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

Development Application for _____
Name of Applicant

Address of site 45 Hillcrest Avenue, Mona Vale

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 27/1/21 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 **45 Hillcrest Avenue, Mona Vale**

Report Date: 27/1/21

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 45 Hillcrest Avenue, Mona Vale

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 **45 Hillcrest Avenue, Mona Vale**

Report Date: 27/1/21

Author: BEN WHITE

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

Please mark appropriate box

☒ Comprehensive site mapping conducted **14/10/20**
(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 **14/10/20**

☒ 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 Pool and Landscaping at **45 Hillcrest Avenue, Mona Vale**

1. Proposed Development

1.1 Install a new pool by excavating to a maximum depth of ~1.3m. Construct a new staircase on the uphill side of the proposed pool by excavating to a maximum depth of ~1.3m.

1.2 Landscape a level lawn area downhill of the proposed pool by filling to a maximum depth of ~1.4m.

1.3 Details of the proposed development are shown on 3 drawings prepared by Right Angle Design & Drafting, job number RADD20090, drawings numbered P1 to P3, dated October 2020.

2. Site Description

2.1 The site was inspected on the 14th of October, 2020.

2.2 This residential property is on the low side of the road and has a SW aspect. It is located on the gentle to moderately graded upper reaches of a hillslope. The natural slope falls across the property at an angle of ~12°. The slopes above and below the property decrease in grade.

2.3 At the road frontage a concrete driveway runs down the slope to a garage attached to the house (Photos 1 & 2). Between the road frontage and the house is a garden area. The fill for the garden area is supported by a low rendered masonry retaining wall. The part two storey rendered house is supported by rendered walls (Photos 2 & 3). The external supporting walls show no significant signs of movement. The cut on the N side of the house is supported by a low sandstone flagging retaining wall and a stable sandstone block retaining wall up to ~1.6m high (Photo 4). Fill provides level lawn areas on the downhill side of the house (Photos 5 & 6). The fill is

supported by keystone retaining walls up to ~3.6m high. The upper wall near the S corner of the fill displays stepped movement of the keystone blocks and the lower wall near the S corner displays minor settlement and cracking through the blocks (Photos 7 to 9). See '**Section 17** Ongoing Maintenance'. The fill extends downhill of the lower retaining wall on the NW side and is battered at stable angles. A gently sloping lawn extends from below the fill to the downhill property boundary (Photo 10). 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

Ten 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. 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 DCP5. 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:

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** (~RL41.0)	**DCP 2** (~RL41.1)	**DCP 3** (~RL41.0)	**DCP 4** (~RL41.0)	**DCP 5** (~RL41.0)
0.0 to 0.3	10	5	16	14	12
0.3 to 0.6	20	6	16	17	10
0.6 to 0.9	13	4	9	14	#
0.9 to 1.2	37	7	13	14	
1.2 to 1.5	19	8	8	33	
1.5 to 1.8	11	16	#	30	
1.8 to 2.1	17	40		19	
2.1 to 2.4	25	#		18	
2.4 to 2.7	40			18	
2.7 to 3.0	#			30	
3.0 to 3.3				#	
	End of Test @ 2.6m	End of Test @ 2.1m	Refusal @ 1.3m	Refusal @ 2.9m	Refusal @ 0.5m

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

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 6** (~RL41.0)	**DCP 7** (~RL39.7)	**DCP 8** (~RL36.6)	**DCP 9** (~RL35.7)	**DCP 10** (~RL36.8)
0.0 to 0.3	16	13	7	5	5
0.3 to 0.6	18	11	7	9	6
0.6 to 0.9	10	5	13	10	7
0.9 to 1.2	12	5	40	14	37
1.2 to 1.5	9	#	#	20	#
1.5 to 1.8	16			#	
1.8 to 2.1	40				
2.1 to 2.4	#				
	End of Test @ 2.0m	Refusal @ 1.0m	End of Test @ 1.2m	Refusal @ 1.3m	Refusal @ 1.2m

DCP Notes:

DCP1 – End of Test @ 2.6m, DCP still very slowly going down, brown orange rock fragments on dry tip.
DCP2 – End of Test @ 2.1m, DCP still very slowly going down, orange clayey rock fragments on dry tip.
DCP3 – Refusal @ 1.3m, DCP bouncing, orange clayey rock fragments on dry tip.
DCP4 – Refusal @ 2.9m, DCP bouncing, white, orange and red rock fragments on dry tip.
DCP5 – Refusal @ 0.5m, DCP bouncing, brown soil on dry tip.
DCP6 – End of Test @ 2.0m, DCP still very slowly going down, orange clay on dry tip.
DCP7 – Refusal @ 1.0m, DCP bouncing, orange and white impact dust on dry tip.
DCP8 – End of Test @ 1.2m, DCP still very slowly going down, orange and white impact dust on dry tip.
DCP9 – Refusal @ 1.3m, DCP bouncing, orange brown rock fragments on dry tip.
DCP10 – Refusal @ 1.2m, DCP bouncing, white impact dust 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 sandy soil over sandy clays. Fill has been placed to form level lawn areas on the downhill side of the house. The clays merge into the weathered zone of the under lying rocks at depths of between 1.0m to 2.9m below the current surface, being deeper in the filled areas. 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

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

Due to the slope and elevation of the block, the water table in the location is expected to be many metres below 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 Hillcrest Avenue above.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The gentle to moderately graded slope that falls across the property and continues above and below is a potential hazard (**Hazard One**). The proposed excavation for the pool undercutting the NW portion of the lower keystone retaining wall (Photo 6) is a potential hazard (**Hazard Two**).

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The gentle to moderately graded slope that falls across the property and continues above and below failing and impacting on the property.	The proposed excavation for the pool undercutting the NW portion of the lower keystone retaining wall (Photo 6).
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (20%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})
RISK TO LIFE	8.3×10^{-7}/annum	8.3×10^{-6}/annum
COMMENTS	This level of risk is 'ACCEPTABLE'.	This level of risk to life and property is 'UNACCEPTABLE'. To move 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

An excavation to a maximum depth of ~1.3m will be required to install the proposed pool. The excavation is expected to be through fill over sandy soil and sandy clays, with Extremely Low to Low Strength Rock expected near the base of the excavation near the NW side of the proposed pool. Another excavation to a maximum depth of ~1.3m is required to construct a new staircase on the uphill side of the proposed pool. The excavation is expected to be through fill.

Excavations through fill, soil, clay and rock up to Low Strength can be carried out with an excavator and bucket. If Medium Strength Rock is encountered it will require grinding or rock sawing and breaking.

12. Vibrations

It is expected the proposed excavations will be carried out with an excavator and bucket and the vibrations produced will be below the threshold limit for building or infrastructure damage.

If Medium Strength Rock or better is encountered, excavations through Medium Strength Rock or better should be carried out to minimise the potential to cause vibration damage to the subject keystone retaining walls (Photo 6) and neighbouring pool to the NW. The excavation is set back ~0.5m from the lower keystone retaining wall, ~3.0, from the upper

keystone retaining wall and ~7.1m from the NW neighbouring pool. Close controls by the contractor over rock excavation are recommended so excessive vibrations are not generated.

Excavation methods are to be used that limit peak particle velocity to 5mm/sec at the subject retaining walls and property boundaries. Vibration monitoring will be required to verify this is achieved.

If a milling head is used to grind the rock, vibration monitoring will not be required. Alternatively, if rock sawing is carried out around the perimeter of the excavation boundaries in not less than 1.0m lifts, a rock hammer up to 300kg could be used to break the rock without vibration monitoring. Peak particle velocity will be less than 5mm/sec at the subject retaining walls and property boundaries using this method provided the saw cuts are kept well below the rock to broken.

It is worth noting that vibrations that are below thresholds for building damage may be felt by the occupants of the subject house and neighbouring properties.

13. Excavation Support Requirements

An excavation to a maximum depth of ~1.3m will be required to install the proposed pool. The excavation will be set back ~0.5m from the NW portion of the lower keystone retaining wall supporting the lawn fill (Photo 6). The retaining wall is to be underpinned to the base of the excavation (or be dismantled if possible), prior to the excavation commencing.

Where underpinning is not required, the low cut batters through fill, soil, clay and Extremely Low to Low Strength Rock will stand at near-vertical angles for short periods of time until the pool structure is installed, provided the cut batters are kept from becoming saturated.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. All unsupported cut batters are to be covered to prevent access of water in wet weather and loss of moisture in dry weather. The materials and labour to construct the pool structure are to be organised so on completion of the excavation they can be constructed as

soon as possible. The excavation is to be carried out during a dry period. No excavations are to commence if heavy or prolonged rainfall is forecast.

If the cut batters remain unsupported for more than a few days before the commencement of pool construction they are to be temporarily supported with typical pool shoring such as braced form ply or similar until the pool structure is in place.

All excavation spoil is to be removed from site or be supported by engineered retaining walls.

14. Fill

Fill will be placed for landscaping purposes downhill of the proposed pool. No fills are to be laid until the retaining walls are in place.

The fill will reach a maximum depth of ~1.4m. The surface is to be prepared before any fills are laid by removing any organic matter and topsoil. Fills for landscaping purposes are to be laid in a loose thickness not exceeding 0.3m before being moderately compacted. Tracking the machine over the loose fill in 1 to 2 passes should be sufficient. Immediately behind the retaining walls (say to 1.5m), the fills are to be compacted with light weight equipment such as a hand-held plate compactor so as not to damage the retaining walls. Where light weight equipment is used, fills are to be laid in a loose thickness not exceeding 0.2m before being compacted. No structures are to be supported on landscaped fill.

15. 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 Soil	20	0.40	0.55
Residual Clays	20	0.35	0.45
Extremely Low to very Low Strength Rock	22	0.25	0.35
Low Strength	24	0.25	0.35

For rock classes refer to Pells et al "Design Loadings for Foundations on Shale and Sandstone in the Sydney Region". Australian Geomechanics Journal 1978.

It is to be noted that the earth pressures in Table 1 assume a level surface above the structure, do not account for any surcharge loads and assume retaining structures 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.

16. Foundations

The uphill NW side of the proposed pool is expected to be seated in Extremely Low Strength Rock or better. This is a suitable bearing material. Where the rock drops away with the slope on the downhill side, piers taken to rock will be required to maintain a uniform bearing

pressure across the structure. The pavement surrounding the pool is subject to excessive wetting due to pool overflow that occurs when the pool is in use. This can result in settlement in fill and clay. As such it is recommended the pool paving be supported on piers taken below the fill and into Extremely Low Strength Rock or better (or cantilevered off the pool structure where possible). A maximum allowable bearing pressure of 600kPa can be assumed for footings on Extremely Low Strength Rock or better.

Spread footings or piers taken below the fill and into the underlying firm to stiff clays of the natural profile are suitable footings for the proposed new stairs and retaining walls. A maximum allowable bearing pressure of 200kPa can be assumed for footings supported on firm to stiff clay.

As the bearing capacity of clay and 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 wet clay or 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.

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.

17. Ongoing Maintenance

The keystone retaining walls (Photos 6 to 9) are to be monitored by the owners on an annual basis. A photographic record of these inspections is to be kept. Should further movement occur the walls are to be remediated so they meet current engineering standards. We can carry out these inspections upon request.

18. Inspections

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 is still onsite and before steel reinforcing is placed or concrete is poured.

White Geotechnical Group Pty Ltd.

Ben White M.Sc. Geol.,
AusIMM., CP GEOL.
No. 222757
Engineering Geologist

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

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.

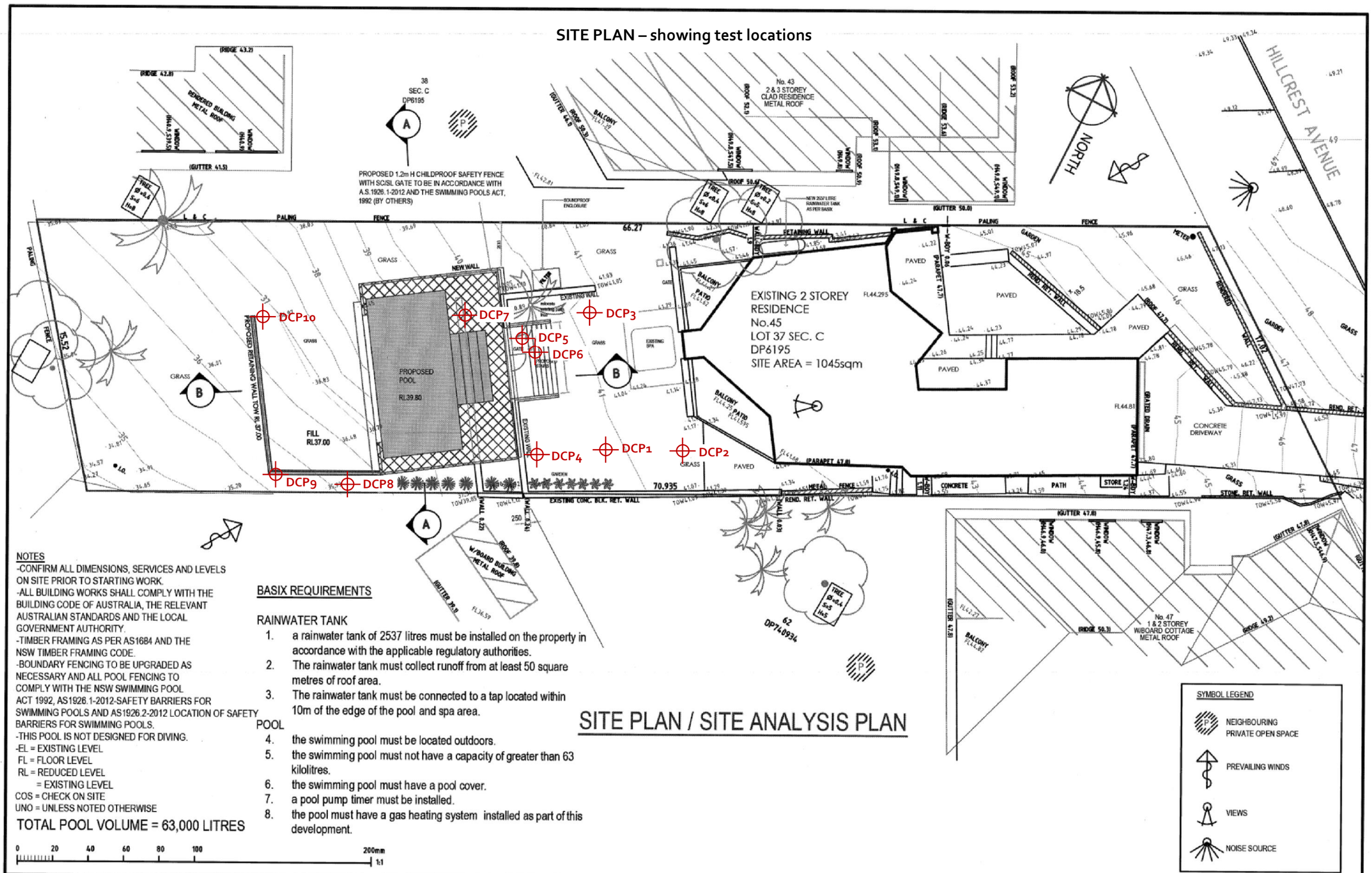
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



NOTES

-CONFIRM ALL DIMENSIONS, SERVICES AND LEVELS ON SITE PRIOR TO STARTING WORK.
-ALL BUILDING WORKS SHALL COMPLY WITH THE BUILDING CODE OF AUSTRALIA, THE RELEVANT AUSTRALIAN STANDARDS AND THE LOCAL GOVERNMENT AUTHORITY.
-TIMBER FRAMING AS PER AS1684 AND THE NSW TIMBER FRAMING CODE.
-BOUNDARY FENCING TO BE UPGRADED AS NECESSARY AND ALL POOL FENCING TO COMPLY WITH THE NSW SWIMMING POOL ACT 1992, AS1926.1-2012-SAFETY BARRIERS FOR SWIMMING POOLS AND AS1926.2-2012 LOCATION OF SAFETY BARRIERS FOR SWIMMING POOLS.
-THIS POOL IS NOT DESIGNED FOR DIVING.
-EL = EXISTING LEVEL
FL = FLOOR LEVEL
RL = REDUCED LEVEL
= EXISTING LEVEL
COS = CHECK ON SITE
UNO = UNLESS NOTED OTHERWISE

TOTAL POOL VOLUME = 63,000 LITRES

BASIX REQUIREMENTS

RAINWATER TANK

1. a rainwater tank of 2537 litres must be installed on the property in accordance with the applicable regulatory authorities.
2. The rainwater tank must collect runoff from at least 50 square metres of roof area.
3. The rainwater tank must be connected to a tap located within 10m of the edge of the pool and spa area.

POOL

4. the swimming pool must be located outdoors.
5. the swimming pool must not have a capacity of greater than 63 kilolitres.
6. the swimming pool must have a pool cover.
7. a pool pump timer must be installed.
8. the pool must have a gas heating system installed as part of this development.

0 20 40 60 80 100 200mm 1:1

SITE PLAN / SITE ANALYSIS PLAN

SYMBOL LEGEND

- NEIGHBOURING PRIVATE OPEN SPACE
- PREVAILING WINDS
- VIEWS
- NOISE SOURCE

RIGHT ANGLE DESIGN & DRAFTING PTY LTD
ROBYN GOOD
HORTICULTURE CERT III
ASSOC. DIPLOMA STRUCTURAL ENGINEERING
NZCD ARCHITECTURAL DRAUGHTING
P.O.Box 1049 SURRY HILLS 2010
PH: 8399-0072
EMAIL: info@rightanglodesign.com.au
ABN: 70 150 745 556

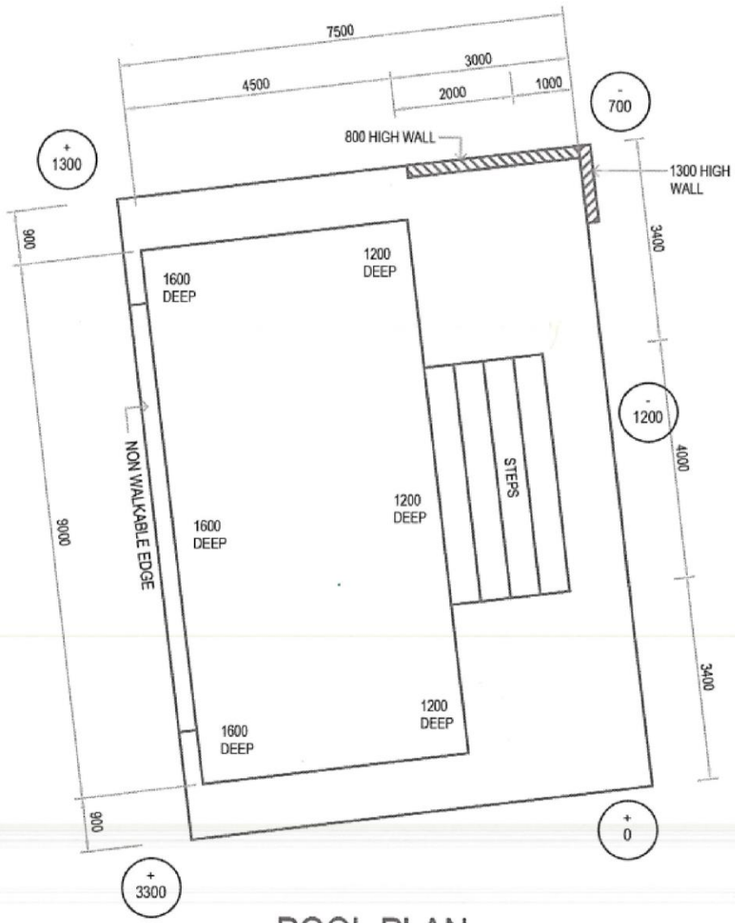
REVISIONS:

PROPOSED POOL & ASSOCIATED WORKS
STEPHEN WOODS & KERRIE WILSON
LOT 37 SEC C DP6195
No. 45 HILLCREST AVENUE
MONA VALE 2103

DWG NAME
SITE PLAN / SITE ANALYSIS PLAN

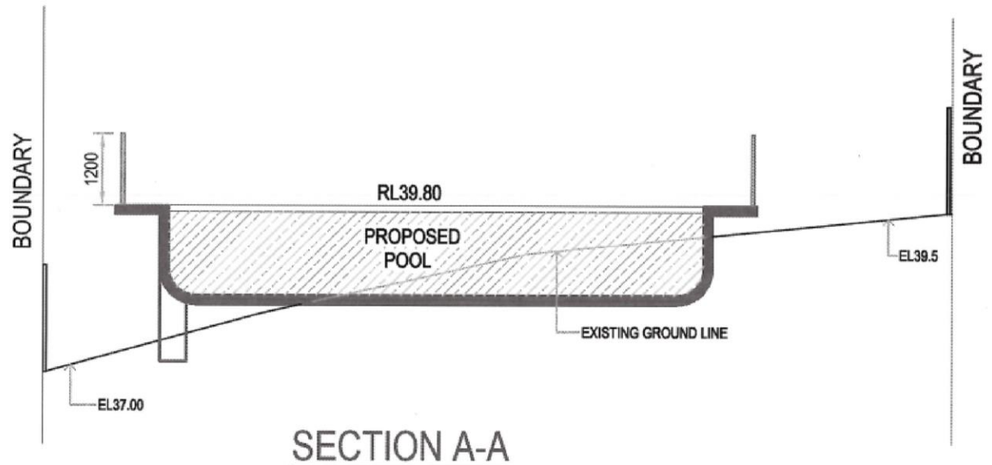
DATE	SCALE AT A3	JOB NUMBER	DWG NUMBER
JAN 2021	1:200	RADD20090	P1

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

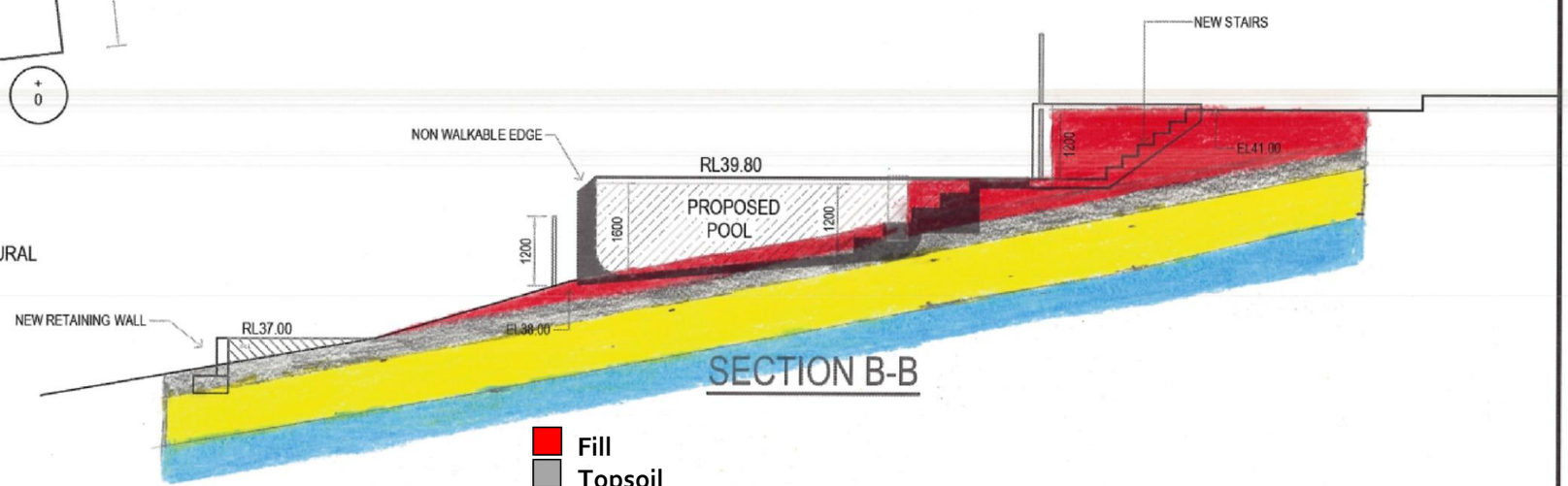


POOL PLAN

+100 DENOTES TOP OF POOL RELATIVE TO NATURAL GROUND LEVEL



SECTION A-A



SECTION B-B

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

0 10 20 30 40 50 100mm 1:1

RIGHT ANGLE DESIGN & DRAFTING PTY LTD
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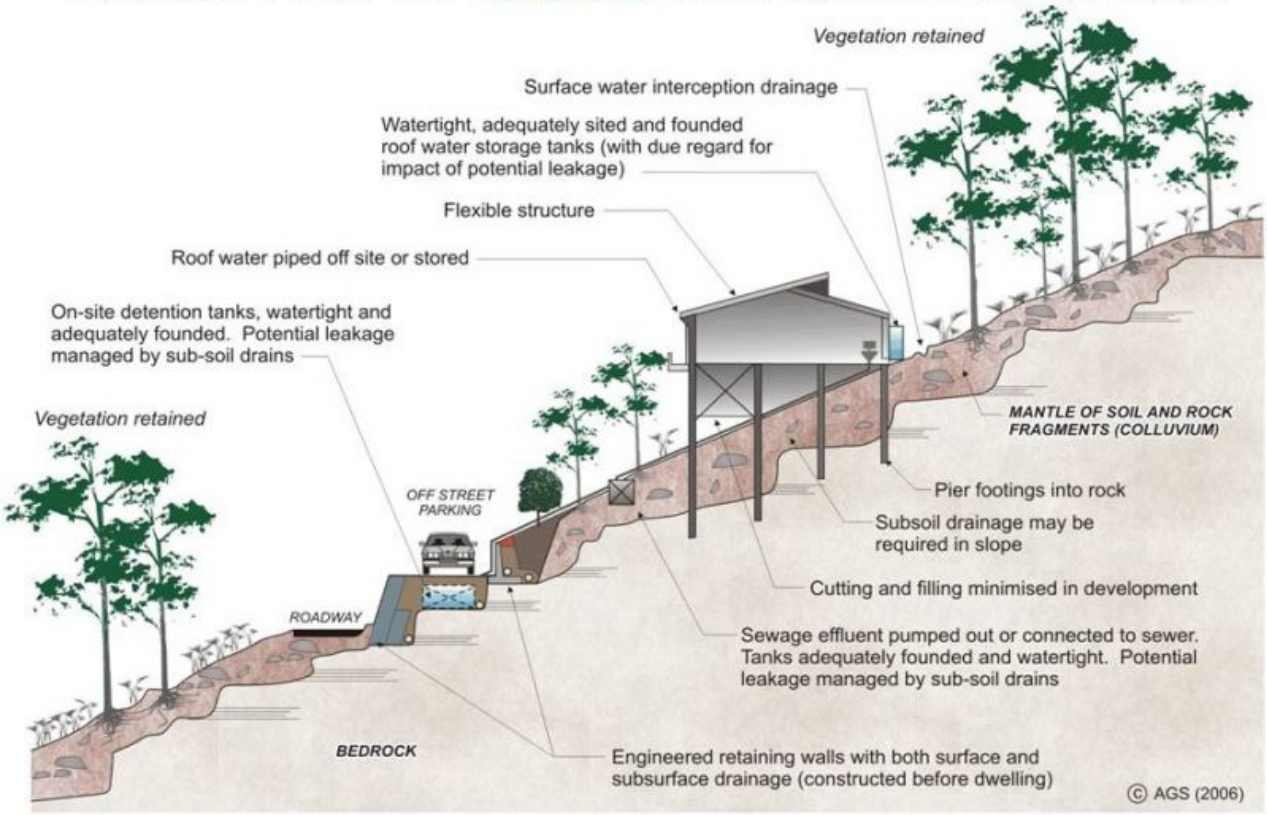
REVISIONS:

PROPOSED POOL & ASSOCIATED WORKS
STEPHEN WOODS & KERRIE WILSON
LOT 37 SEC C DP6195
No. 45 HILLCREST AVENUE
MONA VALE 2103

DWG NAME
POOL PLAN AND SECTIONS

DATE	SCALE AT A3	JOB NUMBER	DWG NUMBER
OCT 2020	1:100	RADD20090	P3

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE