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

Development Application for _____
Name of Applicant

Address of site 15 Chisholm Avenue, Avalon Beach

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk ***Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report***

I, Ben White *on behalf of* **White Geotechnical Group** Pty Ltd
(Insert Name) (Trading or Company Name)

on this the 24/6/25 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 **15 Chisholm Avenue, Avalon Beach**

Report Date: 24/6/25

Author: BEN WHITE

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

Documentation which relate to or are relied upon in report preparation:

Australian Geomechanics Society Landslide Risk Management March 2007.

White Geotechnical Group company archives.

I am aware that the above Geotechnical Report, prepared for the abovementioned site is to be submitted in support of a Development Application for this site and will be relied on by Pittwater Council as the basis for ensuring that the Geotechnical Risk Management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature _____

Name Ben White

Chartered Professional Status MScGEOL AIG., RPGeo

Membership No. 10306

Company **White Geotechnical Group Pty Ltd**

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1(a) - Checklist of Requirements for Geotechnical Risk Management Report for Development Application

Development Application for _____
Name of Applicant

Address of site 15 Chisholm Avenue, Avalon Beach

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical Report. This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).

Geotechnical Report Details:

Report Title: Geotechnical Report **15 Chisholm Avenue, Avalon Beach**

Report Date: 24/6/25

Author: BEN WHITE

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

Please mark appropriate box

☒ Comprehensive site mapping conducted **13/5/25** (date)
☒ Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)
☒ Subsurface investigation required
  ☐ No Justification _____
  ☒ Yes Date conducted **13/5/25**
☒ 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 Pool, Cabana & Garage at **15 Chisholm Avenue, Avalon Beach**

1. Proposed Development

1.1 Install a pool on the downhill side of the property by excavating to a maximum depth of 1.9m.

1.2 Demolish existing retaining walls and landscape the area around the proposed pool by excavating to a maximum depth of ~1.8m In the NW corner of the pool.

1.3 Construct a cabana on the downhill side of the property by excavating to a maximum depth of ~1.8m and filling to a maximum height of ~1.5m.

1.4 Demolish the existing carport and construct a garage in this location.

1.5 Extend the house with first floor above and new decking on the downhill side.

1.6 Details of the proposed development are shown on 8 drawings prepared by AH Design, drawings A-165 numbered 1 to 4, dated 24/4/2025. SED-165 dated APRIL 2025. "waste management plan", unnumbered and undated. And NOT-165 numbered 1 and 2, dated APRIL 2025.

2. Site Description

2.1 The site was inspected on the 13th May, 2025.

2.2 This residential property is on the low side of the road and has an E aspect. It is located on the moderately graded middle reaches of a hillslope. The natural slope falls across the property at an average angle of ~13°. The slope above and below the property continue at similar angles.

2.3 At the road frontage, a shared concrete driveway runs down the slope to a carport to the N of the house (Photo 1). The fill for the carport is supported by a stable

timber retaining wall reaching ~1.0m high (Photo 2). The moderately graded slope between the road frontage and the house is densely vegetated (Photo 3). The part two-story fibre board clad house is supported on brick walls and brick piers (Photo 4). Thin stepped cracking was observed in the uphill supporting wall of the house (Photo 5). This cracking is typical in houses of this age and construction and we attribute it to minor settlement. The moderately graded slope below the house which is the location of the proposed works is terraced in retaining walls of timber and mortared sandstone construction and reaching ~1.3m high (Photos 6 to 8). These walls were largely observed to be stable. One of the walls to the S of the house was observed to be tilting slightly (Photo 9). However, due to the wall's low height and location, it is not considered a threat to life or property should further movement occur. The remainder of the subject property down to the lower common boundary is a moderately graded lawn (Photo 10).

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. Six 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 expected to have occurred in DCP test 1. 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 (~RL40.8) **–** AH1 (Photo 11)

Depth (m)	**Material Encountered**
0.0 to 0.3	**FILL**, clayey soil, derived from natural clays, brown, Soft, damp, fine to medium grained.
0.3 to 0.6	**CLAY**, sandy clay, grey Soft, damp, fine to medium grained.
0.6 to 0.9	**RESIDUAL CLAY**, sandy clay, derived from weathered Very Low to Low Strength Rock or Better, mottled brown and orange, Firm to Stiff, dry, fine to medium grained.

End of test @ 0.9m in residual 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** (~RL40.8)	**DCP 2** (~RL41.3)	**DCP 3** (~RL36.7)	**DCP 4** (~RL40.8)	**DCP 5** (~RL43.9)	**DCP 6** (~RL44.4)
0.0 to 0.3	12	12	3	3	4	5
0.3 to 0.6	15	14	5	4	3F	3F
0.6 to 0.9	21	3	10	9	8	14
0.9 to 1.2	#	3	12	14	18	15
1.2 to 1.5		10	13	26	16	27
1.5 to 1.8		12	30	30	25	30
1.8 to 2.1		#	#	#	8	#
2.1 to 2.4					#	
	Refusal on Rock @ 0.9m	Refusal on Rock @ 1.6m	End of Test @ 1.8m	End of Test @ 1.8m	Refusal on Rock @ 1.9m	End of Test @ 1.8m

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

DCP Notes:

DCP1 – Refusal on Rock @ 0.9m, DCP bouncing off rock surface, maron and grey sandy clay on wet tip.
DCP2 – Refusal on Rock @ 1.6m, DCP bouncing off rock surface, brown sandy clay on damp tip.
DCP3 – End of test @ 1.8m, DCP still very slowly going down, maroon and white clay on dry tip, and in collar above.
DCP4 – End of test @ 1.8m, DCP still very slowly going down, brown clay on damp tip and in collar above.
DCP5 – Refusal on Rock @ 1.9m, DCP thudding on rock surface, maroon and white impact dust on dry tip.
DCP6 – End of test @ 1.8m, DCP still very slowly going down, maroon and white impact dust on dry tip.

5. Geological Observations/Interpretation

The natural slope materials are colluvial at the near surface and residual at depth. In the test locations, the ground materials consist of soft sandy clay over clays derived from weathered rock. Filling has been placed to a height of ~1.3 in the location of the proposed works. The clays merge into the weathered zone of the underlying rock at depths of between 1.5m to 1.8m below the current surface, being deeper due to the presence of filling and a variable weathering profile. The weathered zone is interpreted as Extremely Low to Very Low Strength Rock or better. It is to be noted that this material 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 denser and less permeable clay and weathered shale layers in the sub-surface profile. Due to the slope and site elevation, the water table is expected to be many metres below the base of the proposed excavations.

7. Surface Water

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

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**). Vibrations generated during the proposed excavations are a potential hazard (**Hazard Two**). The proposed excavations are a potential hazard until the retaining walls / pool structure are in place (**Hazard Three**). The proposed excavation for pool landscaping undercutting the brick piers for the existing balcony and concrete slab is a potential hazard. (**Hazard Four**).

Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The moderate slope that falls across the property and continues above and below failing and impacting on the proposed works.	The vibrations produced during the proposed excavations impacting on the surrounding structures.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Minor' (10%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (5×10^{-4})
RISK TO LIFE	8.3×10^{-7}/annum	5.3×10^{-7}/annum
COMMENTS	This level of risk is 'ACCEPTABLE'.	This level of risk to property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels, the recommendations in **Section 12** are to be followed.

(See Aust. Geomech. Jnl. Mar 2007 Vol. 42 No 1, for full explanation of terms)

HAZARDS	Hazard Three	Hazard Four
TYPE	The excavations collapsing onto the work site before retaining structures are in place.	The proposed excavation for landscaping undercutting the brick piers for the existing balcony and concrete slab causing damage or failure.
LIKELIHOOD	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (25%)	'Medium' (35%)
RISK TO PROPERTY	'Moderate' (2×10^{-4})	'Moderate' (2×10^{-4})
RISK TO LIFE	5.9×10^{-5}/annum	5.3×10^{-5}/annum
COMMENTS	This level of risk to life and property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels, the recommendations in **Section 13 and 15** are to be followed.	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.

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 for stormwater disposal.

11. Excavations

Three excavations will be required for the proposed development:

- An excavation to a maximum depth of ~1.9m is required to install the proposed pool.
- An excavation to a maximum depth of ~1.8m is required to construct the proposed cabana.

- Demolition of existing retaining walls and an excavation to a maximum depth of ~1.8m is required to landscape the area around the proposed pool.

The excavations are expected to be through fill, topsoil, and clay with Extremely Low to Very Low Strength Rock or better expected at depths of between ~1.6m to ~1.9m in the area of the proposed excavation. It is envisaged that excavations through fill, soil, clay, and Extremely Low to Very Low Strength Rock or better can be carried out with an excavator and toothed bucket. If encountered, excavations through Medium Strength Rock will require grinding or rock sawing and breaking.

12. Vibrations

Possible vibrations generated during excavations through fill, soil, clay, and Extremely Low to Very Low Strength Rock will be below the threshold limit for building damage utilising a domestic-sized excavator up to 16 tonnes.

Excavations through Medium Strength Rock or better if encountered should be carried out to minimise the potential to cause vibration damage to the subject house. Allowing ~0.5m for backwall drainage where necessary, the proposed excavations will be set back up to ~3.5m from the subject house.

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 house walls. Vibration monitoring will be required to verify this is achieved. Vibration monitoring must include a light/alarm so the operator knows if vibration limits have been exceeded. The equipment is to log and record vibrations throughout the excavation works.

In Medium Strength rock or better techniques to minimise vibration transmission will be required. These include:

- Rock sawing the excavation perimeter to at least 1.0m deep prior to any rock breaking with hammers, keeping the saw cuts below the rock to be broken throughout the excavation process.
- Limiting rock hammer size.
- Rock hammering in short bursts so vibrations do not amplify.
- Rock breaking with the hammer angled away from the nearby sensitive structures.
- Creating additional saw breaks in the rock where vibration limits are exceeded, as well as reducing hammer size as necessary.
- Use of rock grinders (milling head).

Should excavation induced vibrations exceed vibration limits after the recommendations above have been implemented, excavation works are to cease immediately and our office is to be contacted.

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

13. Excavation Support Requirements

Bulk excavation for cabana and landscaping

Allowing 0.5m for back wall drainage, the depths and setbacks for the proposed cabana and landscaping excavations are as follows:

- The landscaping excavation will reach a maximum depth of ~1.8m and come ~flush with a concrete slab on the downhill side of the house and ~0.7m from the supporting brick piers of the existing deck (Photo 4).
- The excavation for the cabana will reach a maximum depth of ~1.8m will be sufficiently set back from any nearby structures and boundaries.

As such, the concrete slab and brick piers will lie within the zone of influence of the proposed landscaping excavation. In this instance, the zone of influence is the area above a theoretical

45° line (from horizontal) from the base of the excavation towards the surrounding structures and boundaries. This line reduces to 30° through the fill and soil.

Where the slab and piers fall within the zone of influence of the excavation, exploration pits along them will need to be put down by the builder to determine the foundation depth and material. These are to be inspected by the geotechnical consultant.

If the foundations are confirmed to extend below the zone of influence of the proposed excavation, the excavation may commence. If they are not, the brick piers of the balcony/slab will need to be underpinned to below the zone of influence of the cut prior to the excavation commencing. See the site plan attached for the minimum extent of the required exploration pits/underpinning.

Timber retaining walls reaching ~1.3m which terrace the slope in this location are proposed to be demolished in order to landscape the property and construct the cabana (Photos 7 & 8). The walls are to be demolished from the top down in an orderly manner with the fill behind the walls being systematically lowered at the same time. The soil batter slope is not to exceed 1.0 Vertical to 1.7 Horizontal (30°) as the walls are demolished.

Due to the grade of the slope, any new excavations are to be temporarily supported prior to the commencement of the excavation, or during the excavation process in a staged manner, so cut batters are not left unsupported. See the site plan attached for the minimum extent of the required shoring. The support will need to be designed/approved by the structural engineer in consultation with the Geotechnical Consultant.

Bulk Excavation for Pool

The excavation for the proposed pool will reach a maximum depth of ~1.9m and will be sufficiently set back from any nearby structures and boundaries.

Due to the depth of the excavation, we recommend the SW and SE sides of the cut for the pool be temporarily supported with typical pool shoring such as braced sacrificial form ply,

until the pool structure is in place. The support will need to be designed by the structural engineer. See site plan attached for extent of minimum required shoring shown in blue.

Advice Applying to Both Excavations

If encountered, Medium Strength Rock or better is expected to stand at vertical angles unsupported subject to approval by the geotechnical consultant.

During the excavation process, the geotechnical consultant is to inspect the cuts in 1.5m intervals as they are lowered, while the machine/excavation equipment is on site, to ensure the ground materials are as expected and the shoring is adequate.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. The materials and labour to construct the pool structure/retaining walls are to be organised so on completion of the excavations they can be constructed as soon as possible. The excavations are 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. Fill

Fill will be placed beneath the proposed cabana as well as around the proposed pool for landscaping. We note no structures are to be supported on fill and the fill in these locations is to be used as formwork for the overlying slabs only. No fills are to be laid until retaining walls are in place. The fills will reach a maximum height of ~1.5m. The surface is to be prepared before any fills are laid by removing any organic matter and topsoil. To prevent excessive settlement of the fill under the suspended slab, fills 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 0.15m before being compacted.

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 – 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 Strength Rock	22	0.25	0.38
Very Low Strength Rock	22	0.22	0.35
Medium Strength Rock	24	0.00	0.01

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 from the slope above and assumes 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. Site Classification

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

17. Foundations

The proposed deck and slab for the garage can be supported on piers taken to and embedded no less than 0.6m into the underlying Extremely Low to Very Low Strength rock or better. This material is expected at depths of between 1.5m to 1.9m below the current surface in the area of the proposed garage and decking. Provided the footings are taken to this ground material no surcharge loads from the deck will be transferred onto the pool shell.

The proposed cabana can be supported on a thickened edge / raft slab with piers taken to and embedded no less than 0.6m into Extremely Low to Very Low Strength Rock or better where necessary. This material is expected to be exposed across the uphill side of the proposed excavation. Where it is not exposed, and where the footprint of the cabana falls outside the footprint of the proposed excavation, piers will be required to maintain a uniform foundation material across the structure. This ground material is expected at depths of between 1.5m to 1.6m below the current surface in the location of the proposed pool and cabana.

The proposed pool excavation is expected to be partially seated in Extremely Low to Very Low Strength Rock or better. This is a suitable foundation material. It is expected to be exposed across the uphill side of the proposed excavation. Where it is not exposed, and where weathered rock drops away with the slope, piers taken to and embedded no less than 0.6m into this material will be required to maintain a uniform foundation material across the structure.

A maximum allowable bearing pressure of 600kPa can be assumed for footings on Extremely Low to Very 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 clay and shale reduces when it is wet, we recommend the footings be dug, inspected, and poured in quick succession (ideally the same day if possible). If the footings get wet, they will have to be drained and the soft layer of wet clay or shale on the footing surface will have to be removed before concrete is poured.

If a rapid turnaround from footing excavation to the concrete pour is not possible, a sealing layer of concrete may be added to the footing surface after it has been cleaned and inspected by the geotechnical consultant.

NOTE: If the contractor is unsure of the footing material required, it is more cost-effective to get the geotechnical consultant on site at the start of the footing excavation to advise on footing depth and material. This mostly prevents unnecessary over-excavation in clay-like shaly-rock but can be valuable in all types of geology.

18. 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.

19. Inspections

The client and builder are to familiarise themselves with the following required inspections as well as council geotechnical policy. We cannot provide certification for the Occupation Certificate or the owner if the following inspections have not been carried out during the construction process.

- The exploration pits to determine the foundation material along the concrete slab and brick piers (Photo 4) are to be inspected by the geotechnical consultant to determine if underpinning is necessary. This is to occur before the bulk excavation for landscaping commences.

- During the excavation process, the geotechnical consultant is to inspect the cuts in 1.5m intervals as they are lowered, while the machine/excavation equipment is on site, to ensure the ground materials are as expected and the shoring is adequate.

- All footings are to be inspected and approved by the geotechnical consultant while the excavation equipment and contractors are still onsite and before steel reinforcing is placed or concrete is poured.

White Geotechnical Group Pty Ltd.

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

Reviewed By:

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

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

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

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.

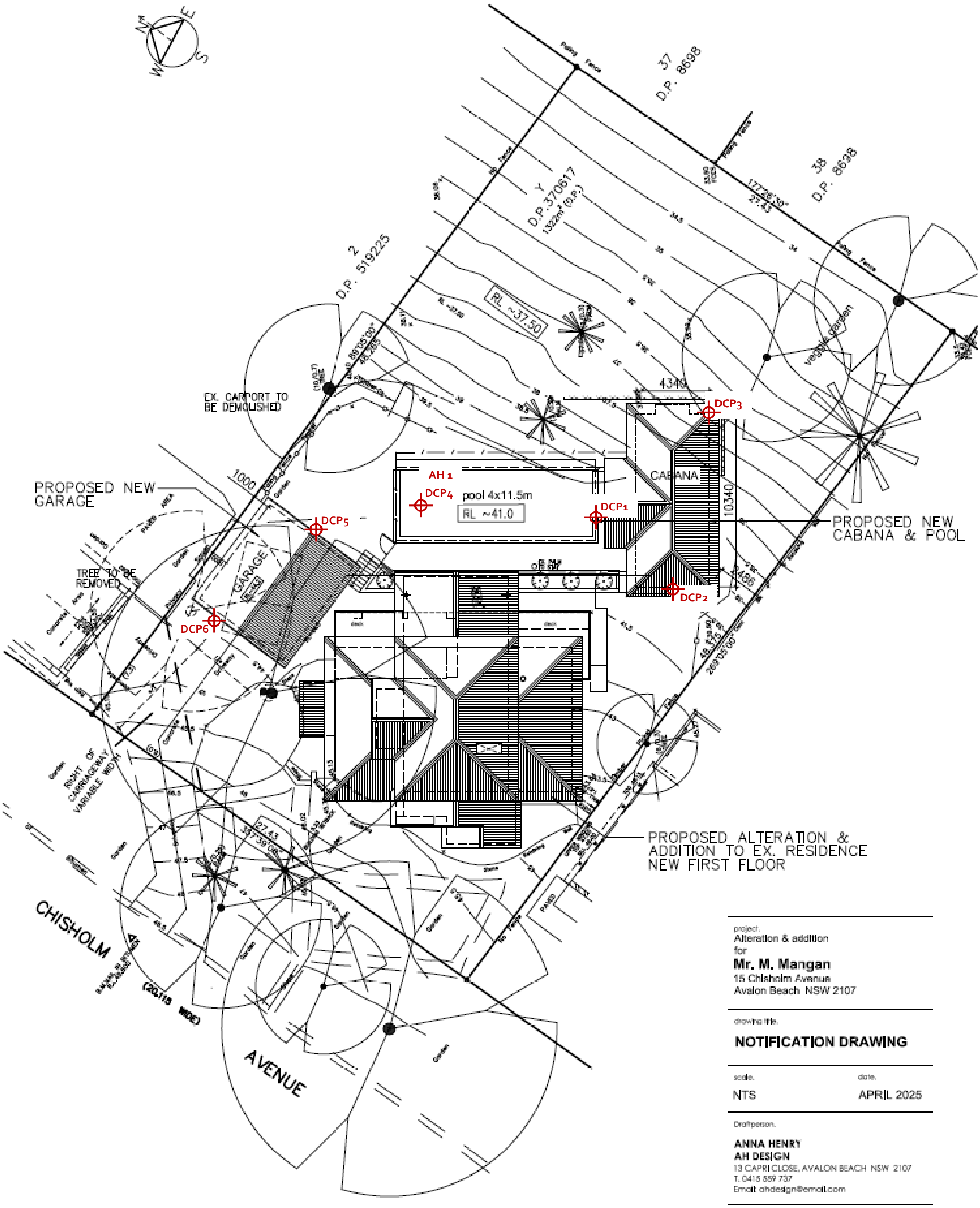
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



site- & roof plan
1:200

project.
Alteration & addition
for
Mr. M. Mangan
15 Chisholm Avenue
Avalon Beach NSW 2107

drawing title.
NOTIFICATION DRAWING

scale. NTS
date. APRIL 2025

Draftperson.
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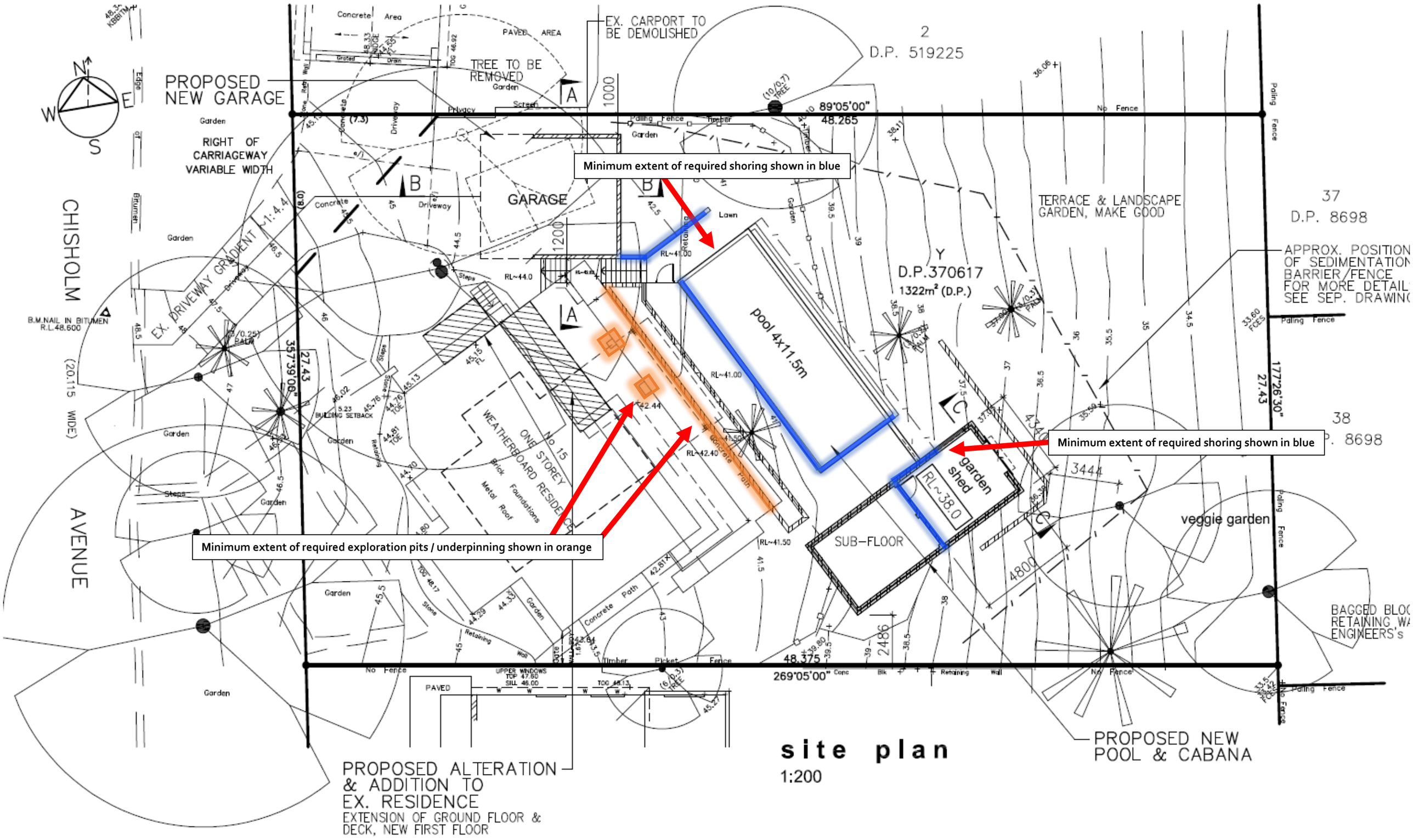
project no.
NOT-165 1/2

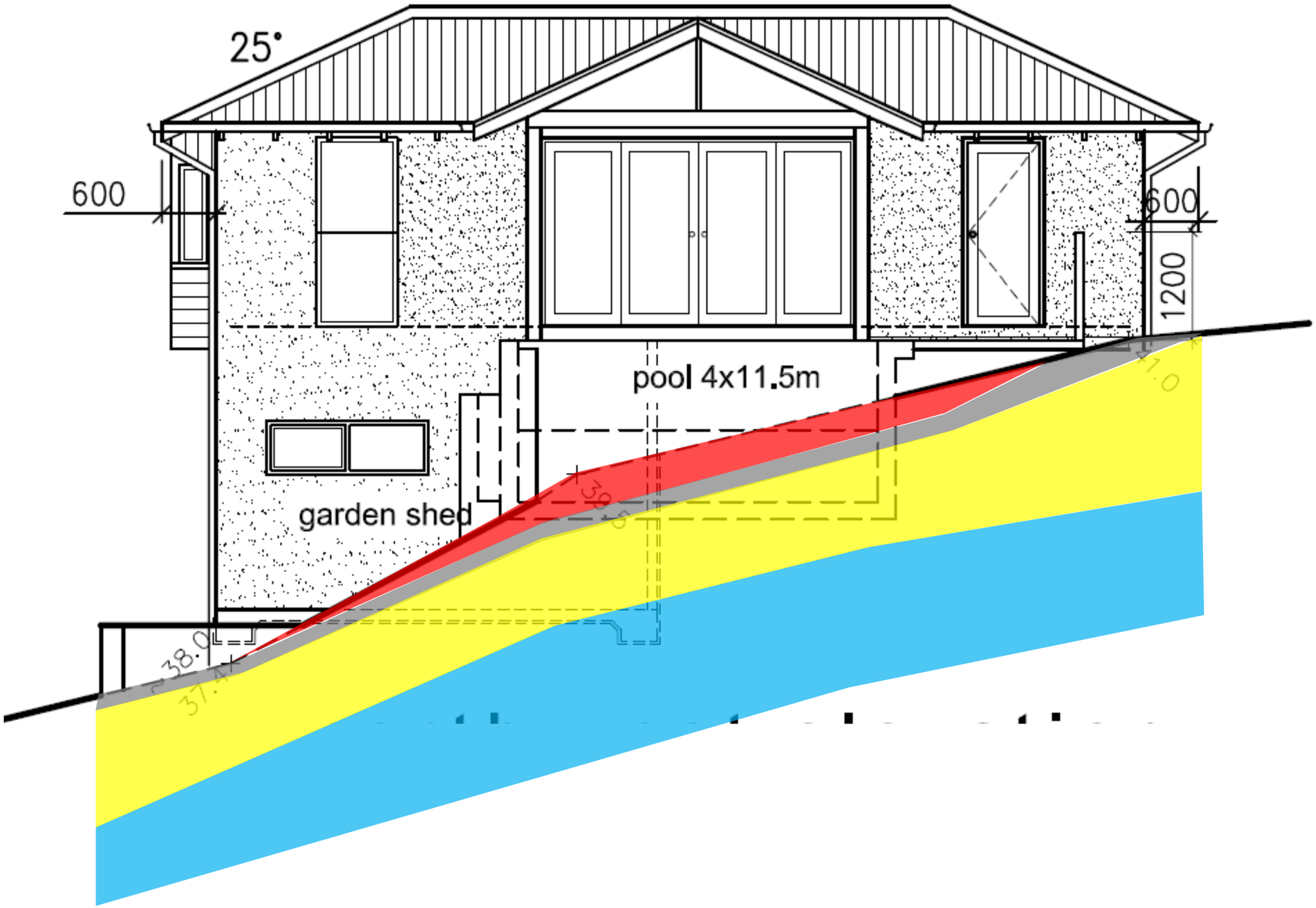
SITE PLAN – showing minimum extent of required shoring



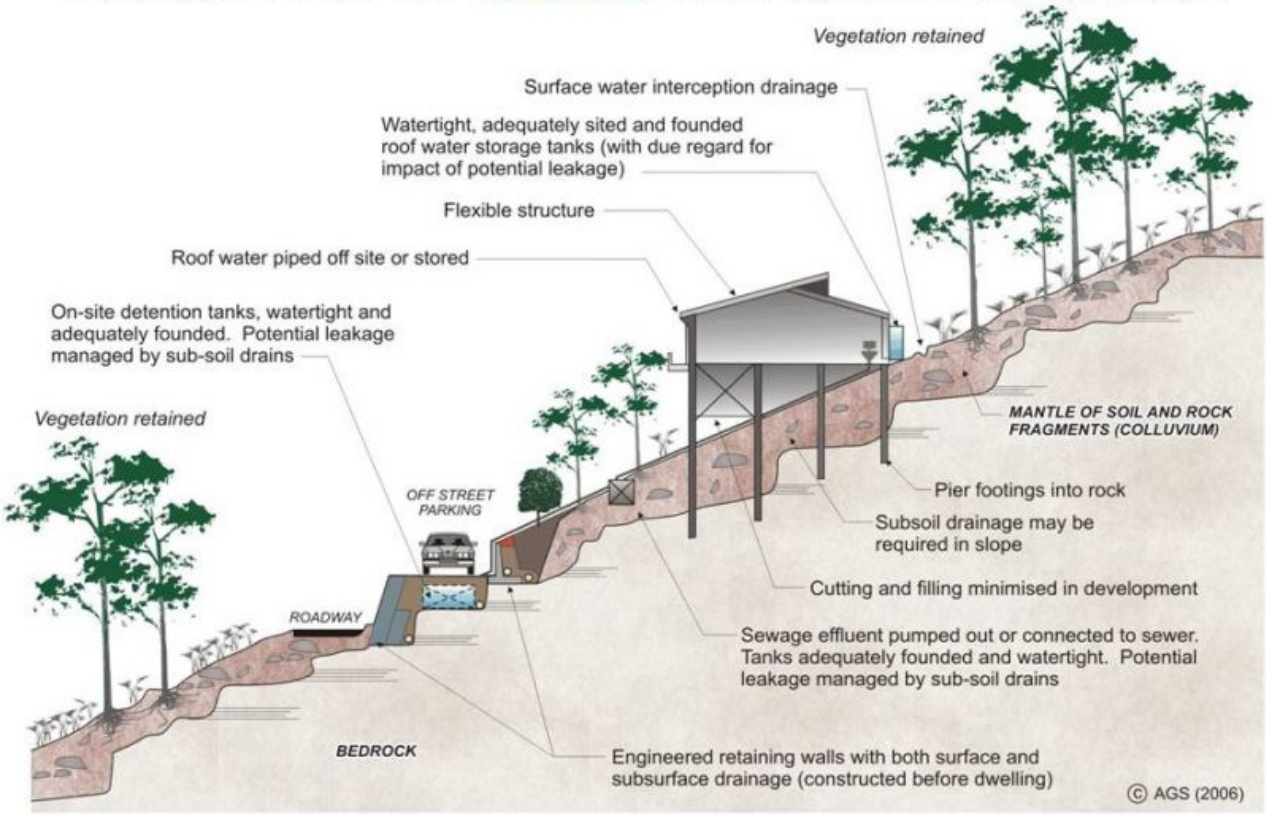
TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

Expected Ground Materials

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



EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE