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

Development Application for _____
Name of Applicant

Address of site 26 Cabarita Road, Avalon Beach

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 28/02/25 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 **26 Cabarita Road, Avalon Beach**

Report Date: 28/02/25

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 MScGEOL AIG., RPGeo

Membership No. 10306

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 26 Cabarita Road, Avalon Beach

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 **26 Cabarita Road, Avalon Beach**

Report Date: 28/02/25

Author: BEN WHITE

Author's Company/Organisation: **White Geotechnical Group Pty Ltd**

Please mark appropriate box

☒ Comprehensive site mapping conducted **13/11/24**
(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 **13/11/24**

☒ 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 MScGEOL AIG., RPGeo

Membership No. 222757

Company **White Geotechnical Group Pty Ltd**

GEOTECHNICAL INVESTIGATION:

Additions and Alterations at **26 Cabarita Road, Avalon Beach**

1. Proposed Development

1.1 Extend the existing level 2 balcony on the downhill side.

1.2 Various other minor internal and external additions and alterations.

1.3 Details of the proposed development are shown on 14 drawings prepared by GWN drafting, project number 3070, drawings numbered 01 to 14. All dated February 2025.

2. Site Description

2.1 The site was inspected on the 13th November, 2024.

2.2 This waterfront residential property is on the low side of the road and has an E aspect. It is located on the steeply graded middle to lower reaches of a hillslope. The natural slope falls across the property at an average angle of ~22°. The slope above the property continues at steep angles before easing at the crest of the ridge.

2.3 At the road frontage (Photo 1), a concrete driveway runs to a garage on level 4 of the house. An inclined lift has been installed between the house and the N common boundary. The cut for the inclined lift (Photo 2) has been battered and lined with rocks that armour the batter surface. The cut for the house is supported by a stable sandstone block retaining wall reaching up to ~1.5m high which approximates the S common boundary (Photo 3). The four-story timber clad house is supported on rendered masonry walls and concrete piers. No significant signs of movement were observed in the visible supporting walls, and the supporting piers stand vertical.

Fill for a tiled patio off the downhill side of the house is supported by stable sandstone block retaining walls reaching up to ~2.4m high (Photo 4). The slope between the

house and a two-story boathouse at the lower boundary is terraced, and supported with a series of stable timber and stack sandstone retaining walls, reaching up to ~1.4m in height (Photo 5).

The two-story timber clad boathouse (Photo 6) is supported on sandstone block walls. No significant signs of movement were observed in the supporting walls. A cut for the boathouse and to landscape the downhill side of the property is supported by a stable dry stack sandstone block retaining wall reaching ~4.7m high (Photos 7 & 8). A stable formed concrete wall supports the return of this cut along the S common boundary. A deck on level 1 of the boathouse is supported on timber posts which appear to stand vertical. Below the subject property, a stable sandstone block seawall reaching ~1.4m (Photo 9) high supports fill for a level lawn. A timber jetty extends a further 25m beyond the sea wall (Photo 6).

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 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:

AUGER HOLE 1 (~RL10.0) **–** AH1 (Photo 10)

Depth (m)	**Material Encountered**
0.0 to 0.2	**TOPSOIL**, dark brown, Dense, dry, fine to medium grained.
0.2 to 0.3	**CLAYEY SOIL**, brown to orange, Very Stiff, dry, fine to medium grained, sandy clayey rock fragments included.

Refusal @ 0.3m. Auger not progressing through clayey soil. No water table encountered.

AUGER HOLE 2 (~RL9.1) **–** AH2 (Photo 11)

Depth (m)	**Material Encountered**
0.0 to 0.5	**FILL**, derived from foreign crushed rock material, brown, Dense, dry, fine to medium grained, rock fragments included.

Refusal @ 0.5m. Auger not progressing in fill. No water table 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** (~RL11.3)	**DCP 2** (~RL10.0)	**DCP 3** (~RL7.3)	**DCP 4** (~RL9.1)
0.0 to 0.3	6	17	13	13
0.3 to 0.6	2	24	28	25
0.6 to 0.9	8	23	#	24
0.9 to 1.2	13	#		#
1.2 to 1.5	23			
1.5 to 1.8	#			
	Refusal on Rock @ 1.4m	Refusal on Rock @ 0.8m	Refusal on Rock @ 0.6m	Refusal on Rock @ 0.8m

#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 @ 1.4m, DCP thudding on rock surface, clean dry tip, grey and orange clay in collar above tip.
DCP2 – Refusal on Rock @ 0.8m, DCP thudding on rock surface, clean dry tip, grey and orange clay in collar above tip.
DCP3 – Refusal on Rock @ 0.6m, DCP thudding on rock surface, maroon and yellow impact dust on dry tip, yellow sandy clay in collar above tip.
DCP4 – Refusal on Rock @ 0.8m, DCP thudding on rock surface, clean dry tip yellow sandy clay in collar above tip.

5. Geological Observations/Interpretation

The natural slope materials are colluvial at the near surface and residual at depth. In the test locations, the ground materials consist of shallow soils over clays. Filling has been placed to a maximum height of ~2.0m behind retaining walls for landscaping and formwork. The clays merge into the weathered zone of the underlying rock at depths of between 0.3m to 1.2m below the current surface, being deeper due to the presence of filling and a variable weathering profile. The weathered zone is interpreted as Extremely Low to Very Low Strength Rock. 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 denser and less permeable clay and weathered rock layers in the sub-surface profile. The water table was not encountered during the testing but is expected to sit just above the waterline. As such, it is expected to be metres below the base of the proposed works.

7. Surface Water

No evidence of significant surface flows were observed on the property during the inspection. Normal sheet wash from the slope above will be intercepted by the street drainage system for Cabarita Road above.

8. Geotechnical Hazards and Risk Analysis

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

Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The steep slope that falls across the property and continues above failing and impacting on the proposed works.
LIKELIHOOD	'Unlikely' (10^{-4})
CONSEQUENCES TO PROPERTY	'Medium' (15%)
RISK TO PROPERTY	'Low' (2×10^{-5})
RISK TO LIFE	9.1×10^{-7}/annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in **Section 7** are followed.

(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

No significant additional stormwater runoff will be created by the proposed development.

11. Excavations

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

12. Site Classification

The site classification for footings supported on the underlying Extremely Low to Very Low Strength Rock is Class M in accordance with AS2870-2011.

13. Foundations

Due to the steep grade of the slope, it is recommended that any new footings for the proposed works be supported on piers taken to and embedded at least ~0.6m into the underlying Extremely Low to Very Low Strength Rock. This material is expected at depths of between 0.6m to 1.4m below the current surface in the area of the proposed works. As such, the required depths of the piered foundations are expected to be between 1.2m and 2.0m below the current surface measured from the downhill side of the pier hole.

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 M' site.

A maximum allowable bearing pressure of 600kPa can be assumed for footings on Extremely Low to Very Low Strength Rock. 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.

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 and inspected by the geotechnical consultant.

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.

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 certification for the Occupation Certificate or the owner 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.

Nathan Gardner B.Sc. (Geol. & Geophys. & Env. Stud.)
AIG., RPGeo Geotechnical & Engineering.
No. 10307
Engineering Geologist & Environmental Scientist.

Reviewed By:

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

REGISTERED PROFESSIONAL GEOSCIENTIST
AUSTRALIAN INSTITUTE OF GEOSCIENTISTS
BENJAMIN WHITE
RPGeo No:
10306

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10 – AH1 – downhole is top to bottom

Photo 11 – AH2 – downhole is top to bottom

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

GWN DRAFTING
GREG NICOL
ARCHITECTURAL DRAFTSMAN
29 BILKURRA AVENUE BILGOLA PLATEAU NSW 2107
PH: 0411 028 928 E: gwndraft@bigpond.net.au

PROJECT: PROPOSED RENOVATIONS TO RESIDENCE
ADDRESS: 26 CABARITA ROAD, AVALON BEACH 2107
CLIENT: DR NATASHA COOK
SCHEME: 4A DATE: FEBRUARY 2025 SCALE: 1:250 @ A3

PROJECT No. 3070
DRAWING No. 14

SITE PLAN · PROPOSED WORKS.

PROPOSED LEVEL 3 RENOVATIONS. FL 17.180

PROPOSED CONSERVATORY TO EXIST. BALCONY - LEVEL 3. FL 17.180

PROPOSED LEVEL 3 LIVING/DINING RM EXTENSION. FL 17.180.

DCP2
AH 1
DCP3
DCP4
AH 2
DCP1

PROPOSED LEVEL 1 (L1) EXTENSION FL 14.380.

PROPOSED BALCONY EXTENSION. FL 14.380 (L1).

1230 APPROX.

EXIST. SCREEN PLANTING (APPROX. 5m HIGH) TO BE RETAINED

S.P. 88331

WASTE MANAGEMENT DETAILS:

1. KITCHEN WASTE BIN.
2. COMPOST STORAGE.
3. WASTE & RECYCLING STORAGE.
4. EXTERNAL WASTE DISPOSAL UNIT.
5. ON SITE STORAGE FOR MATERIALS DURING DEMOLITION & CONSTRUCTION

NOTES:

1) A BOUNDARY IDENTIFICATION HAS BEEN UNDERTAKEN.
2) OFFSET DIMENSIONS TO BOUNDARIES HEREON MUST NOT BE USED FOR CONSTRUCTION.
3) CAUTION: SHOULD ANY DEVELOPMENT OR CONSTRUCTION BE PLANNED ON OR NEAR THE BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE.
4) ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM P.M. 60568 RL 21.860 A.H.D.
5) TREE SPREADS ARE DIAGRAMMATIC ONLY AND ARE NOT SYMMETRICAL.
6) UNDERGROUND (NON VISIBLE) SERVICE LINES HAVE BEEN SHOWN FROM "BEFORE YOU DIG AUSTRALIA" SERVICE AUTHORITY RECORDS & ARE DIAGRAMMATIC ONLY IN REGARD TO THEIR POSITION & WIDTH UNLESS STATED OTHERWISE.
7) BEARINGS SHOWN ARE ON I.S.G. (TRUE NORTH).

BENCH MARK P.M. 60568 RL 21.86 A.H.D.
BENCH MARK NAIL IN KERB RL 22.25 A.H.D.

SITE AREA 646.1m²

Bee & Lethbridge Pty Ltd
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Phone: 9451 9757
Email: survey@beelath.com.au
ABN: 13 003 194 447
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COPLAND C. LETHBRIDGE
REGISTERED SURVEYOR N.S.W.
IDENTIFICATION No. SU001475

PLAN SHOWING BOUNDARIES, RELATIVE HEIGHTS & PHYSICAL FEATURES OVER LOT 10 IN D.P. 17704 KNOWN AS No. 26 CABARITA ROAD, AVALON.

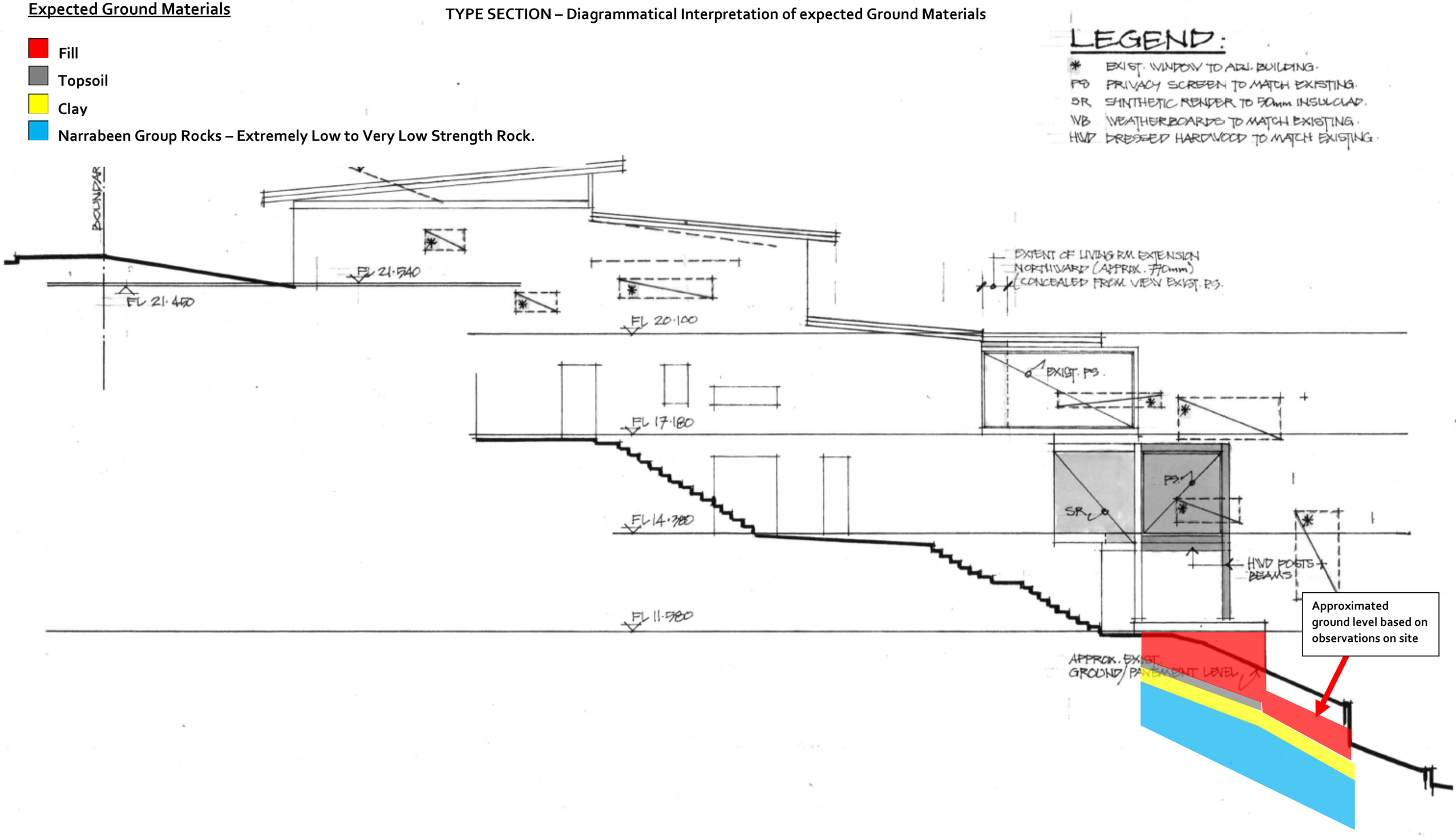
L.G.A.: NORTHERN BEACHES

CLIENT	Dr N. COOK			REF No.	17650
PROPERTY	No. 26 CABARITA ROAD, AVALON				
DATUM	A.H.D.	SCALE	1:100 @ B1	DATE	28/11/2024
SURVEYED	C.L./O.G.	DRAWN	S.C.	DWG No.	17650A
SHEET No.	1 of 1	REV No.	00		

Expected Ground Materials

- Fill
- Topsoil
- Clay
- Narrabeen Group Rocks – Extremely Low to Very Low Strength Rock.

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



SOUTH ELEVATION.

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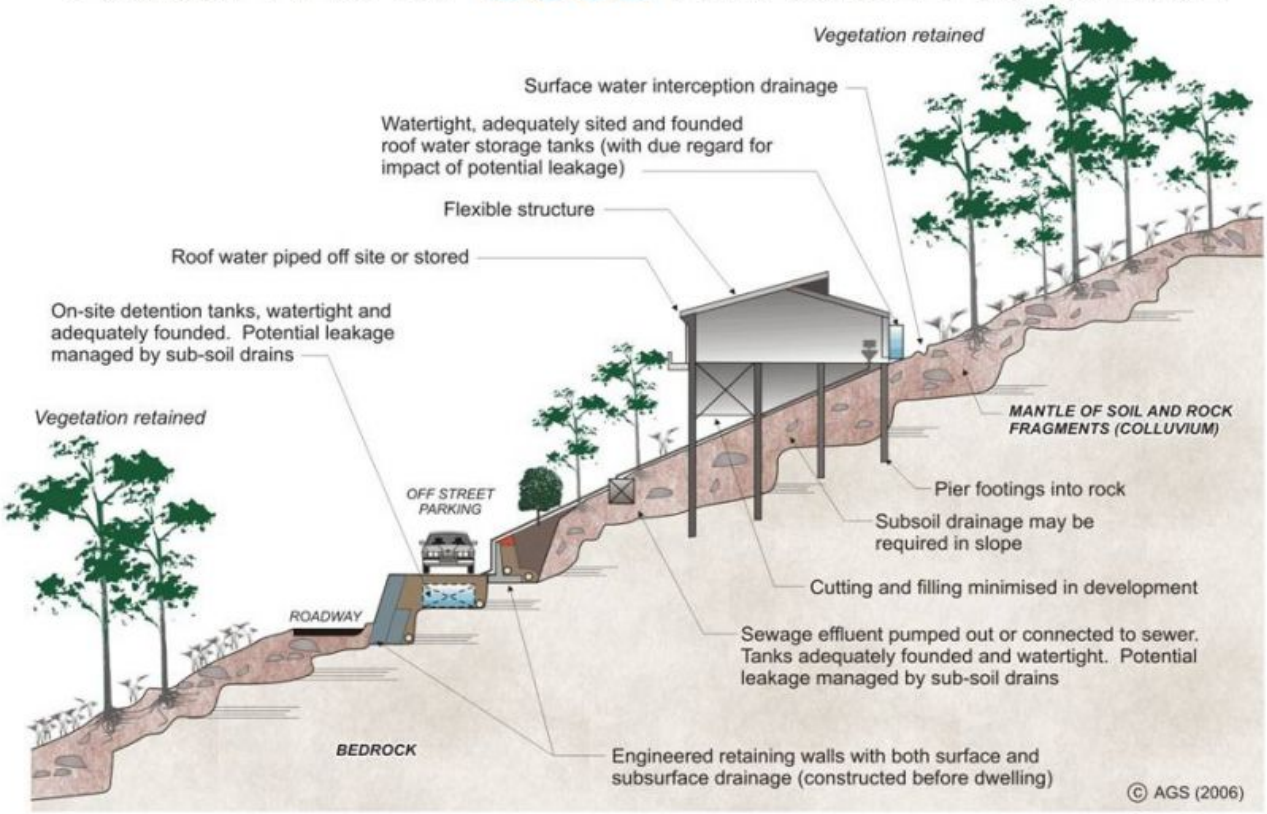
ADDRESS: 26 CABARITA ROAD, AVALON BEACH 2107
CLIENT: DR NATASHA COOK
SCHEME: 4A DATE: FEBRUARY 2025 SCALE: 1:100 @ A3

PROJECT No. 3070
DRAWING No. 10

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE