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 Alexandra Crescent, Bayview

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 10/12/24 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 Alexandra Crescent, Bayview**

Report Date: 10/12/24

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 MScGEOL AIG., RPGeo

Membership No. 10306

Company **White Geotechnical Group Pty Ltd**

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

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 Alexandra Crescent, Bayview

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 Alexandra Crescent, Bayview**

Report Date: 10/12/24

Author: BEN WHITE

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

Please mark appropriate box

- ☒ Comprehensive site mapping conducted **29/11/24** (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 **29/11/24**
- ☒ 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:

New House at **3 Alexandra Crescent, Bayview**

1. Proposed Development

1.1 Construct a new house and garage suspended over a watercourse.

1.2 Details of the proposed development are shown on 10 drawings prepared by Scope Architects, project number 02402, drawings numbered A01 to A10, dated 15.11.24.

2. Site Description

2.1 The site was inspected on the 29th November, 2024.

2.2 This vacant property is on the low side of the road. The property encompasses the moderately graded N and S banks of a drainage path that falls to the E. The natural slope falls towards the channel at an average angle of ~12°. The slope above and below the property continues at similar angles.

2.3 At the road frontage, undeveloped bushland falls to a drainage path that enters the property from a stormwater culvert headwall at the upper boundary (Photos 1 & 2). The council stormwater map indicates a conduit continues through this property. However, the termination point is visible above the surface. The watercourse runs to the E and continues beyond the E boundary (Photo 3). The undeveloped bushland rises from the S side of this water channel to the S common boundary (Photo 4).

3. Geology

The Sydney 1:100 000 Geological Sheet indicates the contact of Hawkesbury Sandstone and the Newport Formation of the Narrabeen Group is in close proximity to the site. Given the ground test results, the Newport Formation of the Narrabeen Group is expected to underlie

the proposed works. 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 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 be an issue for the testing on this site. However, excavation and foundation budgets should always allow for the possibility that the interpreted ground conditions in this report vary from those encountered during excavations. See the appended "Important information about your report" for a more comprehensive explanation. The results are as follows:

AUGER HOLE 1 (~RL24.5) **–** AH1 (Photo 5)

Depth (m)	Material Encountered
0.0 to 0.2	**TOPSOIL**, dark brown clayey soil, medium grained, loose, fine trace of organic matter, dry.
0.2 to 0.7	**CLAY**, orange, fine grained, stiff, dry.

Refusal @ 0.7m. No water table encountered.

DCP RESULTS ON THE NEXT PAGE

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** (~RL24.5)	**DCP 2** (~RL20.5)	**DCP 3** (~RL21.0)	**DCP 4** (~RL23.0)
0.0 to 0.3	2	8	6	7
0.3 to 0.6	8	26	7	7
0.6 to 0.9	32	31	11	21
0.9 to 1.2	30	#	37	30
1.2 to 1.5	#		40	37
1.5 to 1.8			#	#
	End of Test @ 1.2m	End of Test @ 0.9m	End of Test @ 1.5m	End of Test @ 1.5m

#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 @ 1.2m, DCP still going down slowly, red shale on dry tip.
DCP2 – End of test @ 0.9m, DCP still going down slowly, red shale on dry tip.
DCP3 – End of test @ 1.5m, DCP still going down slowly, red shale on dry tip.
DCP4 – End of test @ 1.5m, DCP still going down slowly, red shale on dry tip.

5. Geological Observations/Interpretation

The 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. The clay merges into the underlying weathered rock at depths of between ~0.9m to ~1.2m below the current surface. The weathered zone is interpreted to be Extremely Low Strength Shale. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

As a drainage path cuts the property, we expect groundwater seepage to be slightly higher across the block as slope seepage will move toward the drainage path. Due to the slope and

elevation of the block, the water table is expected to be well below the base of the proposed works.

7. Surface Water

Apart from the drainage path that runs through the middle of the site, no evidence of additional 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 Alexandra Crescent above. As the house will be constructed over the drainage path, maximum drainage flows will need to be calculated by the stormwater engineer utilising an assessment of the catchment size.

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 moderately graded slope that falls to a drainage channel and continues above and below failing and impacting on the proposed works.
LIKELIHOOD	'Unlikely' (10^{-4})
CONSEQUENCES TO PROPERTY	'Minor' (5%)
RISK TO PROPERTY	'Low' (2×10^{-5})
RISK TO LIFE	5.5×10^{-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

The fall is to the drainage path that runs down the centre of the property. Roof water from the development is to be piped to the drainage path through any tanks that may be required by the regulating authorities. Diffusers are to be utilised at the pipe outlet to reduce flow velocity and potential erosion at the drainage path bank.

11. Excavations

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

12. Site Classification

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

13. Foundations

Due to the presence of the water course that runs across the property, the proposed house is to be supported off piers taken to and embedded 0.6m into the underlying Extremely Low Strength Shale. This ground material is expected to be encountered at depths of between ~0.9m and ~1.2m. As such, the required depths of the piered foundations are expected to be between ~1.5m and 1.8m below the current surface measured from the downhill side of each pier hole. See Type Section appended.

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

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. Inspections

The client and builder are to familiarise themselves with the following required inspections as well as council geotechnical policy. We cannot provide geotechnical certification for the owners and Occupation Certificate if the following inspections have 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.

Tyler Jay Johns
BEng (Civil)(Hons),
Geotechnical Engineer.

Reviewed By:

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

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5 (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

No	Revision Description	Date
A	Pre DA Meeting	29.02.2024
B	Consultant Issue	20.08.2024
C	Updated Design	21.10.2024
D	Consultant Issue	25.11.2024

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80 WEST ST BALGOWLAH NSW 2093
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www.scopearchitects.com.au

CLIENT: LES & TIM HILL

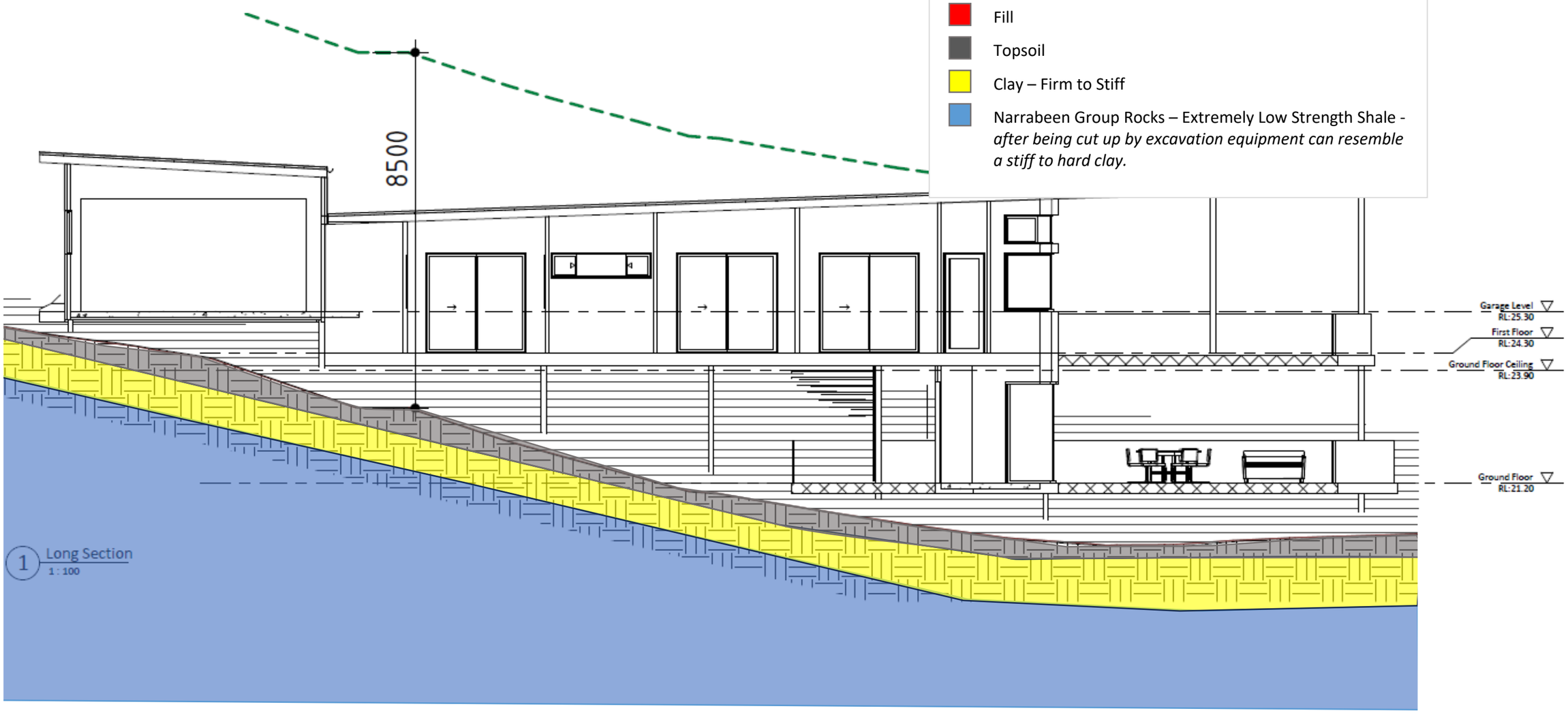
PROJECT: New Dwelling
3 ALEXANDRA CRES BAYVIEW 2104
LOT: 2 DP: 1016440

DRAWING TITLE: SITE PLAN

TRUE NORTH

DRAWN: XK
PROJECT NO.: 02402
SIZE: A3
SCALE: 1 : 200
DRAWING NO: A01
REV NO: D

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



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CLIENT: LES & TIM HILL

PROJECT: New Dwelling
3 ALEXANDRA CRES BAYVIEW 2104
LOT: 2 DP: 1016440

DRAWING TITLE: SECTIONS

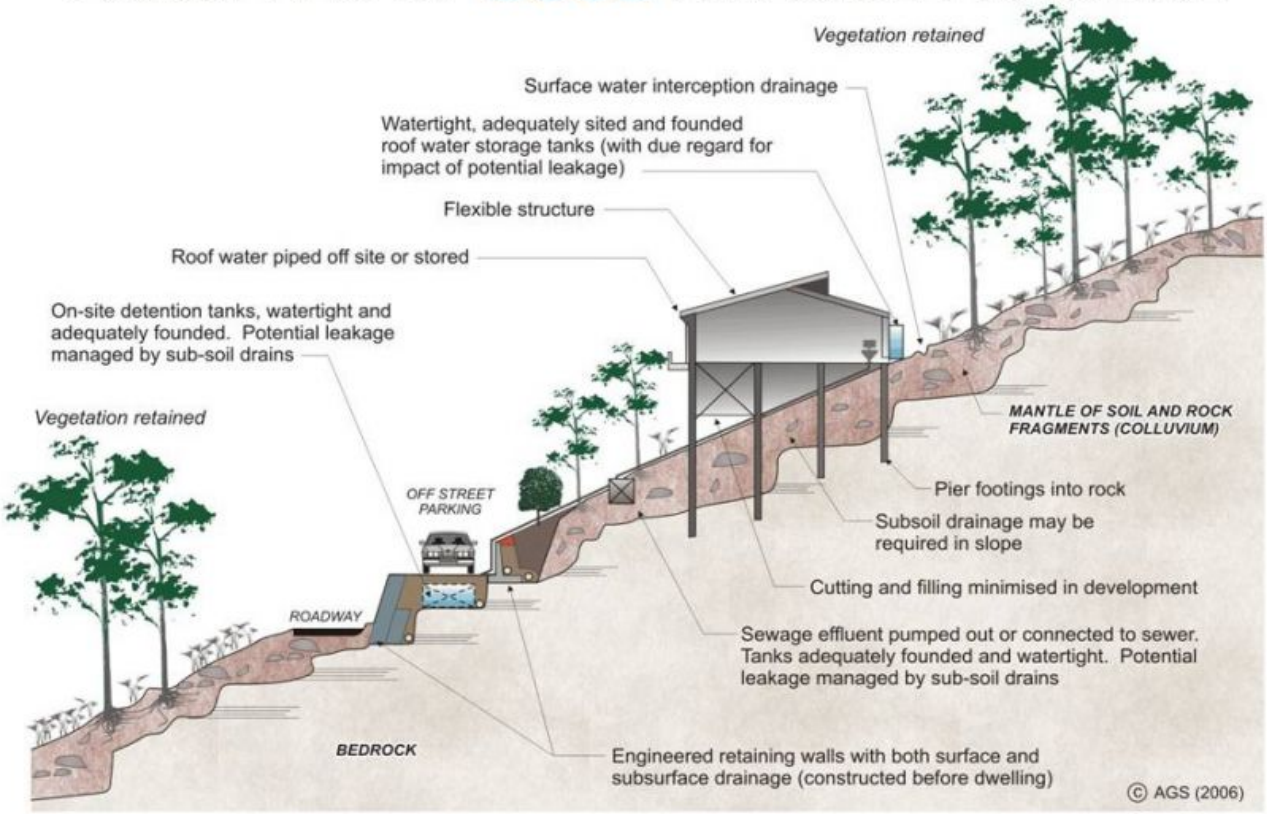
TRUE NORTH

DRAWN: XK
SIZE: A3
PROJECT NO.: 02402
SCALE: 1 : 100
DRAWING NO: A09
REV NO: D

SCOPE ARCHITECTS | ph: 02 9400 4554 | email: mail@scopearchitects.com.au | www.scopearchitects.com.au

25/11/2024 3:07:55 PM

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE