

948 Barrenjoey Road, Palm Beach

Comments on Updates to Plans

We have reviewed the existing minor works report, the plans used to carry out the report, and the updated plans for DA shown on 10 drawings prepared by JJ Drafting, drawings numbered 01, 03, 04, 06, 08, and 09 with two drawings both numbered 02 and two drawings both numbered 07, all drawings are, Revision F, dated 10/2022.

The changes include:

- Removing the covered pergola on the uphill side of the house.
- Removing the roof of the existing deck on the N corner of the house.
- Various other minor modifications.

The removal of these structures also removes any proposed new footings that may have been required. As such, the required footing inspections are no longer necessary. The changes to the plans are minor from a geotechnical perspective and, apart from the above, do not alter the recommendations or the risk assessment in the report carried out by this firm numbered J1978 and dated the 11th February, 2019.

White Geotechnical Group Pty Ltd.



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

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

Development Application for _____
Name of Applicant
Address of site 948 Barrenjoey Road, Palm Beach

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 11/02/19 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 948 Barrenjoey Road, Palm Beach
Report Date: 11/02/19
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 INVESTIGATION:

Minor Works at **948 Barrenjoey Road, Palm Beach**

1. Proposed Development

- 1.1** Construct pergolas over the existing decks on the uphill and N side of the house.
- 1.2** Other various internal and external modifications.
- 1.3** Details of the proposed development are shown on 10 architectural drawings prepared by JJ Drafting, project number 587/17, drawings numbered DA1 and DA3 to 4, DA6 to 9, dated October 2018.

2. Site Description

- 2.1** The site was inspected on the 6th November, 2018.
- 2.2** This residential property is on the high side of the road and has a W aspect. The block is located on the steeply graded lower middle reaches of a hillslope that falls to Pittwater. From the road frontage, the slope rises at an average angle of ~18° to the uphill side of the house and continues at angles of ~24° to the uphill boundary. The slope above and below the property continues at similar angles.
- 2.3** At the road frontage a concrete driveway runs to a car parking area and carport on the downhill side of the property (Photo 1). A cut has been made into the slope for the parking area (Photo 2). The cut is supported by a stable dimensioned sandstone retaining wall. The slope between the carport and the house is terraced with a series of mortared dimensioned sandstone block retaining walls reaching a maximum height of ~1.8m (Photo 3). To maintain ongoing stability for these types of walls they require occasional maintenance which may involve re-mortaring or repointing. There was evidence of such maintenance in the form of new mortar on some areas of the walls.

A ~3.0m cut has been made for an inclinometer on the S side of the property (Photo 4). It is supported by a continuation of mortared dimensioned sandstone retaining walls that terrace the slope front. The wall shows some cracking but is currently considered stable (Photo 14 & 15). See **Section 13** "Site Maintenance" for treatment of the cracking. Medium Strength Sandstone was observed outcropping in the lower portions of the wall at the S boundary and bedrock was also present in the creek bed that flows down the slope to the N of the property (Photo 5 & 6). The part two-storey rendered masonry and timber clad house is supported by rendered masonry walls and was undergoing renovations at the time of the inspection (Photo 7 & 8). No significant signs of movement or cracking was observed in the external supporting walls of the house. Two dimensioned sandstone block walls terrace the slope above the house (Photo 9 & 10). The lower wall reaches a maximum height of ~2.0m and levels the area for the lower ground floor. The upper wall reaches a maximum height of ~1.0m and levels an area for a deck attached to the ground floor. Both walls are slightly angled back into the slope and are considered stable. The slope above the house gradually increases to steep angles to the uphill boundary. It is densely vegetated (Photo 11). Large dislodged sandstone joint blocks that have historically fallen from the slope above were observed outcropping randomly on the slope (Photo 12 & 13). Most are obscured by the vegetation but those visible are partially embedded in the slope so have been in place for a long time and are considered stable.

3. Geology

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

4. Subsurface Investigation

Four Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock. 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 (~RL27.0)	DCP 2 (~RL28.2)	DCP 3 (~RL28.6)	DCP 4 (~RL27.2)
0.0 to 0.3	7	4	3	6
0.3 to 0.6	6	3	3	6
0.6 to 0.9	6	10	6	25
0.9 to 1.2	8	7	6	40
1.2 to 1.5	10	8	8	#
1.5 to 1.8	13	10	13	
1.8 to 2.1	45	18	18	
2.1 to 2.4	#	19	19	
2.4 to 2.7		#	24	
2.7 to 3.0			40	
3.0 to 3.3			#	
	End of Test @ 2.1m	Refusal on rock @ 2.3m	End of Test @ 3.0m	End of Test @ 1.2m

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

DCP Notes:

DCP1 – End of test @ 2.1m, DCP still very slowly going down, clean dry tip, orange clay on sleeve above tip.

DCP2 – Refusal on rock @ 2.3m, DCP bouncing on rock surface, red clay on dry tip, yellow clay in sleeve above tip.

DCP3 – End of test @ 3.0m, DCP still very slowly going down, white impact dust on dry tip, yellow/white clay in sleeve above tip.

DCP4 – End of test @ 1.2m, DCP still very slowly going down, white and red shale on dry tip, white and red shale in sleeve above tip.

5. Geological Interpretation

The slope materials are colluvial at the near surface and residual at depth. They consist of a man made fill over thin sandy topsoil and clays. In the test locations, the clays merge into the weathered zone of the under lying rocks at an average depth of ~1.8m below the current surface with DCP4 being shallower due to the irregular nature of the rock which results in a varied weathering profile across the strata. The weathered zone of the underlying rock is interpreted as Extremely Low Strength Shale. It is to be noted that this material is a soft rock and can appear as a mottled stiff clay when it is cut up by excavation equipment. The outcropping sandstone on the property below the house is interpreted to be a bed of sandstone within the otherwise shale dominated profile.

6. Groundwater

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

7. Surface Water

A natural creek down the slope to the N of the property. No significant signs of erosion were observed on its banks. The creek flows to a man-made channel with a sandstone bedrock base that runs beneath Barrenjoey Road. Due to the steep slope on the property it is expected that sheet wash from the slope above will move onto the property at relatively high velocities during heavy downpours.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside or below the property. The large sandstone floaters above and on the property are a potential hazard (**Hazard One**).

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The large dislodged sandstone joint blocks above and on the property falling onto the house. (Photo 11 & 12).
LIKELIHOOD	'Rare' (10^{-5})
CONSEQUENCES TO PROPERTY	'Medium' (20%)
RISK TO PROPERTY	'Low' (2×10^{-5})
RISK TO LIFE	9.9×10^{-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

Any additional stormwater created by the proposed works is to be piped to the existing stormwater system that drains to the creek to the N of the property through any tanks that may be required by the regulating authorities.

11. Excavations

Apart from those for footings no excavations are required.

12. Foundations

Any footings that may be required are to be supported on the underlying firm to stiff clays. Footings will need to be taken to at least 0.5m below the current ground surface into the underlying firm to stiff clays. A maximum allowable bearing pressure of 200kPa can be assumed for footings embedded in firm to stiff clay.

As the bearing capacity of clay and shale reduces when it is wet, we recommend the footings be dug, inspected and poured in quick succession (ideally the same day if possible). If the footings get wet, they will have to be drained and the soft layer of wet clay or shale on the footing surface will have to be removed before concrete is poured.

If a rapid turnaround from footing excavation to the concrete pour is not possible, a sealing layer of concrete may be added to the footing surface after it has been cleaned.

NOTE: If the contractor is unsure of the footing material required, it is more cost effective to get the geotechnical professional 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.

13. Maintenance

The property is extensively terraced in mortared stone walls (Photos 2, 3, 4, 8 & 9). These types of walls require occasional maintenance to ensure ongoing stability in the future. As such, it is recommended that the owners inspect the walls on an annual basis or after extreme rainfall events, whichever occurs first. A photographic record of these inspections is to be kept. We can carry out these inspections upon request. Should cracking, bulging or tilting in the wall face be observed the wall is to be assessed for stability by a geotechnical consultant. The risk assessment in **Section 8** is conditional on these inspections being carried out.

14. Inspections

The following inspection is recommended. If geotechnical certification of the footing is required/desired the inspection is a requirement.

- All footings are to be inspected and approved by the geotechnical professional while the excavation equipment is still onsite and before steel reinforcing is placed or concrete is poured.

White Geotechnical Group Pty Ltd.



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Photo 1



Photo 2



Photo 3

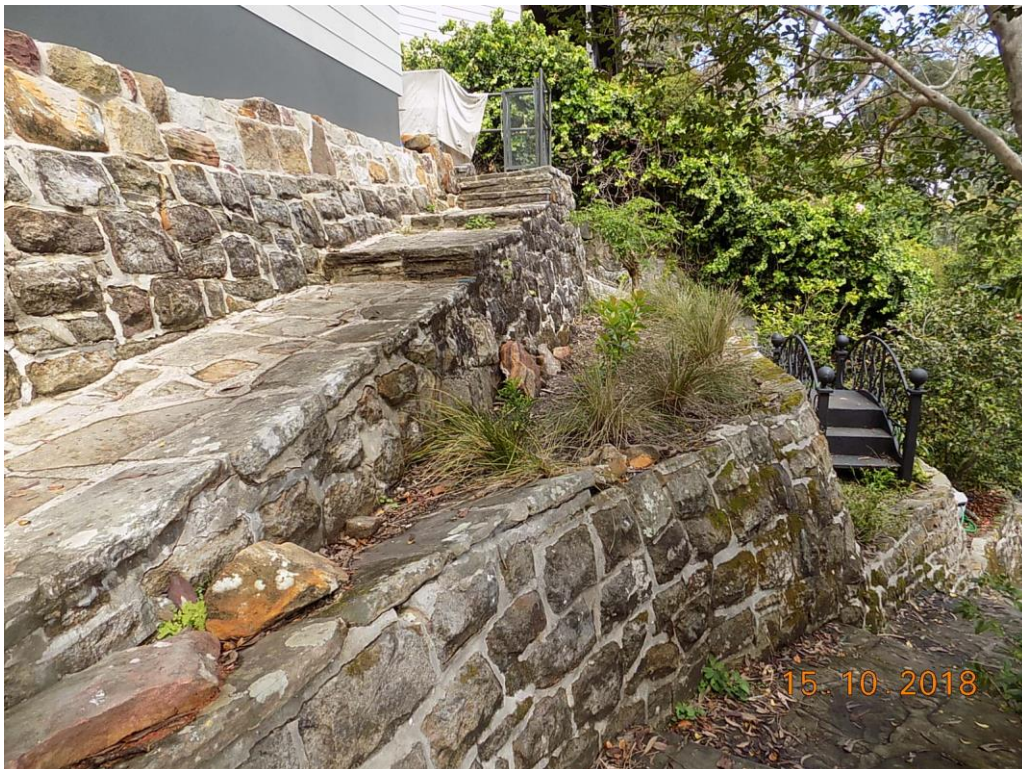


Photo 4



Photo 5

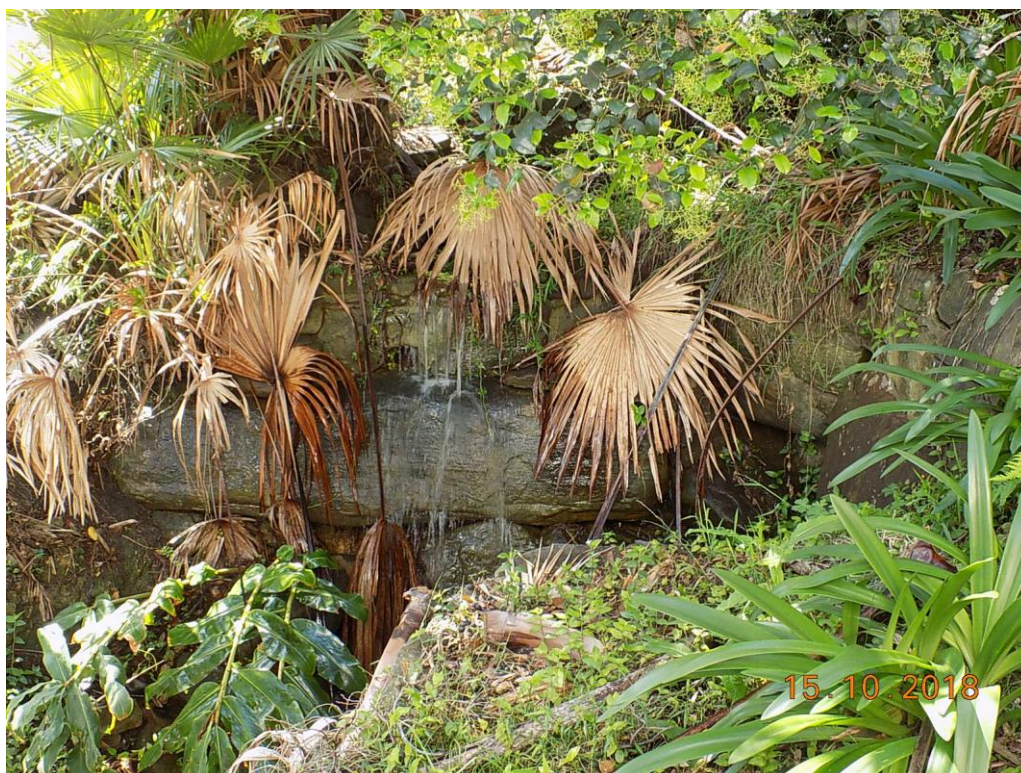


Photo 6

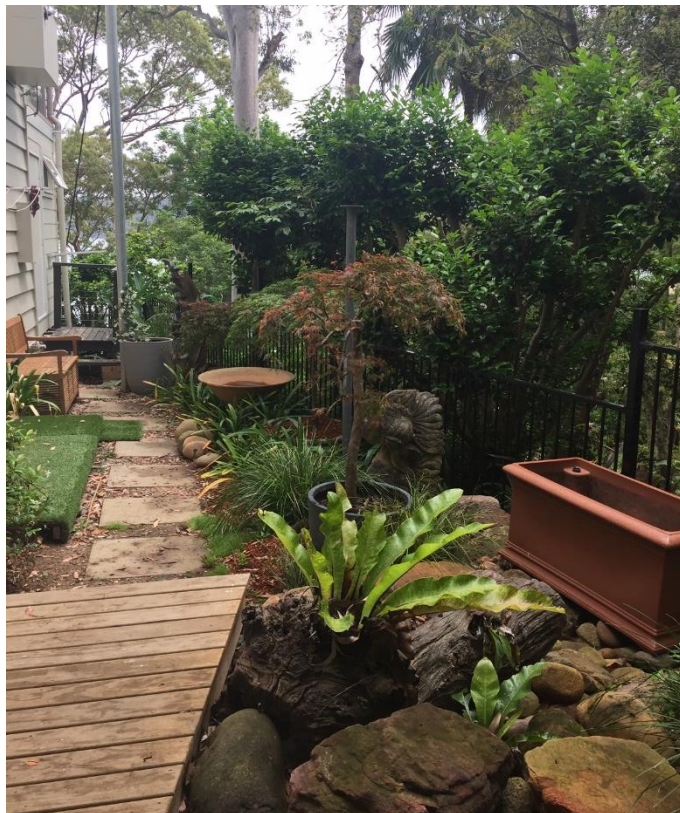


Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15

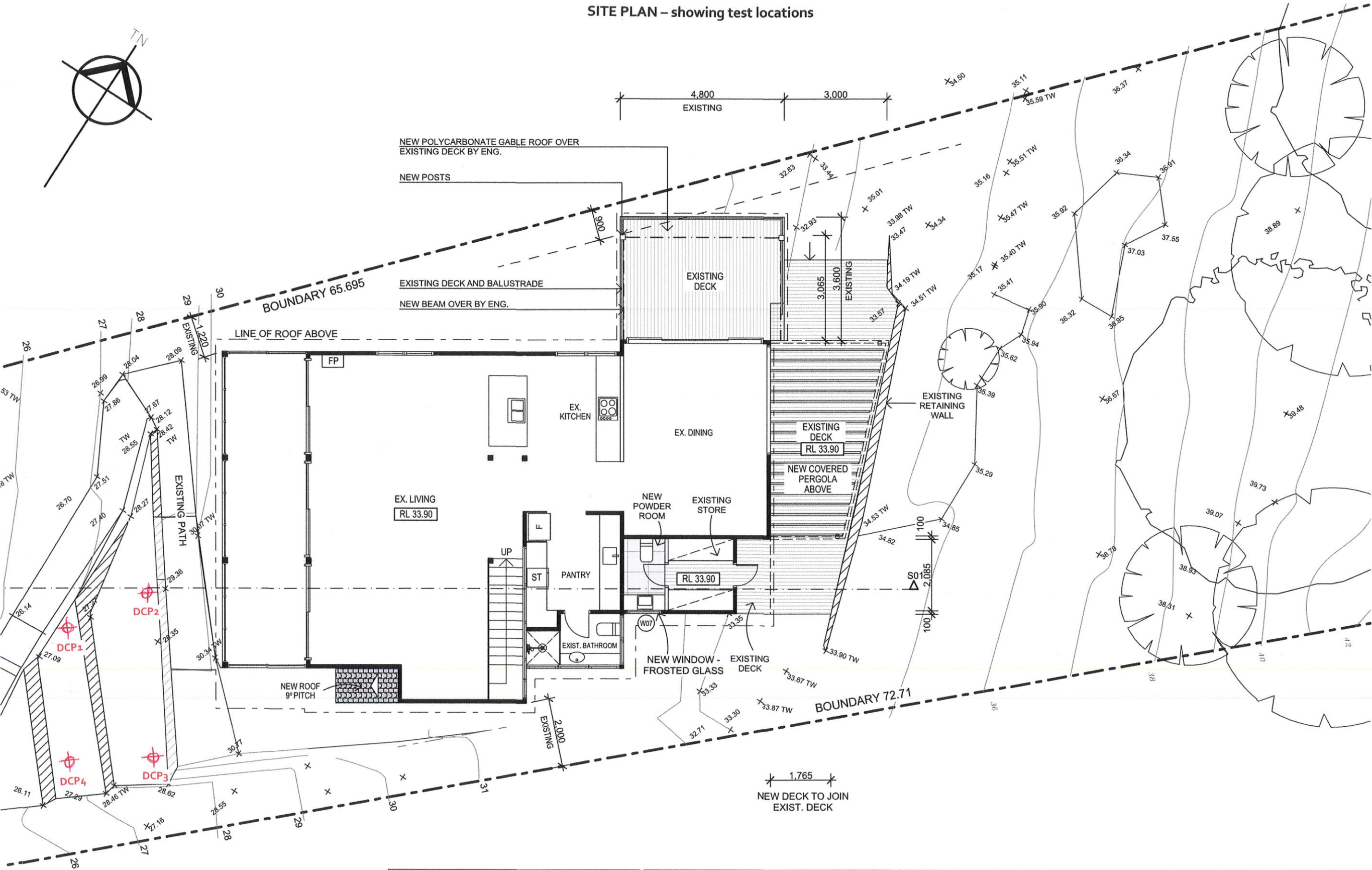
Important Information about Your Report

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 tests 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 professional. 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



GROUND FLOOR PLAN

NOTES:

- * All structures including stormwater & drainage to engineer's details.
- * Do not obtain dimensions by scaling drawings.
- * All dimensions are to be checked on site prior to starting work.
- * These drawings are to be read in conjunction with all other consultant's drawings and specifications.
- * All workmanship & materials shall be in accordance with the requirements of current editions including amendments of the relevant SAA Codes of Practice, the Building Code of Australia and local council requirements.
- * New materials are to be used throughout unless otherwise noted.
- * Concrete footings, slab, structural beams or any other structural members are to be designed by a practicing engineer.

JJ Drafting

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Project: PROPOSED ALTERATIONS AND ADDITIONS 948 Barrenjoey Rd - Palm Beach	
Title: GROUND FLOOR PLAN	Job No. : 587/17

Scale: 1:100
Date: October 2018
Dwg No. DA 3

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE

