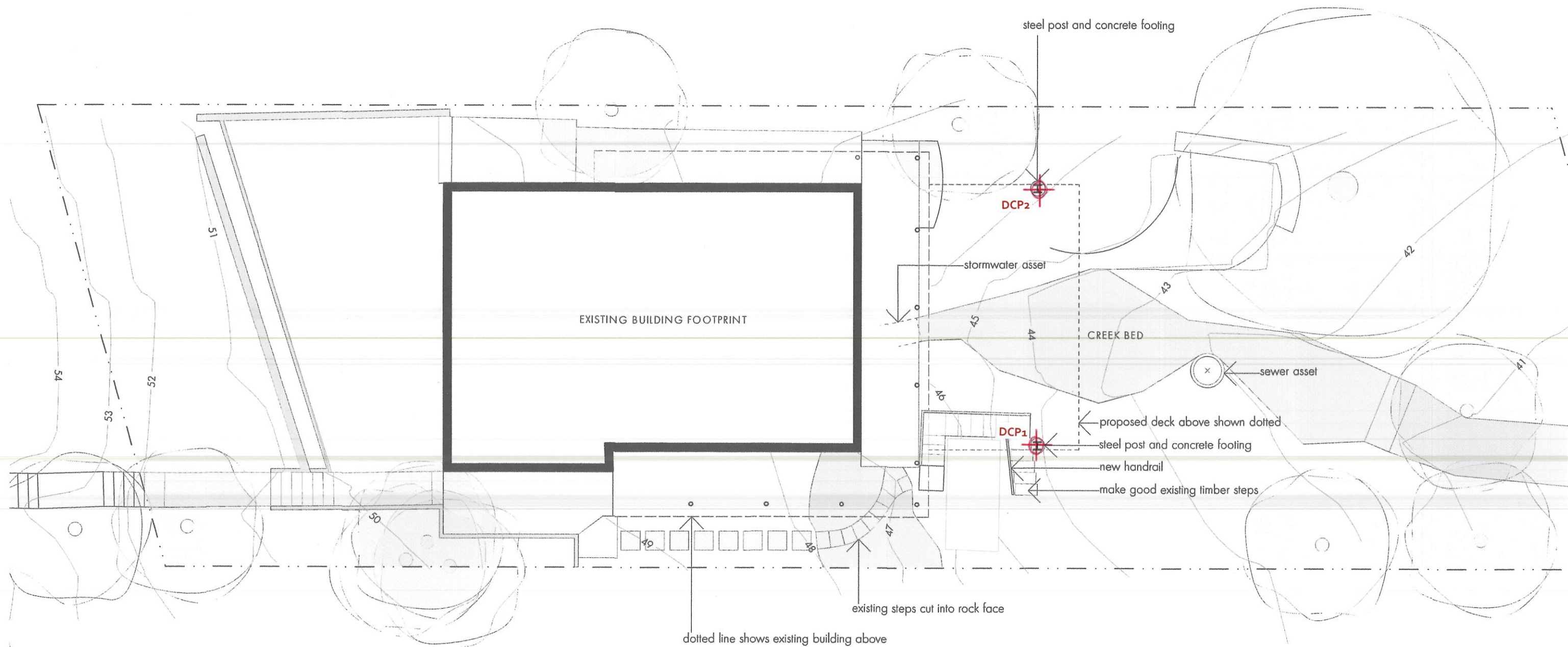
Important Information about Your Report

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.

SITE PLAN – showing test locations



marika jarv.

MARIKA JARV - B.Arch (Honours)
PO Box 489 Avalon Beach NSW 2107
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mj@marikajarv.com.au
www.marikajarv.com.au

FERN GULLY HOUSE | DEVELOPMENT APPLICATION

Alterations and Additions to Existing Residence
Matt & Emma Smith
87 Wallumatta Road
NEWPORT NSW 2106

0 1 2 3 4 5m

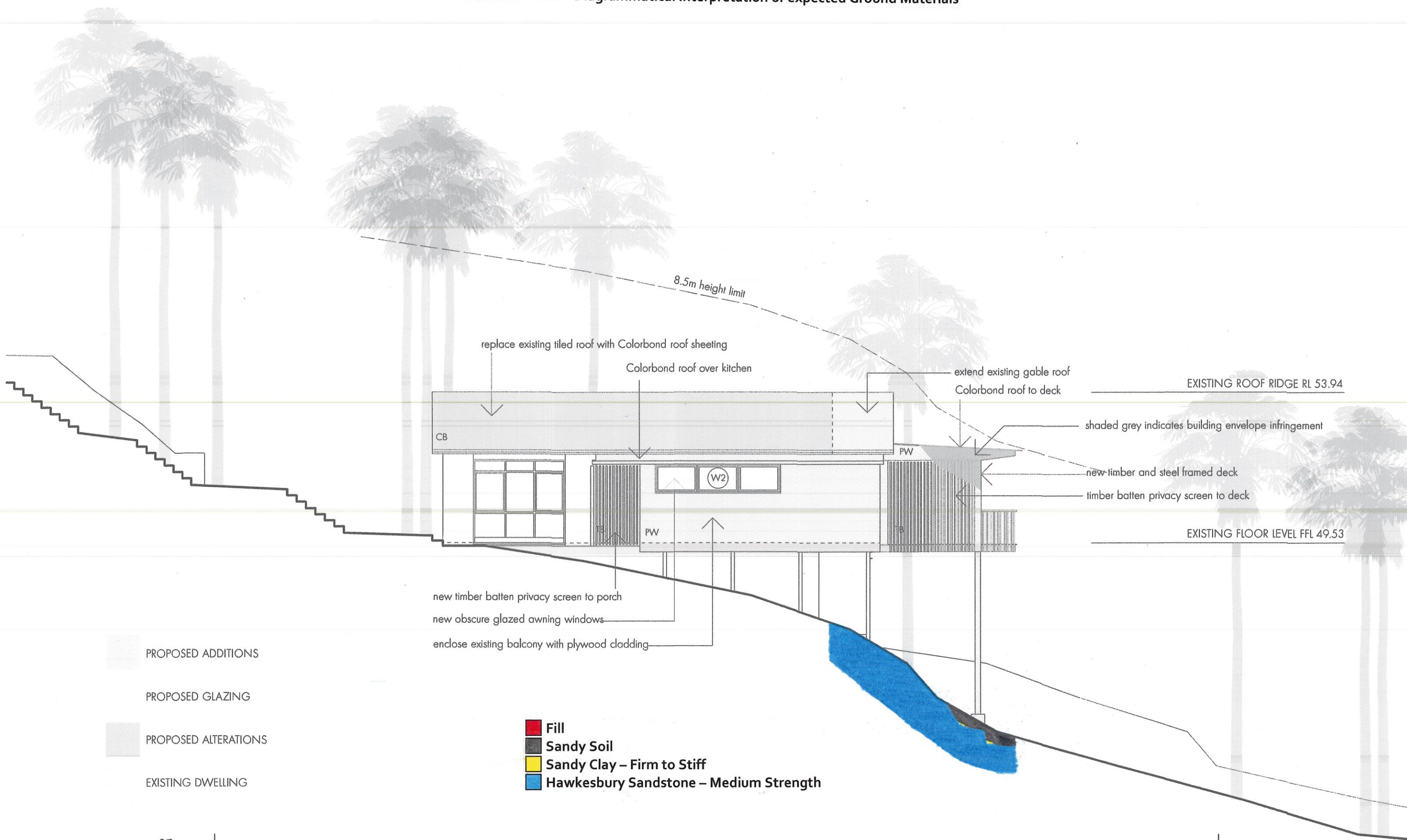
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DWG FG05-DA
DATE 05/06/2020
ISSUE Pre-DA
JOB # 39
SCALE 1:100 @ A3

PROPOSED FOOTING PLAN



TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



marika
jarv.

FERN GULLY HOUSE | DEVELOPMENT APPLICATION

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Alterations and Additions to Existing Residence
Matt & Emma Smith
87 Wallumatta Road
NEWPORT NSW 2106

0 1 2 3 4 5m

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DWG FG08-DA
DATE 05/06/2020
ISSUE Pre-DA
JOB # 39
SCALE 1:100 @ A3

ELEVATION - WEST

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE

