

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

Development Application for _____
Name of Applicant

Address of site 44 Wandeen Road, Clareville

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 9/4/25 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 44 Wandeen Road, Clareville
Report Date: 9/4/25


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 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>44 Wandeen Road, Clareville</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>44 Wandeen Road, Clareville</u>
Report Date: <u>9/4/25</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 18/11/24
(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 18/11/24
- ☒ 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 MScGEOLAusIMM CP GEOL
Membership No. 222757
Company White Geotechnical Group Pty Ltd



GEOTECHNICAL INVESTIGATION:

Alterations and Additions at **44 Wandeen Road, Clareville**

1. Proposed Development

- 1.1** Convert the existing carport into a garage. Construct a storeroom below the garage requiring minor levelling. Construct a new entry pathway/steps.
- 1.2** Rebuild the existing partially demolished house. Various other minor internal and external alterations and additions to the existing house and balconies.
- 1.3** Details of the proposed development are shown on 12 drawings prepared by Northern Beaches Drafting, project number 2321, drawings numbered DA3 to DA14, dated 7/4/25.

2. Site Description

- 2.1** The site was inspected on the 18th November, 2024 and previously on the 23rd August, 2023.
- 2.2** This residential property is on the low side of the road has a N aspect. It is located on the steeply graded upper reaches of a hillslope. The natural slope falls across the property at an average angle of $\sim 23^\circ$. The slope above the property continues at similar angles before easing to near level angles at the crest of the hill. The slope below the property gradually decreases in grade.
- 2.3** At the road frontage, a partially suspended concrete driveway runs to a suspended timber carport (Photo 1). The concrete piers and steel posts that support the driveway and carport stand vertical (Photos 2 & 3). The fill batter for the road merges into the natural steep slope (Photo 4). The existing house is partially demolished (Photos 5 & 6). One of the supporting brick walls of the house displays a stepped crack through the mortar (Photo 7). It is expected that this wall will be

demolished or remediated as part of the proposed works. The brick piers supporting the house stand vertical (Photo 8).

Stable sandstone flagging up to ~1.5m high and a stable concrete retaining wall ~1.5m high support cuts for the house and fills for garden and paved areas above (Photos 9 & 10). Suspended timber balconies extend off the downhill side of the house (Photo 6). The steel posts that support the balconies stand vertical. Low timber, timber crib, and brick retaining walls support fills for level garden and lawn areas beside and downslope of the house. The timber retaining wall at the downhill side of the house is tilting downslope slightly (Photo 11), but due to its low height and location, it is not considered a significant threat to life or property. A moderate to steeply graded garden and lawn area extends off the downhill side of the retaining walls to the downhill property boundary (Photo 12).

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. Five 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 may have occurred for DCP1. 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 (~RL59.3) – AH1 (Photo 13)

Depth (m)	Material Encountered
0.0 to 0.3	FILL , sandy soil and clayey soil, with some rock fragments, dark brown, grey, orange, damp, fine to coarse grained.
0.3 to 0.6	CLAY , yellow/orange brown, stiff, dry.

End of hole @ 0.6m in stiff clay. 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 (~RL60.7)	DCP 2 (~RL59.3)	DCP 3 (~RL57.7)	DCP 4 (~RL54.5)	DCP 5 (~RL52.8)
0.0 to 0.3	8	12	13	3	15
0.3 to 0.6	10	17	23	3	34
0.6 to 0.9	#	15	41	7	38
0.9 to 1.2		29	#	25	#
1.2 to 1.5		34		37	
1.5 to 1.8		#		#	
	Refusal @ 0.5m	End of Test @ 1.5m	End of Test @ 0.9m	Refusal on Rock @ 1.5m	End of Test @ 0.9m

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

DCP Notes:

DCP1 – Refusal @ 0.5m, DCP bouncing, orange clay and dark brown soil on dry tip.

DCP2 – End of Test @ 1.5m, DCP still very slowly going down, orange red and grey shale fragments and orange clay on dry tip.

DCP3 – End of Test @ 0.9m, DCP still very slowly going down, orange red and grey shale fragments and orange clay on dry tip.

DCP4 – Refusal on Rock @ 1.5m, DCP bouncing off rock surface, orange clay and grey sandy soil on wet tip.

DCP5 – End of Test @ 0.9m, DCP still very slowly going down, orange clay and dark brown soil 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 fill and a thin topsoil over firm to stiff clays. Fill to an estimated maximum depth of ~1.0m provides level platforms for lawn, garden, and paved areas across the property. In the test locations, the clays merge into the weathered zone of the underlying rock at depths of between ~0.9m to ~1.5m below the current surface. The weathered zone of the underlying rock is interpreted as Extremely Low to Low Strength Rock. 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. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

Ground water seepage is expected to move over the denser and less permeable clay and weathered rock layers in the sub-surface profile. 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

No evidence of 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 Wandeen Road above.

8. Geotechnical Hazards and Risk Analysis

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

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One
TYPE	The steep 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	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

The fall is away from the street. The stormwater engineer is to refer to council stormwater policy for suitable options.

11. Excavations

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

12. Site Classification

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

13. Foundations

Any new foundations required for the proposed additions are to be supported on piers taken to and embedded no less than 0.6m from the downhill edge of the footing into Extremely Low Strength Rock or better. This ground material is expected at depths of between ~0.9m to ~2.0m below the current surface, being deeper in the filled areas. A maximum allowable bearing pressure of 600kPa can be assumed for footings embedded in Extremely 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 M' 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) MIEAust NER,
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



Photo 6

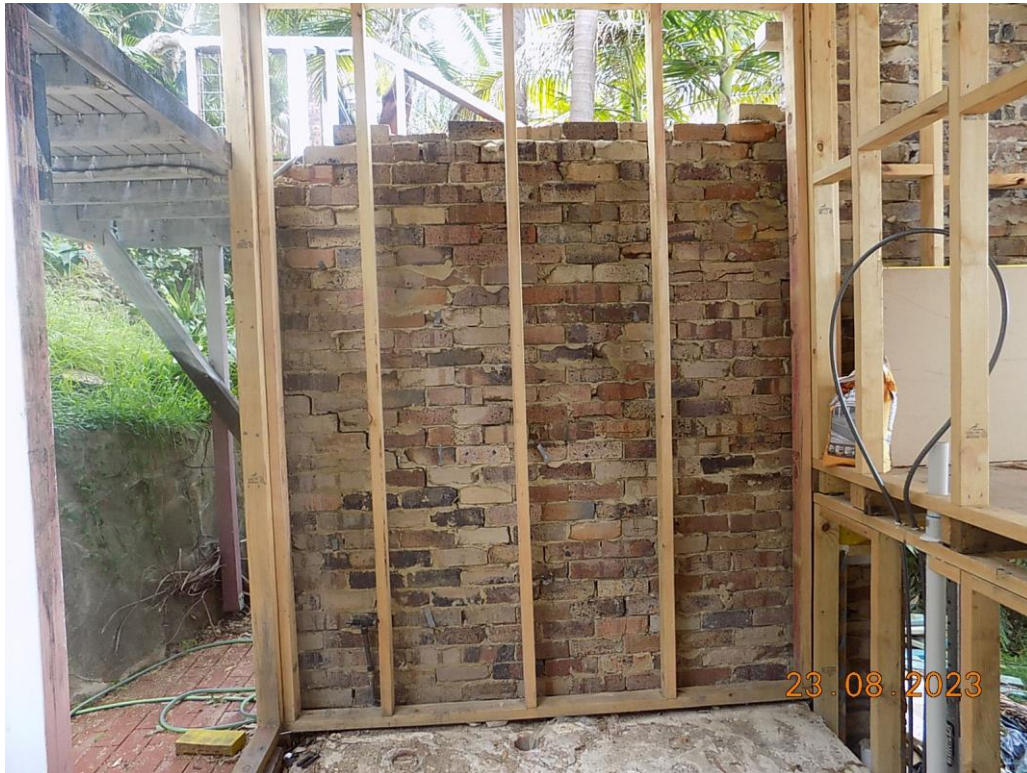


Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13: AH1 – Downhole is from 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

LEGEND

POS

PRIVATE OPEN SPACE (EXISTING)

EXISTING DWELLING

EXISTING DWELLING

MS

MATERIAL STOCKPILE

WM

WASTE MANAGEMENT

SITE SAFETY FENCE

BOUNDARY

▲

EXISTING LEVELS

▲

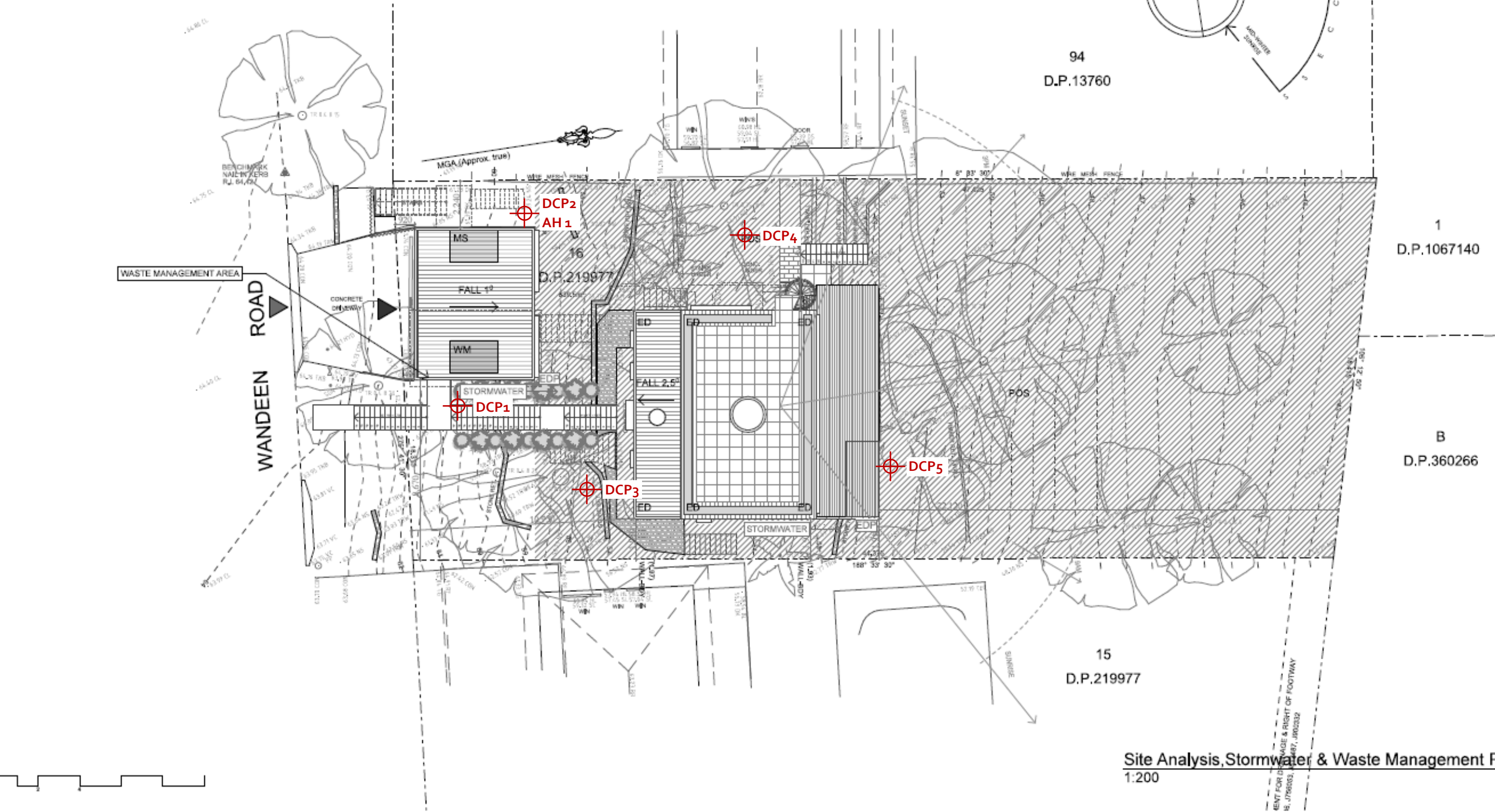
CAR ENTRY POINT

▲

CARPORT ENTRY

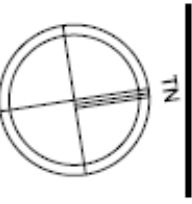
ALL TIMBER FRAMING,
MEMBERS
AND FOOTINGS TO
ENGINEERS DETAILS

EXISTING SITE
SERVICES TO BE USED



Site Analysis, Stormwater & Waste Management Plan
1:200

Date :	Issue :	Description :



The builder shall check and verify all dimensions and verify all errors and omissions to the Designer. Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Designer for construction.



**NORTHERN
BEACHES**
DRAFTING

P 0414 978 491
E ph@northernbeachesdrafting.com.au

Project : Additions & Alterations
DA
44 Wandeen Rd, Clareville
Lot 16 in DP 219977 - 839.5m2
Client : Private Residence
Drawing : - Site Analysis, Stormwater & Waste Management Plan

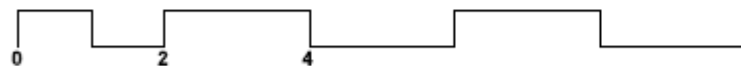
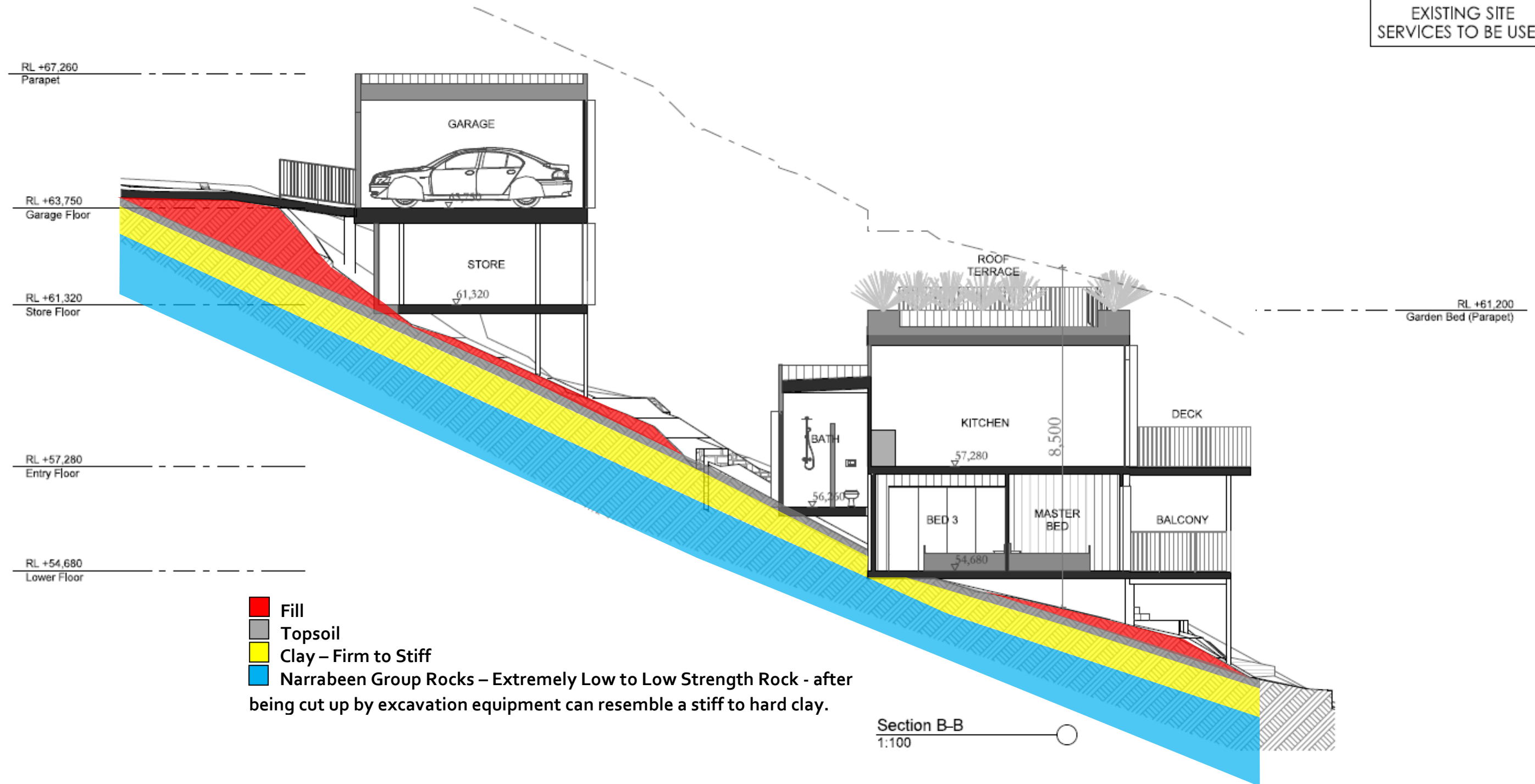
Legend:
- Proposed Work
- Demolition
- Existing

Drawn/Designed : PB
Project Number : 2321
Drawing No. : DA3
Date : 070425
Scale : 1:200 @ A3
Issue :

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

ALL TIMBER FRAMING,
MEMBERS
AND FOOTINGS TO
ENGINEERS DETAILS

EXISTING SITE
SERVICES TO BE USED



Date :	Issue :	Description :

The builder shall check and verify all dimensions and verify all errors and omissions to the Designer. Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Designer for construction.



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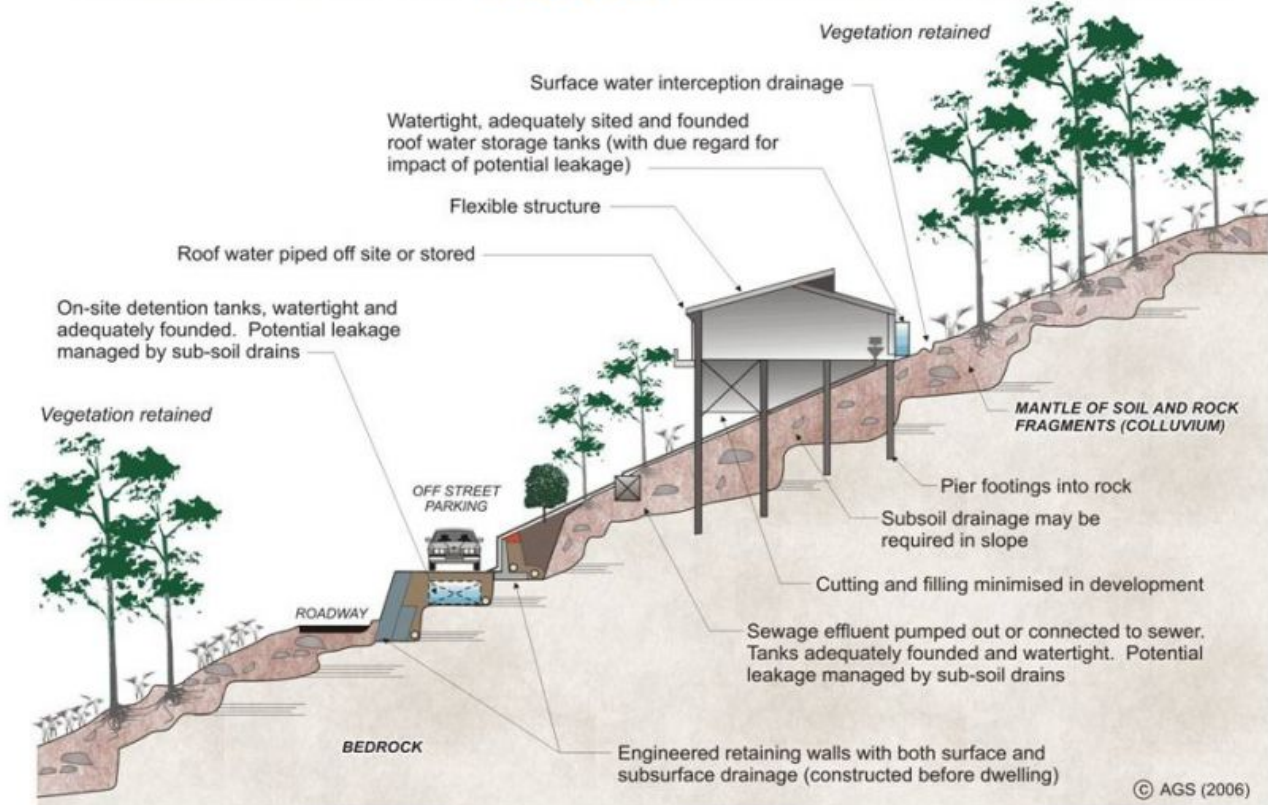
Project : Additions & Alterations
DA
44 Wandeen Rd, Clareville
Lot 16 in DP 219977 - 839.5m2
Client : Private Residence
Drawing : **Section B-B**

■ = Proposed Work
■ = Demolition
■ = Existing

Drawn/Designed : PB
Project Number : **2321**
Drawing No. : **DA13**

Date : 070425
Scale : 1:100 @ A3
Issue :

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE

