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

Development Application for _____
Name of Applicant

Address of site 3 Coolawin Road, Avalon

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 26/11/24 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 Coolawin Road, Avalon**
Report Date: 26/11/24

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 3 Coolawin Road, Avalon

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 **3 Coolawin Road, Avalon**

Report Date: 26/11/24

Author: BEN WHITE

Author's Company/Organisation: WHITE GEOTECHNICAL GROUP PTY LTD

Please mark appropriate box

☒ Comprehensive site mapping conducted **6/6/22**
(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 **6/6/22**

☒ 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 **3 Coolawin Road, Avalon**

1. Proposed Development

1.1 Demolish part of the existing deck. Construct a new entryway, deck and alfresco at the downhill and E sides of the house.

1.2 Install a new partially suspended pool at the downhill side of the house requiring minor levelling.

1.3 Landscaping works at the downhill side of the property requiring minor levelling.

1.4 Details of the proposed development are shown on 18 drawings prepared by Action Plans, drawings numbered DA00 to DA17, dated 7/11/24.

2. Site Description

2.1 The site was inspected on the 6th June, 2022.

2.2 This residential property is on the low side of the road and has a N aspect. It is located on the gently graded middle reaches of a hillslope. The natural slope rises across the property at an average angle of ~5°. The slope above the property gradually increases in grade. The slope below the property continues at similar angles.

2.3 At the road frontage, a concrete and gravel driveway runs up to the slope to a carport beside the house (Photos 1 & 2). Sandstone bedrock is exposed at the surface on the downhill neighbouring property near the common boundary (Photo 3). A garden area and gently sloping lawn are located on the downhill side of the house (Photo 4). A timber deck extends off the downhill side of the house. The timber posts supporting the deck stand vertical. The part two storey timber clad house is supporting by brick walls and brick piers (Photos 4 & 5). The supporting walls and piers stand

vertical and show no significant signs of movement (Photo 6). A cut provides a level platform for the house and carport. The cut is supported by a stable concrete crib retaining wall ~1.2m high (Photo 7). A gently sloping lawn is located on the uphill side of the retaining wall. No signs of slope instability were observed on the property. The adjoining neighbouring properties were observed to be in good order as seen from the street and subject property.

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

One hand Auger hole (AH) was put down to identify the soil materials. 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 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 have been an issue for this site. But due to the possibility that the actual ground conditions vary from our interpretation there should be allowances in the excavation and foundation budget to account for this. We refer to the appended “Important Information about Your Report” to further clarify. The results are as follows:

TEST RESULTS ON NEXT PAGE

AUGER HOLE 1 – AH1 (Photo 8)

Depth (m)	Material Encountered
0.0 to 0.5	**FILL**, sandy soil and clay, dark brown, light orange brown, damp.
0.5 to 0.7	**SANDY SOIL**, with trace sandy clay at base of hole, dark brown, orange, damp.

Refusal @ 0.7m, auger grinding on rock surface. No watertable encountered.

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	DCP 2	DCP 3	DCP 4
0.0 to 0.3	5	7	3	4
0.3 to 0.6	4	6	#	7
0.6 to 0.9	11	12		#
0.9 to 1.2	10	#		
1.2 to 1.5	#			
	Refusal on rock @ 1.0m	Refusal on rock @ 0.7m	Refusal on rock @ 0.2m	Refusal on rock @ 0.6m

#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 @ 1.0m, DCP bouncing off rock surface, orange and white rock fragments, dark brown soil and orange clay on moist tip.

DCP2 – Refusal on rock @ 0.7m, DCP bouncing off rock surface, white rock fragments, orange clay and dark brown soil on dry tip.

DCP3 – Refusal on rock @ 0.2m, DCP bouncing off rock surface, white rock fragments and dark brown soil on damp tip.

DCP4 – Refusal on rock @ 0.6m, DCP bouncing off rock surface, white rock fragments and dark brown soil on damp tip.

5. Geological Observations/Interpretation

The site is underlain by fill, sandy soil and sandy clay over weathered rock. In the test locations, the depth to rock ranged from between ~0.2m to ~1.0m below the current surface, being shallower at the downhill side of the existing concrete crib retaining wall supporting the cut for the carport. The weathered rock is interpreted as Very Low Strength Rock or better. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

Normal ground water seepage is expected to move over the buried surface of the rock and through the cracks in the rock.

Due to the elevation of the block, the water table in the location is expected to be many metres below the base of the proposed works.

7. Surface Water

No evidence of surface flows were observed on the property during the inspection. It is expected that normal sheet wash will move onto the site from above the property during heavy down pours. If the owners know, or become aware in the future, that overland flows enter the property during heavy prolonged rainfall events our office is to be informed so appropriate drainage measures can be recommended and installed.

8. Geotechnical Hazards and Risk Analysis

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

RISK ANALYSIS SUMMARY ON NEXT PAGE

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The gentle 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' (12%)
RISK TO PROPERTY	'Low' (2×10^{-5})
RISK TO LIFE	4.2×10^{-8}/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

The fall is to Coolawin Road. All stormwater from the proposed development is to be piped to the street drainage system through any tanks that may be required by the regulating authorities.

11. Excavations

Apart from those for footings and minor levelling, no excavations are required.

12. Site Classification

The site classification in accordance with AS2870-2011 is Class S.

13. Foundations

The proposed house/deck additions and pool are to be supported on spread footings or shallow piers taken to Very Low Strength Rock or better. This ground material is expected at depths of between ~0.5m to ~1.5m below the current surface, being deeper in the filled areas. A maximum allowable bearing pressure of 600kPa can be assumed for footings supported on Very Low Strength Rock or better. It should be noted that this material is a soft rock and a rock auger will cut through it so the builders should not be looking for refusal to end the footings.

The foundations supporting the existing house are currently unknown. Ideally, footings should be founded on the same footing material across the old and new portions of the structure. Where the footing material does change across the structure construction joints or similar are to be installed to prevent differential settlement, where the structure cannot tolerate such movement in accordance with a 'Class S' site.

As the bearing capacity of weathered rock 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 weathered rock 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 and inspected.

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.

14. 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.

15. 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 Occupation Certificate 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.

Dion Sheldon
BEng(Civil)(Hons),
Geotechnical Engineer.

Reviewed By:

Ben White M.Sc. Geol.,
AIG., RPGeo Geotechnical & Engineering.
No. 10306
Engineering Geologist.

Photo 1

Photo 2

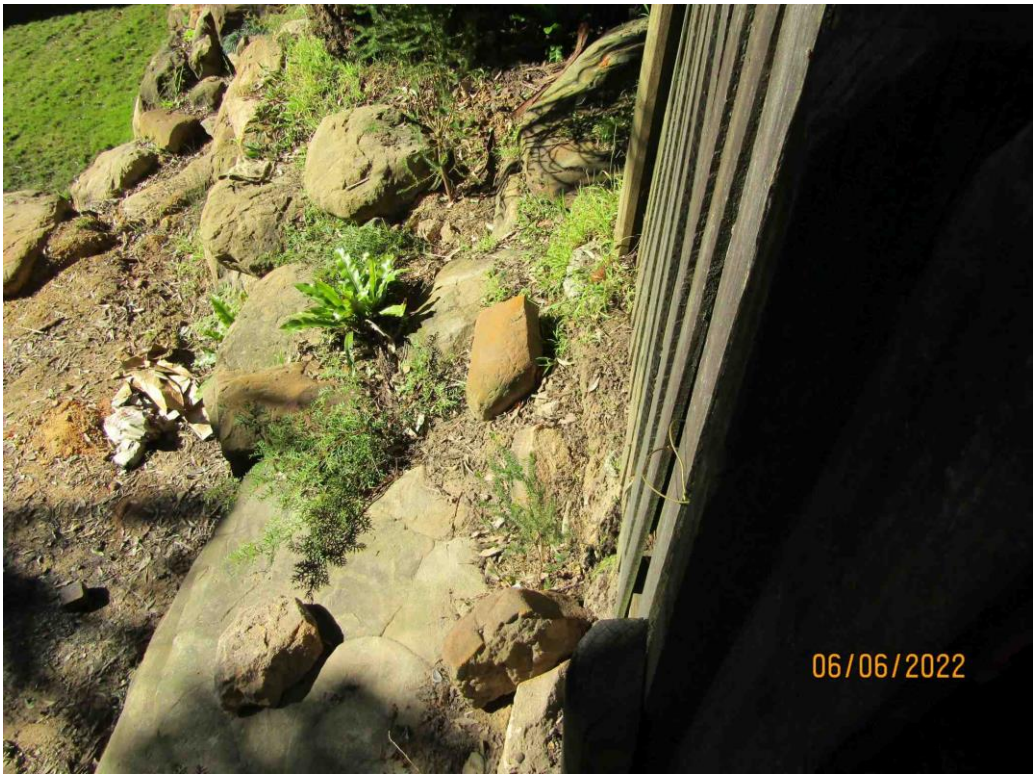


Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8: AH1 – Downhole is from left to right.

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.

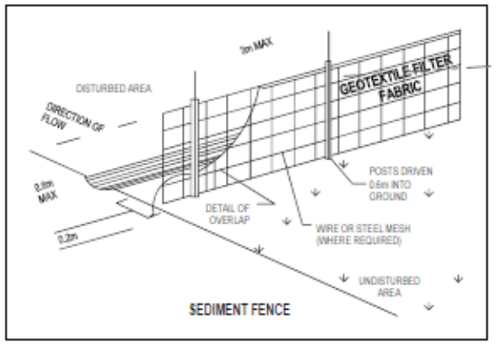
- If this report is used by other professionals during the design or construction process, any questions should be directed to White Geotechnical Group as only we understand the full methodology behind the report's conclusions.

- 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.

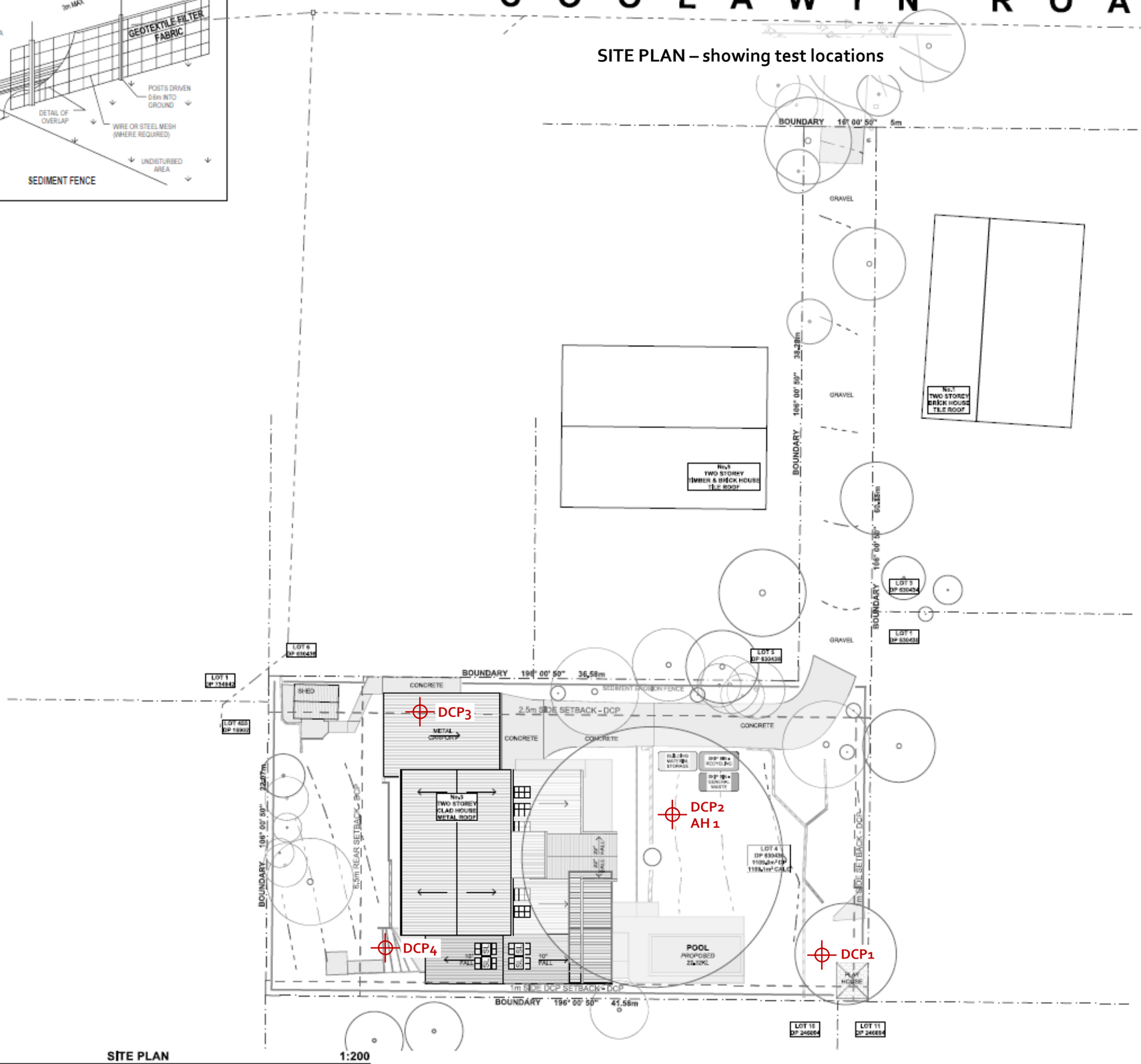
- It is common for the design and construction process to be adapted as it progresses (sometimes to suit the previous experience of the contractors involved). If alternative design and construction processes are required to those described in this report, contact White Geotechnical Group. We are familiar with a variety of techniques to reduce risk and can advise if your proposed methods are suitable for the site conditions.



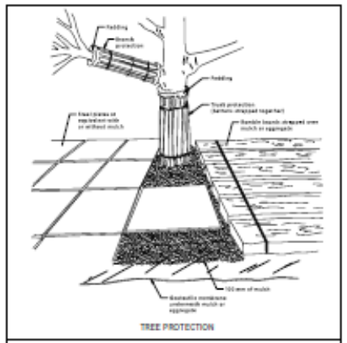
SEDIMENT FENCE

C O O L A W I N R O A D

SITE PLAN – showing test locations



1 SITE PLAN 1:200



NOTES REGARDING BOUNDARY
THE INFORMATION SHOWN ON THIS PLAN IS FOR DESIGN PURPOSES ONLY. THE POSITION OF BOUNDARY LINES HAVE BEEN ESTABLISHED BY A SURVEY TO MEET THE IDENTIFICATION REQUIREMENTS FOR COUNCIL AND NOT FOR REGISTRATION WITH THE LAND REGISTRATION SERVICES NSW NOR MAY THIS PLAN BE USED FOR ANY OTHER PURPOSE. SUBSEQUENT REGISTERED OR OTHER SURVEYS MAY AFFECT THE DEFINED BOUNDARY POSITIONS IN THIS AREA. ANY DIFFERENCES OF THIS NATURE ARE BEYOND THE PURPOSES OF THIS PLAN. THIS PLAN IS FOR THE ABOVE STATED PURPOSES ONLY. RESTRICTIONS ON THE TITLE HAVE NOT BEEN INVESTIGATED. IF FURTHER DEVELOPMENT IS CONTEMPLATED OR CONSTRUCTION INTENDED THEN IT IS IMPORTANT THAT A SURVEY SET OUT IS CARRIED OUT.

DUST CONTROL :
TO REDUCE DUST GENERATED BY WIND ACTION, THE REMOVAL OF THE TOP SOIL IS TO BE MINIMISED. TO PREVENT DUST GENERATION, WATERING DOWN OF THE SITE, ESPECIALLY DURING THE MOVEMENT OF MACHINERY IS REQUIRED, WHERE EXCAVATING INTO ROCK, KEEP THE SURFACE MOIST TO MINIMISE DUST, CONSTRUCT A GRAVEL ENTRY/EXIT POINT USING BLUE METAL AND RESTRICT ALL VEHICLE MOVEMENTS WITHIN THE SITE TO A MINIMUM, ENSURE WIND BREAKS, SUCH AS EXISTING FENCES ARE MAINTAINED DURING THE CONSTRUCTION PHASE UNTIL NEW LANDSCAPING IS PROVIDED OR REINSTATED. PREVENT DUST BY COVERING STOCKPILES

SEDIMENT NOTE :
1. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY THE SITE MANAGER.
2. MINIMISE DISTURBED AREAS. REMOVE EXCESS SOIL FROM EXCAVATED AREA AS SOON AS POSSIBLE.
3. ALL MATERIAL STOCKPILE TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS, OR WITHIN SEDIMENT FENCE AREA.
4. DRAINAGE TO BE CONNECTED TO STORMWATER AS SOON AS POSSIBLE. IF STORED ON SITE, IT MUST BE FILTERED BEFORE RELEASING INTO STORMWATER SYSTEM OR WATERWAYS.
5. ROADS AND FOOTPATHS TO BE SWEPT DAILY.

STOCKPILES :
ALL STOCKPILES ARE TO BE KEPT ONSITE WHERE POSSIBLE, ANY MATERIALS PLACED ON THE FOOTPATHS OR NATURE STRIPS REQUIRE COUNCIL'S PERMISSION.
ALL STOCKPILES ARE TO BE PLACED AWAY FROM THE DRAINAGE LINES AND STREET GUTTERS. IT IS BEST TO LOCATE THESE ON THE HIGHEST PART OF THE SITE IF POSSIBLE. PLACE WATERPROOF COVERING OVER STOCKPILES.
IF REQUIRED PROVIDE DIVERSION DRAIN & BANK AROUND STOCKPILES.

GUTTER PROTECTION :
PROVIDE PROTECTION TO DOWNHILL GRATE IN GUTTER BY MEANS OF SAND BAGS OR BLUE METAL WRAPPED IN GEOTEXTILE FABRIC. WHEN SOIL OR SAND BUILDS UP AROUND THIS SEDIMENT BARRIER, THE MATERIAL SHOULD BE RELOCATED BACK TO THE SITE FOR DISPOSAL.

NOTE: ALL PROPOSED STORMWATER TO CONNECT WITH EXISTING

NOTE: SITE BOUNDARY IS TO BE IDENTIFIED BY A REGISTERED SURVEYOR AND CLEARLY MARKED ON SITE PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION WORKS.

ACTION PLANS
m: 0426 957 518
e: operations@actionplans.com.au
w: www.actionplans.com.au

REV.	DATE	COMMENTS	DRWN
A	04/11/2024	DA - INTERNAL REVIEW	DLR

NOTES

Do not scale measure from drawings. Figured dimensions are to be used only.
The Builder/contractor/owner is to ensure that the approved boundary setbacks and approved levels are confirmed and set out by a registered Surveyor prior to construction, the boundary setbacks take precedence over all other dimensions.
The Builder/Contractor shall check and verify ALL dimensions on site prior to commencement of any work, creation of shop drawings, or fabrication of components.
All errors and omissions are to be verified by the Builder/Contractor/client and referred to the designer prior to the commencement of works.

LEGEND
EXISTING
DEMOLISHED
PROPOSED

CLIENT
Gail & Steve Hilton

PROJECT ADDRESS
3 COOLAWIN ROAD, AVALON BEACH 2107

DRAWING NO.
DA04

DATE
Thursday, 7 November 2024

DRAWING NAME
SITE / ROOF / SEDIMENT EROSION / WASTE MANAGEMENT / STORMWATER CONCEPT PLAN

SCALE
1:200 @A2

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

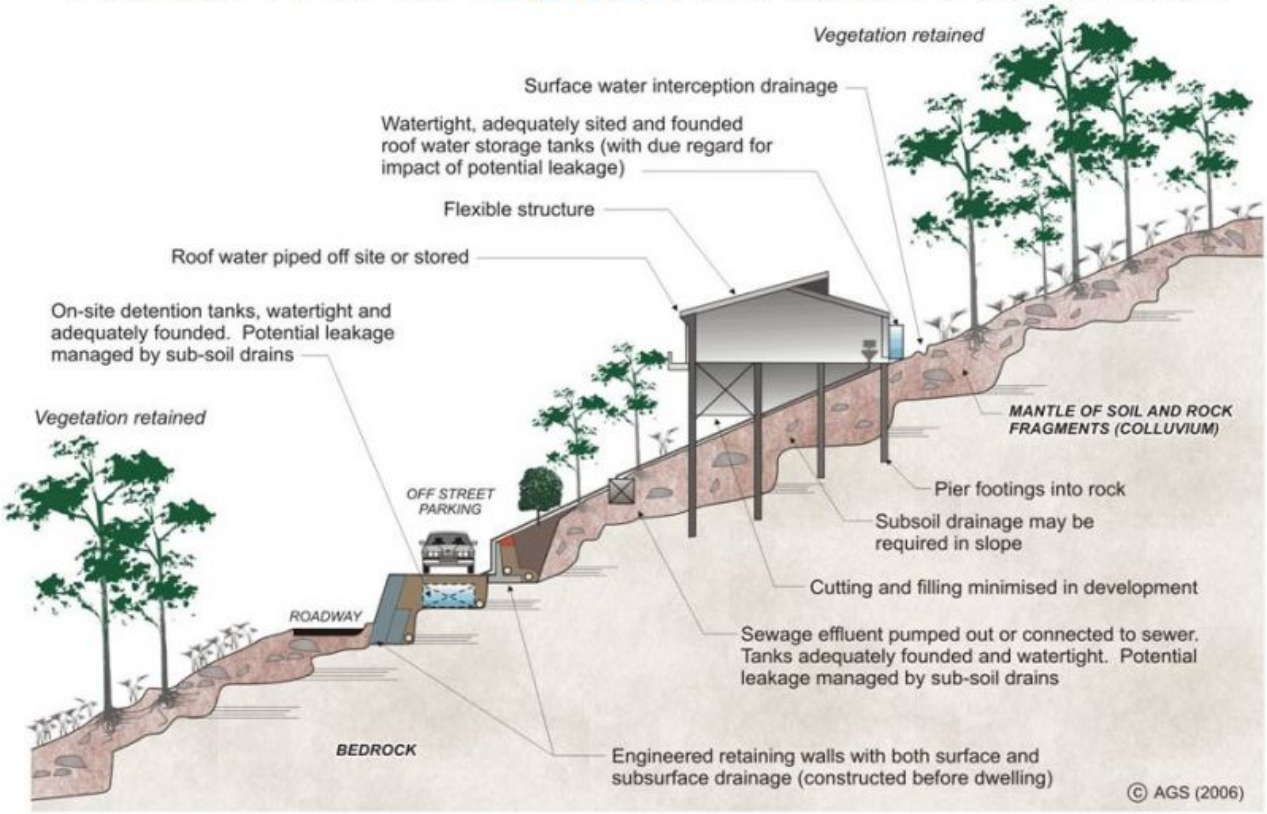
LONG SECTION 1 1:100

Fill

Topsoil and Clay

Narrabeen Group Rocks – Very Low Strength Rock or better - after being cut up by excavation equipment can resemble a stiff to hard clay.

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE