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

Development Application for _____
Name of Applicant

Address of site 2 Milga 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 25/7/24 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 **2 Milga Road, Avalon**
Report Date: 25/7/24

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 2 Milga 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 **2 Milga Road, Avalon**

Report Date: 25/7/24

Author: BEN WHITE

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

Please mark appropriate box

- ☒ Comprehensive site mapping conducted **22/7/24** (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 **22/7/24**
- ☒ 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:

New Retaining Wall at **2 Milga Road, Avalon**

1. Proposed Development

1.1 Demolish and replace the existing damaged retaining wall at the W side of the driveway. The demolition of the wall will expose a cut batter up to ~1.8m high.

1.2 Details of the proposed development are shown on 3 structural drawings prepared by NB Consulting Engineers, job number 2406021, drawings numbered S01 to S03, Issue A, dated 26/6/24.

2. Site Description

2.1 The site was inspected on the 22nd July, 2024.

2.2 This residential property is on the high side of the road and has a S aspect. It is located on the moderately graded middle to upper reaches of a hillslope. The natural slope rises across the property at moderate angles. The slope above the property gradually increases in grade. The slope below the property decreases in grade.

2.3 At the road frontage, a concrete Right of Carriageway (ROW) runs up the slope to a concrete driveway and stable concrete block garage at the downhill side of the property (Photos 1 & 2). A rendered masonry retaining wall up to ~1.6m high supports a cut for the driveway and fill for a lawn and garden area above (Photos 2 & 3). The wall is tilting downslope and displays stepped and horizontal cracking. The wall is currently braced with timber. We have been informed by the owner that the wall was damaged by a vehicle. We have also been informed that the wall was tilting downslope significantly prior to being damaged by the vehicle. It is expected that the previous movement has been caused by a palm tree on the uphill side of the wall (Photo 13). These types of plants are supported by a large root ball. As the tree grows and the

root ball expands it exerts large lateral forces. The wall will be replaced by the proposed new retaining wall. The palm tree above is to be removed, as per the recommendations in '**Section 13** Excavation Support Requirements'.

Timber and masonry retaining walls up to ~2.0m high terrace the slope between the ROW and the house (Photos 4 to 6). The timber retaining wall along the downhill property boundary is tilting downslope slightly. See '**Section 16** Ongoing Maintenance'. Sandstone is exposed at the surface beside and upslope of the garage (Photos 4 & 5). The lower rock (Photo 4) is interpreted to be a detached sandstone joint block. It is unknown if the upper rocks (Photo 5) are detached joint blocks or if they are bedrock. An inclined lift runs from the uphill side of the garage to the SW side of the house (Photo 7). A pool that shows no significant signs of movement is located SW of the house (Photo 8). The exterior of the two storey sandstone-dressed and timber clad house with deck shows no significant signs of movement (Photos 6 & 9). A timber retaining wall up to ~1.5m high and a rendered masonry retaining wall up to ~3.0m high support a cut for the uphill side of the house with deck (Photos 10 & 11). The rendered masonry retaining wall appears to be stable. The timber retaining wall is tilting downslope slightly. See '**Section 16** Ongoing Maintenance'. A moderately graded garden area extends from the uphill side of the retaining walls to the uphill property boundary. The slope above the property is densely vegetated (Photo 12). Apart from the damaged retaining wall that will be replaced, no signs of slope instability were observed on the property that could have occurred since the property was developed. 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. Three 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. We note the owners of the W neighbouring property granted permission for us to perform ground testing on their property behind the retaining wall. 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 – AH1 (Photo 14)

Depth (m)	Material Encountered
0.0 to 0.6	**FILL**, sandy soil and clay, dark brown, brown, orange, white, moist, fine to coarse grained.
0.6 to 0.9	**TOPSOIL**, sandy soil, dark brown, moist, fine to medium grained.
0.9 to 1.0	**CLAY**, brown, firm to stiff, moist.

End of hole @ 1.0m in firm to stiff clay. No water table encountered.

DCP TEST RESULTS ON 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**	**DCP 2**	**DCP 3**
0.0 to 0.3	6	3	10
0.3 to 0.6	8	4	12
0.6 to 0.9	7	7	14
0.9 to 1.2	12	33	12
1.2 to 1.5	12	#	15
1.5 to 1.8	16		20
1.8 to 2.1	34		18
2.1 to 2.4	#		#
	End of Test @ 2.1m	End of Test @ 1.2m	Refusal on Rock @ 1.9m

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

DCP Notes:

DCP1 – End of Test @ 2.1m, DCP still very slowly going down, brown clay and dark brown soil on moist tip.

DCP2 – End of Test @ 1.2m, DCP still very slowly going down, orange red shale fragments and dark brown soil on moist tip.

DCP3 – Refusal on Rock @ 1.9m, DCP thudding on rock surface, maroon shale fragments on moist 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 sandy topsoil over Firm to Stiff Clays. Fill to a maximum depth of ~2.0m provides level platforms for garden and lawn areas across the property. In the test locations, the clays merge into the weathered zone of the underlying rock at depths of between ~1.2m to ~2.1m below the current surface, being deeper where the fill is deeper. 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. 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. It is a condition of the slope stability assessment in Section 8 (**Hazard One**) that this be done.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The moderately graded slope that rises across the property and continues above and below is a potential hazard (**Hazard One**). The proposed excavation/demolition is a potential hazard until retaining structures are in place (**Hazard Two**).

RISK ANALYSIS SUMMARY ON NEXT PAGE

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The moderate slope that rises across the property and continues above and below failing and impacting on the property.	The proposed excavation/demolition for the proposed new retaining wall collapsing onto the worksite and impacting the W neighbouring property and palm tree (Photo 13) during the excavation process.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (15%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})
RISK TO LIFE	4.2×10^{-7}/annum	3.7×10^{-5}/annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in **Section 7** are carried out.	This level of risk to life and property is 'UNACCEPTABLE**'**. To move the risk to 'ACCEPTABLE' levels, the recommendations in **Section 13** are to be 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 stormwater runoff will be created by the proposed development.

11. Excavations

The demolition of the existing retaining wall will expose a cut batter up to ~1.8m high. The excavation/demolition is expected to be through fill, topsoil, and clay with Extremely Low to Low Strength Rock expected at depths of between ~1.2m to ~2.1m below the current surface.

Excavations through fill, soil, clay, and Extremely Low to Low Strength Rock are expected to be carried out with an excavator and toothed bucket or hand tools.

12. Vibrations

It is expected the proposed excavation/demolition will be carried out with an excavator and toothed bucket or hand tools and the vibrations produced will be below the threshold limit for building or infrastructure damage using a domestic sized excavator up to 16 tonne or hand tools.

13. Excavation Support Requirements

Allowing for backwall drainage, the excavation/demolition comes close to flush with a palm tree (Photo 13), flush with the W common boundary at the downhill side and is set back ~0.7m from the W common boundary at the uphill side. The palm tree and W common boundary will be within the zone of influence of the excavation. In this instance, the zone of influence is the area above a theoretical 30° line (from horizontal) through fill/soil and a 45° line through clay / weathered rock from the base of the excavation towards the surrounding structures and boundaries.

The structural plans indicate there is a plan to batter the excavation if possible. There is insufficient room to batter. In addition, the demolition/excavation comes close to flush with a palm tree (Photo 13). As discussed in **Section 2.3**, it is expected that the previous movement of the existing retaining wall (prior to it being damaged further by a vehicle) has been caused by the lateral loads exerted by the root ball that supports the palm tree. As such, due to the proximity of the proposed excavation to the palm tree and the potential of the lateral loads

from the tree impacting on the new retaining wall, the palm tree (Photo 13) is to be removed prior to the demolition/excavation commencing.

The existing retaining wall is to be demolished from the top down.

The demolition/excavation will need to be temporarily or permanently supported prior to the commencement of the demolition/excavation, or during the demolition/excavation process in a staged manner, so cut batters are not left unsupported. The support will need to be designed by the structural engineer. See the site plan attached for the minimum extent of the required shoring shown in blue.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. The materials and labour to construct the retaining wall are to be organised so shoring walls can be installed as required. The excavation is to be carried out during a dry period. No excavations are to commence if heavy or prolonged rainfall is forecast.

All excavation spoil is to be removed from site following the current Environmental Protection Agency (EPA) waste classification guidelines.

14. Retaining Structures

For cantilever or singly propped retaining structures it is suggested the design be based on a triangular distribution of lateral pressures using the parameters shown in Table 1.

TABLE 1 ON NEXT PAGE

Table 1 – Likely Earth Pressures for Retaining Structures

Unit	Earth Pressure Coefficients		
	Unit weight (kN/m^3)	'Active' K_a	'At Rest' K_0
Fill and Topsoil	20	0.40	0.55
Residual Clays	20	0.35	0.45
Extremely Low to Low Strength Rock	22	0.25	0.38

For rock classes refer to Pells et al "Design Loadings for Foundations on Shale and Sandstone in the Sydney Region".

It is to be noted that the earth pressures in Table 1 assume a level surface above the wall, do not account for any surcharge loads and assume retaining walls are fully drained. Rock strength and relevant earth pressure coefficients are to be confirmed on site by the geotechnical consultant.

All retaining structures are to have sufficient back-wall drainage and be backfilled immediately behind the structure with free draining material (such as gravel). This material is to be wrapped in a non-woven Geotextile fabric (i.e. Bidim A34 or similar), to prevent the drainage from becoming clogged with silt and clay. If no back-wall drainage is installed in retaining structures the full hydrostatic pressures are to be accounted for in the retaining structure design.

15. Foundations

Extremely Low Strength Rock or better is expected near the base of the proposed retaining wall at the N side and at depths of up to ~1.5m at the S side of the wall. The wall can be supported on a strip footing embedded into this ground material where it is exposed at the base of the wall and supported on piers where required at the S side. 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.

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.

16. Ongoing Maintenance

The tilting timber retaining walls across the property (Photos 4 & 11) are to be monitored by the owners on an annual basis or after heavy and prolonged rainfall events, whichever occurs first. A photographic record of these inspections is to be kept. Should further movement occur the walls are to be remediated or replaced so that they meet current engineering standards. We can carry out these inspections upon request.

17. 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.

18. 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.

Reviewed By:

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

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

REGISTERED PROFESSIONAL GEOSCIENTIST
AUSTRALIAN INSTITUTE OF GEOSCIENTISTS
NATHAN GARDNER
RPGeo No: 10307

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

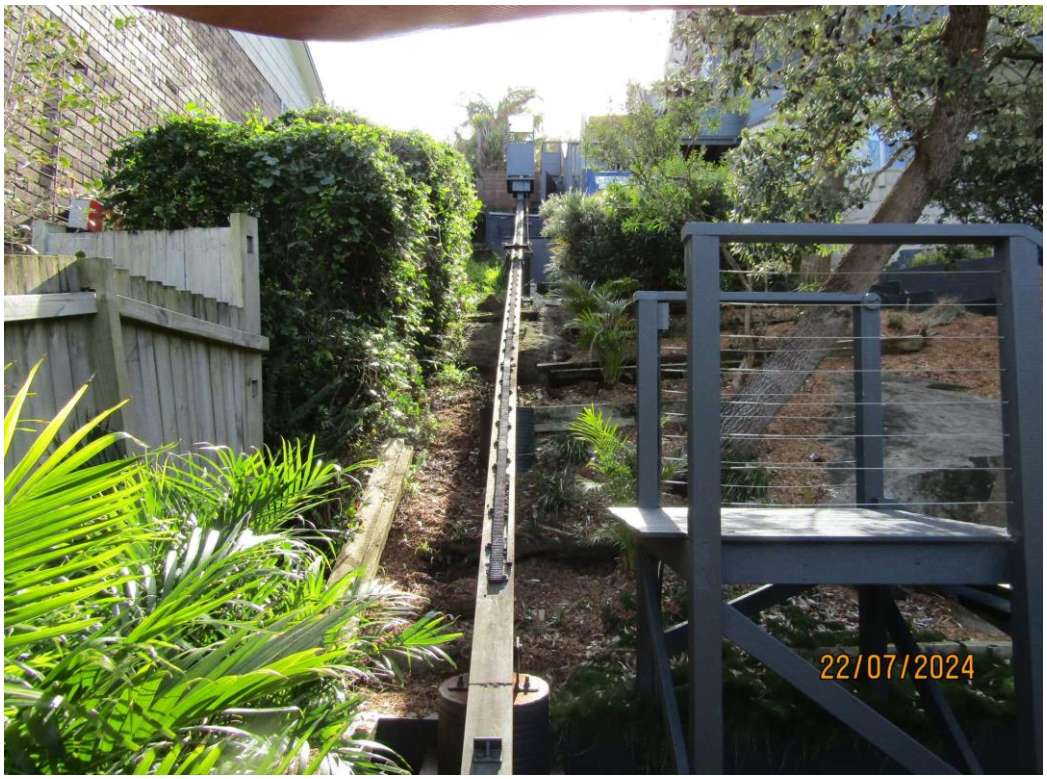


Photo 7

Photo 8

Photo 9

Photo 10

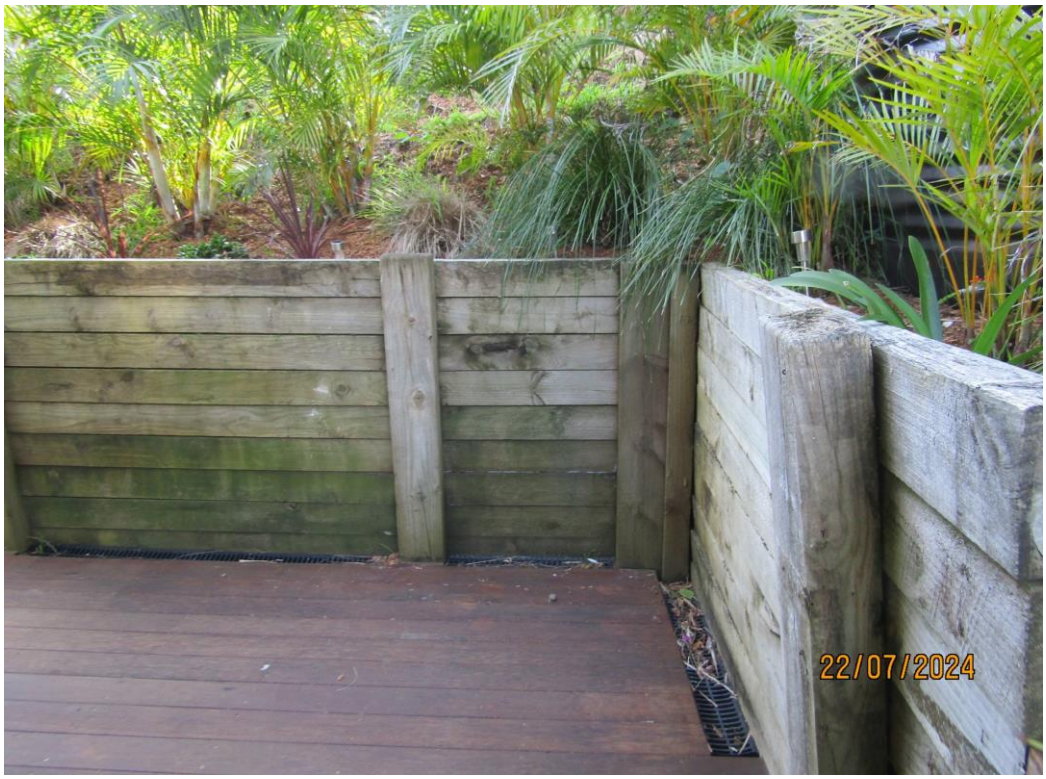


Photo 11

Photo 12

Photo 13

Photo 14: 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.

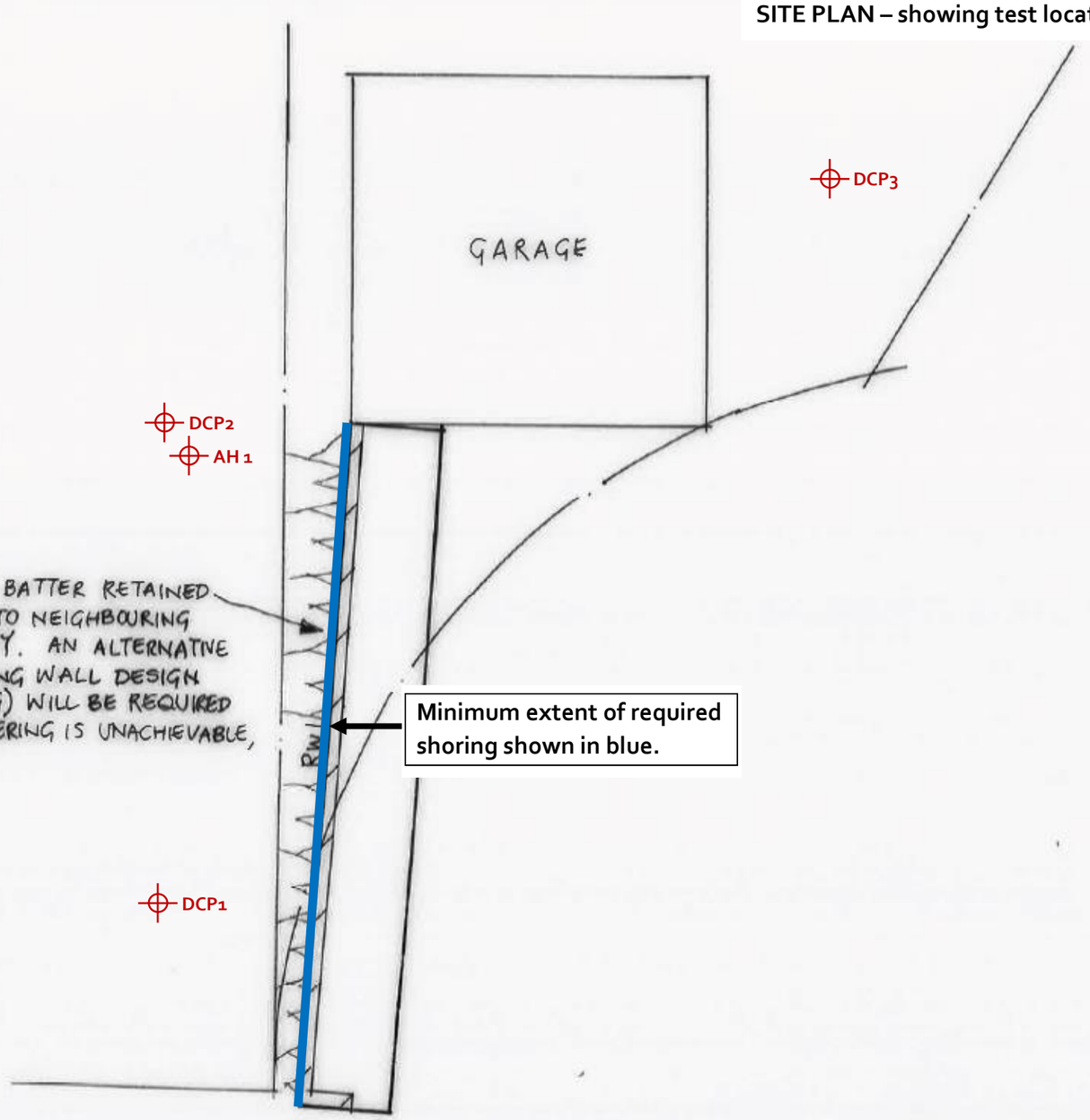
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



RW1 : 200 DINCEL RETAINING WALL
- REFER S03 FOR DETAILS.

RETAINING WALL PLAN
1:100

NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: S01.

Scale check - 100mm when printed to scale

A3

IF IN DOUBT ASK

NB Consulting Engineers

Date	Issue	Description	By	Review
	A	ISSUE FOR CONSTRUCTION	LFC	

DOCUMENT CERTIFICATION
Date : 2/7/24
Brad Seghers
B.E.(Hons.), MIEAust, CPEng NER.

NB Consulting Engineers
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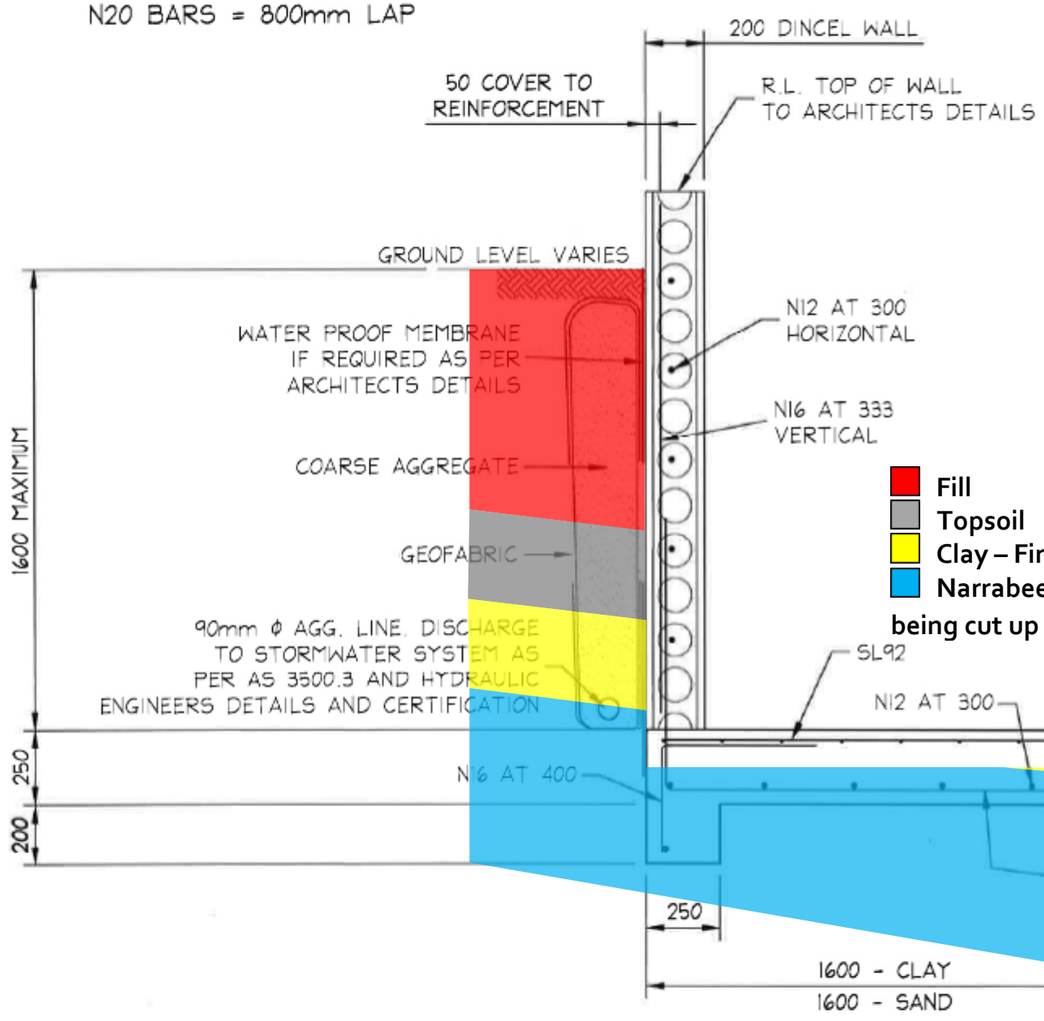
E : nb@nbconsulting.com.au W: www.nbconsulting.com.au

Architect: –	Project: 2 MILGA RD AVALON	Date: JUNE '24	Design: L.B.	Drawn: LFC
Client: SAVO CONSTRUCTIONS PTY LTD	Drawing Title: RETAINING WALL PLAN	Job No: 2406021	Drawing No: S02	Issue: A

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

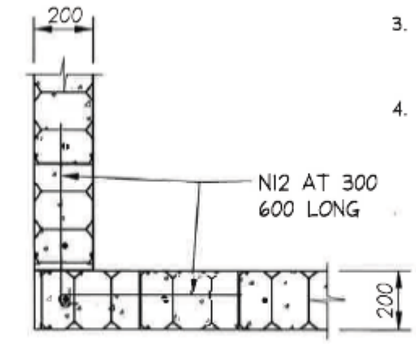
NOTE:
ALL LAPS IN REINFORCEMENT TO BE AS FOLLOWS:
N12 BARS = 500mm LAP
N16 BARS = 650mm LAP
N20 BARS = 800mm LAP



RETAINING WALL TYPE RW1 – 1600 MAXIMUM RETAINED HEIGHT

SCALE = 1 : 20

- Fill
- Topsoil
- Clay – Firm to Stiff
- Narrabeen Group Rocks – Extremely Low to Low Strength Rock - after being cut up by excavation equipment can resemble a stiff to hard clay.



200mm DINCEL WALL
TYPICAL CORNER DETAIL

SCALE = 1 : 20

NOTES:
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Scale check - 100mm when printed to scale

A3

IF IN DOUBT ASK

Date	Issue	Description	By	Review
2024.06.26	A	ISSUE FOR CONSTRUCTION	LFC	-

DOCUMENT CERTIFICATION
Date : 2/7/24
Brad Seghers
B.E.(Hons.),FIEAust,CPEng,NER, PDP, PRE, DEP.
(NB Consulting Engineers)

NB Consulting Engineers
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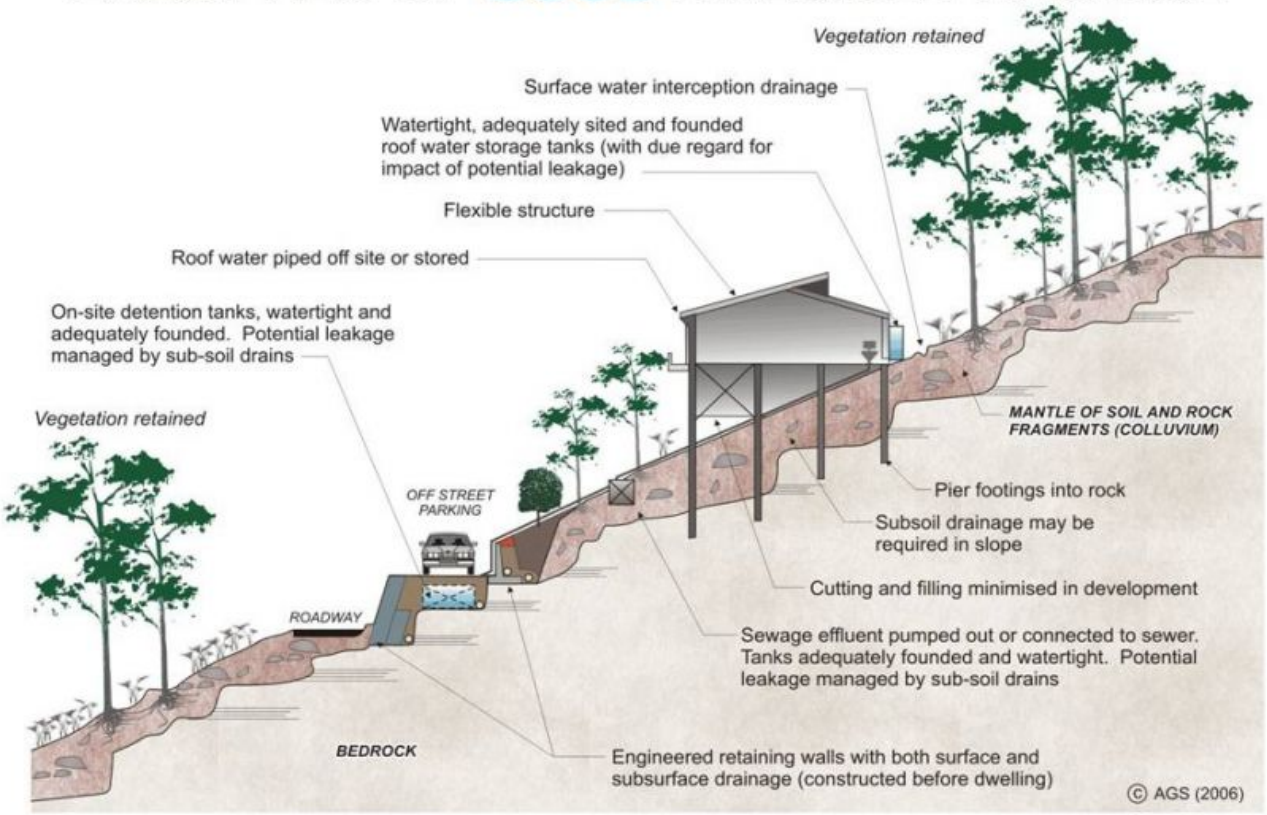
Architect: -	Project: 2 MILGA RD AVALON	Date: JUNE '24	Design: LB	Drawn: LFC
Client: SAVO CONSTRUCTION PTY LTD	Drawing Title: RETAINING WALL DETAIL	Job No: 2406021	Drawing No: S03	Issue: A

NB Consulting Engineers

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE