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

Development Application for _____
Name of Applicant

Address of site 1005-1009 Barrenjoey Road, Palm 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 7/5/25 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 **1005-1009 Barrenjoey Road, Palm Beach**

Report Date: 7/5/25

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 1005-1009 Barrenjoey Road, Palm 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 **1005-1009 Barrenjoey Road, Palm Beach**

Report Date: 7/5/25

Author: BEN WHITE

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

Please mark appropriate box

- ☒ Comprehensive site mapping conducted **20/3/25** (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 **20/3/25**
- ☒ 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 House and Pool at **1005-1009 Barrenjoey Road, Palm Beach**

1. Proposed Development

1.1 Demolish the existing house and structures on site, and construct a new house and outbuilding requiring minor leveling.

1.2 Install a pool in the S corner of the property by excavating to a maximum depth of ~1.8m.

1.3 Various other minor internal and external additions and alterations.

1.4 Details of the proposed development are shown on 18 drawings prepared by Kennon, project number 2424, drawings numbered DA000 to 002, DA050, DA099 to 102, DA200 to 201, DA300 to 301, DA500 to 504, and DA600. All revision D, all dated 05/05/25.

2. Site Description

2.1 The site was inspected on the 20th March, 2025.

2.2 This large residential property is accessed via a shared driveway in the road reserve, that runs parallel and at a lower level to the main roadway of Barrenjoey Road and has a SW aspect. It is located on the gentle to near level lower reaches of a hillslope. The natural slope falls below the ROW at gentle angles before continuing at near level angles of <5° to the waterfront. The slope above the property quickly increases in grade.

2.3 Above the subject property, a cut for the uphill side of the ROW and fill for Barrenjoey Road is supported by a stable ~2.5m high sandstone block retaining wall (Photo 1 & 2). The gently graded slope on the downhill side of the ROW is supported by retaining walls of timber crib, brick, and mortared sandstone construction (Photo

3). These walls will be demolished as part of the proposed works. The bitumen ROW runs to two driveways of concrete, brick paving, and gravel construction. The gravel driveway runs to a garage on the ground floor of the house (Photo 4). Between the ROW frontage and the house is a near-level lawn and garden area (Photo 5). The two-story house is supported on brick walls and brick piers. No significant signs of movement were observed in the visible supporting walls, and the supporting piers stand vertical. The land surface surrounding the house is near level lawn. The lawn continues below the house for some ~32m before stepping down slightly to the sand at the beach front (Photo 6).

3. Geology

The Sydney 1:100 000 Geological Sheet indicates contact of modern marine and estuarine beach sands (Qhb), medium to fine marine sand (Qhf) of the foredune, and Narrabeen Group of Rocks underlie the property. The Narrabeen Group of Rocks are expected to underlie the more elevated E corner of the property and are expected to get progressively deeper to the W. The majority of the property is interpreted to be underlain by deep sediments over the Narrabeen Group.

4. Subsurface Investigation

Two hand Auger Holes (AH) were put down to identify the soil materials. Eight Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative densities of the sands throughout the profile. 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 natural rock surface. This is expected to have occurred for DCP test 4. 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 (~RL1.6) **–** AH1 (Photo 7)

Depth (m)	Material Encountered
0.0 to 0.2	**TOPSOIL**, silty sandy soil, brown, Dense, dry, fine to medium grained.
0.2 to 1.2	**MARINE SEDIMENT**, clean quartz sand, yellow, Medium Dense to Dense, dry to damp, medium grained, shell fragments throughout.
1.2 to 1.9	**MARINE SEDIMENT**, clean quartz sand, grey, Medium Dense, wet, medium to coarse grained, shell fragments throughout.

End of hole @ 1.9m in marine sediment. Hole collapsing due to presence of water. Water table encountered at ~1.3m.

AUGER HOLE 2 (~RL2.2) **–** AH2 (Photo 8)

Depth (m)	Material Encountered
0.0 to 0.4	**FILL**, sandy fill, dark brown, Very Dense, dry, medium grained.
0.4 to 0.7	**TOPSOIL**, sandy, dark brown, Medium Dense to Dense, dry, fine to medium grained.
0.7 to 1.1	**SANDY LOAM**, dark brown, Medium Dense, dry, fine to coarse grained.
1.1 to 2.1	**MARINE SEDIMENT**, clean quartz sand, grey to orange, Medium Dense, dry to wet, medium to coarse grained, shell fragments throughout, maroon clay flecks at base of auger.

End of Hole @ 2.1m in marine sediment. Hole collapsing due to presence of water. Water table encountered at ~1.6m.

DCP RESULTS ON THE NEXT PAGE

DCP TEST RESULTS – Dynamic Cone Penetrometer								
Equipment: 9kg hammer, 510mm drop, conical tip.						Standard: AS1289.6.3.2 - 1997		
Depth(m) Blows/0.3m	**DCP 1** (~RL2.3)	**DCP 2** (~RL1.7)	**DCP 3** (~RL1.6)	**DCP 4** (~RL1.7)	**DCP 5** (~RL1.7)	**DCP 6** (~RL1.8)	**DCP 7** (~RL2.0)	**DCP 8** (~RL2.2)
0.0 to 0.3	20	15	13	10	20	5	22	26
0.3 to 0.6	20	4	20	11	15	5	20	19
0.6 to 0.9	9	3	14	12	6	6	17	24
0.9 to 1.2	9	5	12	8	14	13	15	26
1.2 to 1.5	8	4	10	10	15	12	15	29
1.5 to 1.8	6	5	8	12	11	22	15	24
1.8 to 2.1	10	10	8	8	#	20	17	20
2.1 to 2.4	20	10	10	13		20	18	19
2.4 to 2.7	50	13	14	21		13	14	14
2.7 to 3.0	#	9	12	12		13	13	#
3.0 to 3.3		14	12	#		10	12	
3.3 to 3.6		#	#			8	10	
3.6 to 3.9						10	14	
3.9 to 4.2						10	13	
4.2 to 4.5						33	19	
4.5 to 4.8						#	30	
4.8 to 5.1							#	
	End of Test @ 2.7m	End of Test @ 3.3m	End of Test @ 3.3m	Refusal @ 2.9m	End of Test @ 1.8m	End of Test @ 4.4m	End of Test @ 4.8m	End of Test @ 2.7m

#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 @ 2.7m, DCP still very slowly going down, brown clayey sand on wet tip, maroon clayey sand in collar above tip.

DCP2 – End of test @ 3.3m, DCP still going down, brown clayey sand on wet tip.

DCP3 – End of test @ 3.3m, DCP still going down, grey clayey sand on wet tip.

DCP4 – Refusal on unknown object in sand @2.9m, DCP thudding, grey clayey sand on wet tip.
DCP5 – End of test @ 1.8m, DCP still going down, brown sand on wet tip.
DCP6 – End of test @ 4.4m, DCP thudding and still very slowly going down, yellow clayey sand on wet tip.
DCP7 – End of test @ 4.8m, DCP still very slowly going down, brown clayey sand on wet tip.
DCP8 – End of test @ 2.7m, DCP still going down, brown clayey sand on wet tip.

5. Geological Observations/Interpretation

Across the majority of the property, the site is underlain by a sandy topsoil and sands that extend to the depth of the testing. Filling to a height of ~0.4m has been placed across the property for landscaping. To summarise the test results, below the fill, a Loose to Medium Dense sandy topsoil occupies the top ~0.7m of the profile, that overlies sands of variable density that range from Loose to Medium Dense to the extent of the testing at ~4.8m. See the Type Section attached for a diagrammatical representation of the expected ground materials. The contact of Narrabeen group rocks is shown to extend across the E corner of the property, DCP test 1 which was taken in this location was terminated at ~2.7m due to a very high blow count. It is interpreted that the test was terminated in Extremely Low Strength Rock or better. The rock in this location quickly drops away to the W and is not thought to have been encountered by the other tests.

6. Groundwater

The water table was encountered at depths of between ~1.3m to ~1.6m below the current surface (~RL0.3 and ~0.6). This is to be noted by the pool builders as it will have an impact on excavation stability and the excavation walls will need to be supported until the pool structure is in place as per the recommendations in **Section 13**. It should be noted the water table fluctuates with the tide and climatic changes.

7. Surface Water

No evidence of significant surface flows were observed on the property during the inspection. Normal sheet wash that is generated on the property will be quickly absorbed into the sandy soil where surfaces are unsealed.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed below, or beside the property. The gently graded slope that falls across the uphill side of the property and continues at increasing angles is a potential hazard (**Hazard One**). The proposed excavation is a potential hazard until the pool structure is in place (**Hazard Two**). The demolition of the retaining wall exposing the existing cut batter is a potential hazard (**Hazard Three**). The empty pool popping out of the ground and floating on the water table is a potential hazard (**Hazard Four**).

Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The gentle slope that falls across the uphill side of the property and continues above at increasing angles failing and impacting on the proposed works.	The pool excavation collapsing onto the work site before retaining structures are in place.
LIKELIHOOD	'Unlikely' (10^{-4})	'Likely' (10^{-2})
CONSEQUENCES TO PROPERTY	'Minor' (5%)	'Minor' (10%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (5×10^{-4})
RISK TO LIFE	5.5×10^{-7}/annum	2.2×10^{-4}/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 and 14** are to be followed.

HAZARDS	Hazard Three	Hazard Four
TYPE	Following the demolition of the brick retaining wall (Photo 3), the exposed cut batter failing and impacting on the subject property and ROW (Photo 2) before retaining walls are in place.	The finished pool being emptied, resulting in it floating on the water table and popping out of the ground.
LIKELIHOOD	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (15%)	'Medium' (12%)
RISK TO PROPERTY	'Moderate' (2×10^{-4})	'Moderate' (2×10^{-4})
RISK TO LIFE	8.3×10^{-6}/annum	8.3×10^{-7}/annum
COMMENTS	This level of risk to property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels, the recommendations in **Section 13 and 14** are to be followed.	This level of risk to property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels the recommendations in **Section 17** 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

There is fall to the waterfront below. All stormwater or drainage runoff from the proposed works is to be piped to the waterfront through any tanks that may be required by the regulating authorities.

11. Excavations

An excavation to a maximum depth of ~1.8m is required for the proposed pool.

The excavation is expected to be through topsoil and Medium Dense sand. It is envisaged that excavations through soil and sand can be carried out with an excavator and bucket.

The water table is expected to be encountered in the deepest parts of this excavation.

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 using a domestic sized excavator up to 16 tonnes.

13. Excavation Support Requirements

The excavation for the proposed pool will reach a maximum depth of ~1.8m and will be sufficiently set back from any nearby structures and boundaries.

The excavation is expected to encounter groundwater seepage at an approximate depth of 1.3m. Seepage at this level will likely undercut the excavation and cause the cut batter to slump / collapse. As such, temporary support around the perimeter of the pool excavation will be required to maintain stability until the pool shell is in place. See the site plan attached for the minimum extent of the required shoring shown in green.

A sandbag retaining wall that is systematically installed as the excavation is progressed, is one such suitable support. The sandbag wall is 'sacrificial' in that it is to remain in place and the pool structure is constructed over it. The sandbags allow water to flow through the soil but prevent sediment movement and subsequent batter collapse. We point out that this is one suitable shoring option of many. The shoring is to be designed/approved by the Structural Engineer in consultation with the Geotechnical Consultant.

A sump and pump will likely be required during construction to keep the base of the pool excavation dry. As the pool excavation is sufficiently set back from nearby structures and boundaries, and the depth is only 0.5m below the water table at 1.3m, draw down effects on

the water table from short term pumping during the pool construction will be minimal and are not expected to impact the neighbouring properties.

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

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. Retaining Structures

It is proposed to demolish a ~0.8m high failing brick retaining wall (Photo 3) which approximates the uphill boundary and supports fill for the ROW (Photo 2). As such, the uphill boundary and the bitumen ROW will lie within the Zone of Influence of the exposed cut batter following the retaining wall demolition. In this instance, the zone of influence is the area above a theoretical 30° line through sand from the base of the cut batter towards the surrounding boundaries or structures.

This wall is to be demolished from the top down in an orderly manner. The fill, soil, and sand behind the wall will need to be temporarily or permanently supported prior to the commencement of the demolition, or during the demolition process in a staged manner, so cut batters are not left unsupported. The support will need to account for surcharges imparted by vehicles from the ROW immediately upslope and is to be designed by the structural engineer in consultation with the Geotechnical Consultant. See the site plan attached for the minimum extent of the required shoring shown in blue.

Upslope runoff is to be diverted from the retaining wall demolition for the uphill boundary retaining wall by sandbag mounds or other diversion works.

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
Sand	20	0.40	0.55

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.

15. Site Classification

Due to abnormal water conditions resulting from the presence of the water table, the site classification is Class P in accordance with AS2870-2011.

16. Foundations

The proposed house and outbuilding may be supported on spread footings taken below the fill ~0.4m into the underlying Loose to Medium Dense Sands of the natural profile. The footing walls are to be shored with timber to prevent collapse.

A maximum allowable bearing pressure of 100kPa can be assumed for footings supported on sand above the water table.

If a higher bearing capacity is required for the house, due to the proximity of the water table at ~1.3m to ~1.6m below the current surface, screw piles are recommended.

We can provide a list of screw pile contractors upon request who have successfully carried out similar works in the past.

Note that we do not certify screw pile foundations. Screw pile design varies between contractors and we are not privy to the details of individual design or how the screw pile contractor converts torque to bearing pressure. As such, the screw pile contractor is totally responsible for ensuring the screw piles can support the loads on the piles and that these are within acceptable settlement limits/factor of safety limits. They are to provide certification of the foundations they install.

Although the proposed pool excavation is expected to be seated in the Loose to Medium Dense sand that has an adequate bearing pressure to support the pool, we recommend screw piles be installed to prevent possible 'pop-out' that can occur when the pool is empty and it floats on the water table and subsequently lifts out of the ground. The structural engineer is to design the screw piles to resist buoyancy.

If another method of "hold down" is used and the pool is supported on the sand at the base of the excavation, assume an ultimate allowing bearing pressure of 50 kPa.

If the cost of these measures to prevent 'pop out' are considered too much and the owners wish to support the pool on the base of the excavation only, we point out the pool will always

need to be kept full of water to prevent it floating on the water table. We recommend the pool be anchored. If it is not and the pool does pop out of the ground, we accept no liability whatsoever.

The base of any footing excavations in sand above the water table should be compacted as the excavation will loosen the upper sands. This can be carried out with a hand-held plate compactor. Water may be used to assist in compaction in sand but footing materials should be kept damp but not saturated. As a guide to the level of compaction required a density index of >85% is to be achieved.

All footing surfaces are to be cleaned of loose material just prior to the placing of steel and concrete.

The geotechnical consultant is to inspect and test the compacted base of the footings to ensure the required density has been achieved during compaction.

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.

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. 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.

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

- The geotechnical consultant is to inspect and test the compacted base of footing excavations while the compaction equipment is still on site and before steel reinforcing is placed or concrete is poured. This is to ensure the required density has been achieved during compaction.

- Any conventional foundations other than screw piles 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.

Photo 1

Photo 2

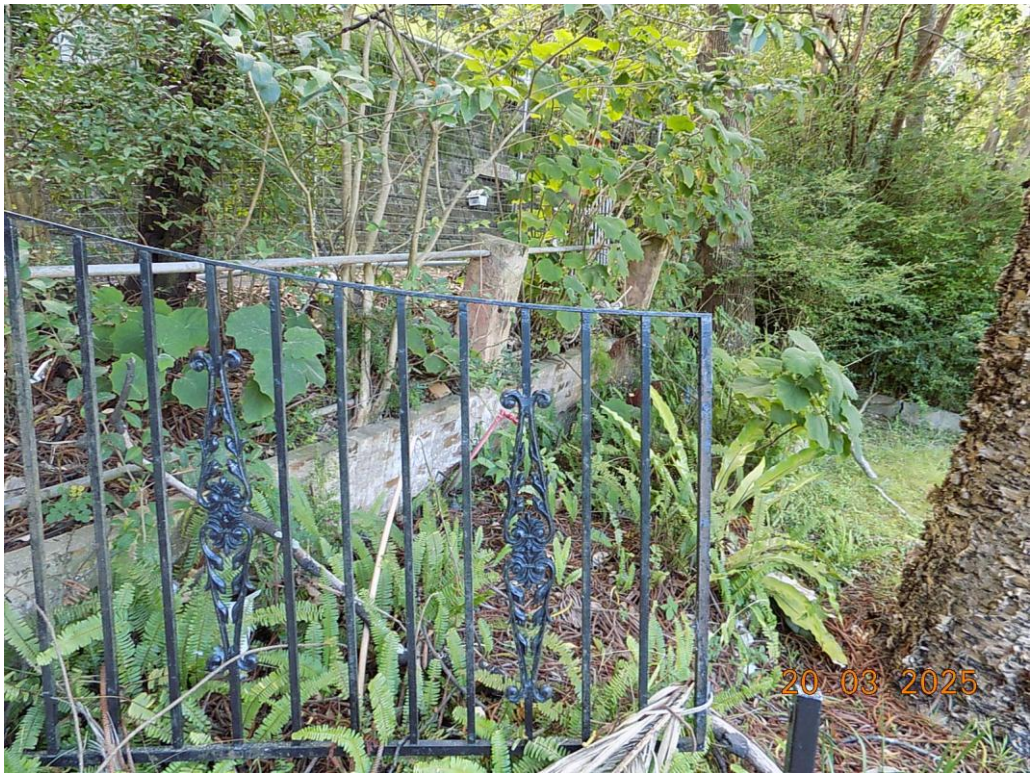


Photo 3

Photo 4

Photo 5

Photo 6

Photo 7 – downhole is top to bottom

Photo 8 - downhole is 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.

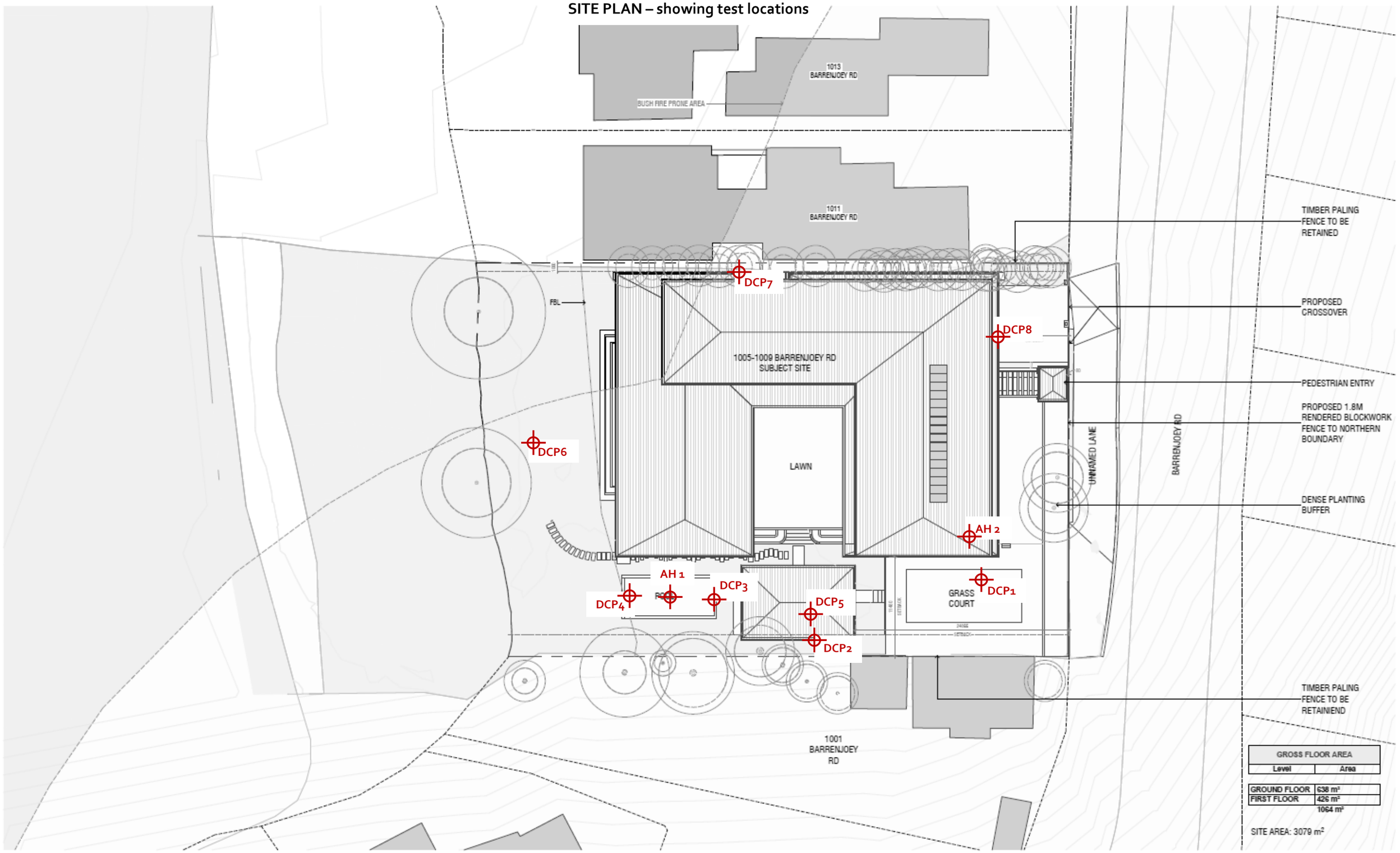
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



GROSS FLOOR AREA	
Level	Area
GROUND FLOOR	638 m²
FIRST FLOOR	426 m²
	1064 m²

SITE AREA: 3079 m²

KENNON

Architecture & Interior Design
Practice for the Human Experience

Level 26, 1 Spring St
Melbourne VIC
3000 Australia

studio@kennon.com.au
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PROJECT
PALM BEACH
1005-1009 BARRENJOEY RD, PLAM BEACH

CLIENT
DB 19 Pty Ltd

Rev	Date	Reason for Issue	Submitted By
A	13/03/25	DA SUBMISSION PACKAGE	KENNON
B	24/03/25	DA SUBMISSION PACKAGE	KENNON
C	10/04/25	DA SUBMISSION PACKAGE	KENNON
D	08/08/25	DA SUBMISSION PACKAGE	KENNON

Builders / Contractors shall verify all dimensions before any work commences. Dimensions shown are nominal. Figured dimensions shall take precedence over scaled dimensions. Any discrepancies are to be made known to the Architects / Designers studio prior to any works commencing on site. All shop drawings shall be submitted for review and manufacture shall not commence prior to the return of stamped shop drawings.

 ABN 96 607 655 792

SCALE@ 1 : 200

NORTH

DRAWING
SITE PLAN

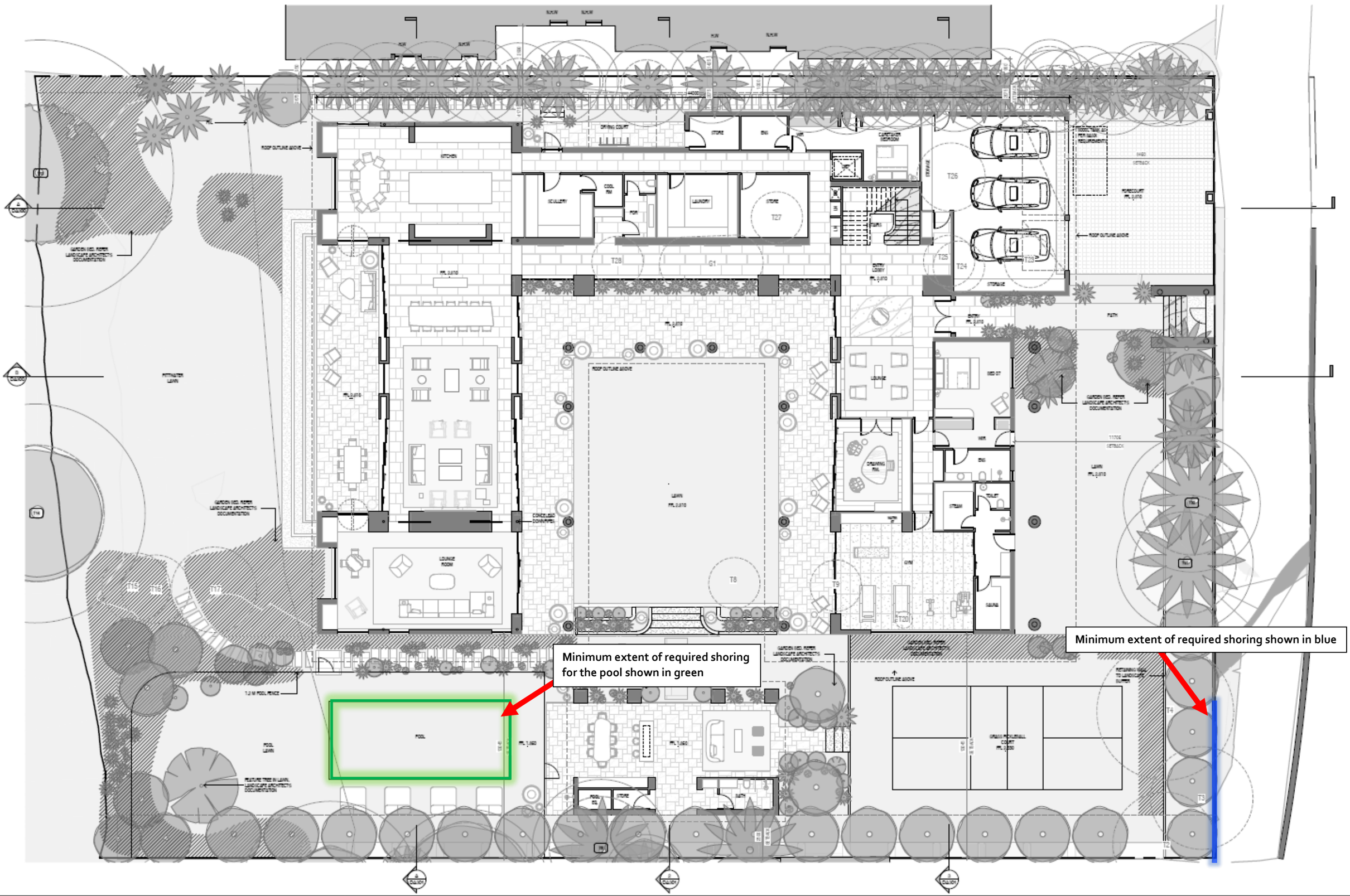
PROJECT
2424

DRAWING
DA099

DRAWING
DEVELOPMENT APPLICATION

REVISION
D

6/08/2025 10:34:29 AM



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A	13/03/26	DA SUBMISSION PACKAGE	KENNON
B	24/03/26	DA SUBMISSION PACKAGE	KENNON
C	19/04/26	DA SUBMISSION PACKAGE	KENNON
D	29/06/26	DA SUBMISSION PACKAGE	KENNON

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 ABN 96 607 655 792

SCALE@ 1 : 100

NORTH

DRAWING
GROUND FLOOR PLAN

PROJECT 2424
DRAWING DA100
DRAWING DEVELOPMENT APPLICATION
REVISION D

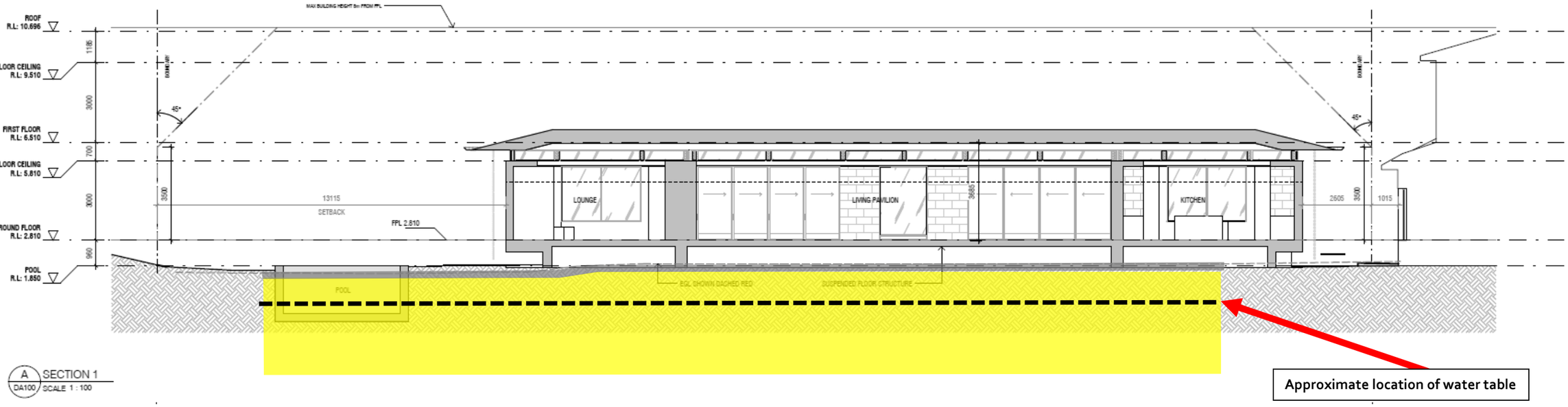
6/29/2026 10:35:04 AM

Expected Ground Materials

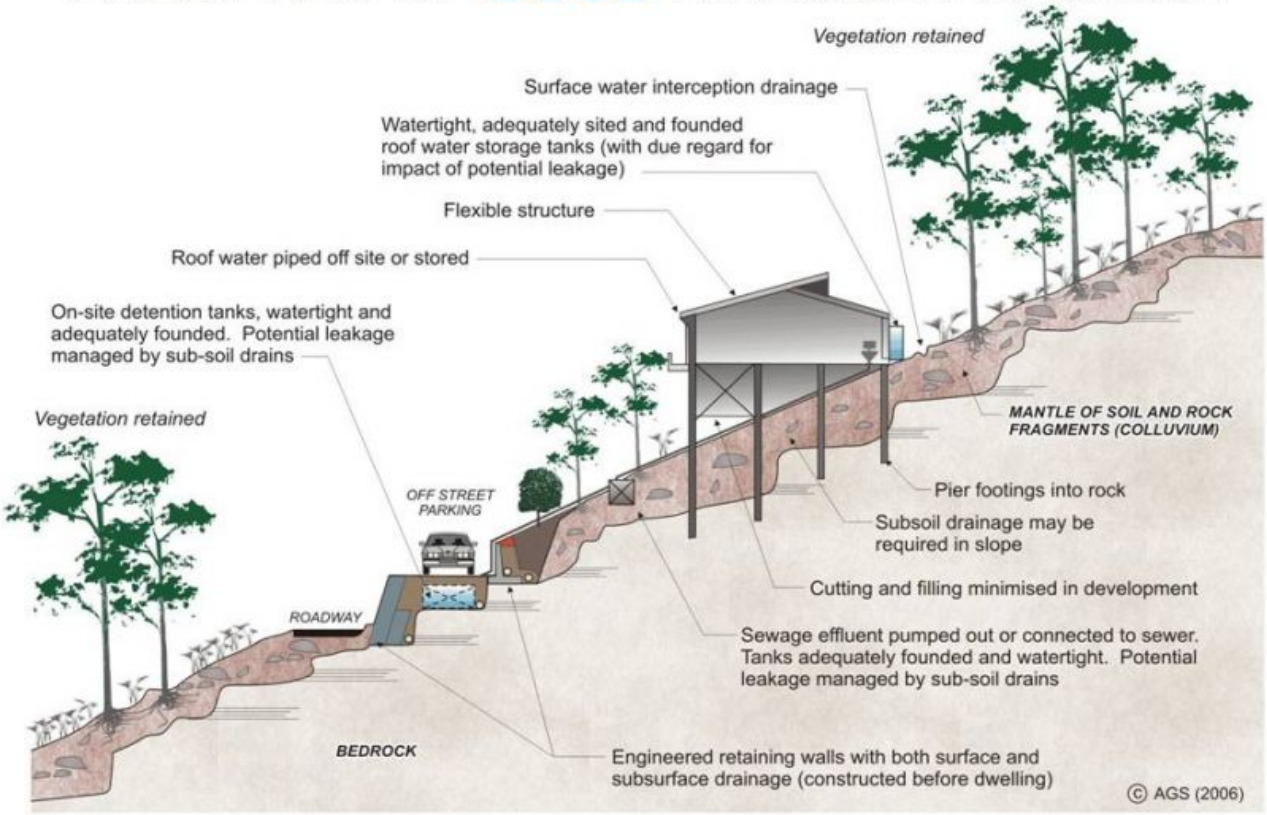
TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

Topsoil

Sand - Loose To Dense



EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE