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

Development Application for _____
Name of Applicant

Address of site 123 Bynya 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 9/6/22 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 **123 Bynya Road, Palm Beach**
Report Date: 9/6/22

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 123 Bynya 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 **123 Bynya Road, Palm Beach**

Report Date: 9/6/22

Author: BEN WHITE

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

Please mark appropriate box

☒ Comprehensive site mapping conducted **21/4/22**
(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 **21/4/22**

☒ Geotechnical model developed and reported as an inferred subsurface type-section

☒ Geotechnical hazards identified
- ☐ Above the site
- ☒ On the site
- ☐ Below the site
- ☐ Beside the site

☒ Geotechnical hazards described and reported

☒ Risk assessment conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
- ☒ Consequence analysis
- ☒ Frequency analysis

☒ Risk calculation

☒ Risk assessment for property conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009

☒ Risk assessment for loss of life conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009

☒ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater - 2009

☒ Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.

☒ Design Life Adopted:
- ☒ 100 years
- ☐ Other _____
specify

☒ Geotechnical Conditions to be applied to all four phases as described in the Geotechnical Risk Management Policy for Pittwater - 2009 have been specified

☒ Additional action to remove risk where reasonable and practical have been identified and included in the report.

☐ Risk assessment within Bushfire Asset Protection Zone.

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, as the basis for ensuring that the geotechnical risk management aspects of the proposal have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated, and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature _____

Name Ben White

Chartered Professional Status MScGEOLAusIMM CP GEOL

Membership No. 222757

Company White Geotechnical Group Pty Ltd

GEOTECHNICAL INVESTIGATION:

Alterations and Additions and New Garage at **123 Bynya Road, Palm Beach**

1. Proposed Development

1.1 Construct a new garage on the downhill side of the property by excavating to a maximum depth of ~1.8m.

1.2 Re-landscape the downhill side of the property by filling to a maximum height of ~1.8m.

1.3 Construct a small addition to the uphill side of the house.

1.4 Construct a new deck on the downhill side of the house.

1.5 Various other internal and external modifications.

1.6 Details of the proposed development are shown on 12 drawings prepared by Design Studio Group, Job number PB2021, drawings numbered DA0.00, DA1.02, DA2.01 to DA2.03, DA2.51, DA3.01, DA3.02, DA4.01, DA4.02, DA5.01, and DA6.01, Revision A, dated 8/6/22.

2. Site Description

2.1 The site was inspected on the 21st April, 2022.

2.2 This residential property has dual access. It is on the downhill side of Bynya Road and on the uphill side of Pacific Road. The property has a NE aspect. It is located on the gentle to moderately graded upper middle reaches of a hillslope. The slope falls across the site at an average angle of ~8°. The slope above the property continues at similar angles. The grade below the property gradually increases.

2.3 At the road frontage to Bynya Road, a concrete driveway runs to a stable carport attached to the uphill side of the house (Photo 1). Between this road frontage and the house is a gently sloping garden area (Photo 2). The part two-storey brick and

timber framed and clad house is supported on brick walls (Photo 3). No significant signs of movement were observed in the external supporting walls. A pool has been cut into the slope below the house (Photo 4). The cut for the pool area is supported by stable rendered masonry retaining walls (Photo 5). The water level of the pool indicates no ground movement has occurred in the shell of the pool since its construction. A gently sloping lawn falls beside the pool to a parking area in the N corner of the property (Photo 6). Competent Medium Strength Sandstone outcrops through the downhill side of this lawn area. The parking area is accessed from Pacific Road and will be demolished as part of the proposed works (Photo 7).

3. Geology

The Sydney 1:100 000 Geological sheet indicates the site is underlain by Hawkesbury Sandstone. It is described as a medium to coarse grained quartz sandstone with very minor shale and laminite lenses.

4. Subsurface Investigation

One hand Auger Hole (AH) was put down to identify the soil materials. Four Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to bedrock. 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 not expected to be an issue for the testing on this site. However, excavation and foundation budgets should always allow for the possibility that the interpreted ground conditions in this report vary from those encountered during excavations. See the appended “Important information about your report” for a more comprehensive explanation. The results are as follows:

AUGER HOLE 1 (~RL97.4) **–** AH1 (Photo 8)

Depth (m)	Material Encountered
0.0 to 0.3	**FILL**, disturbed sandy soil, dark brown, very loose, dry, fine to coarse grained with fine trace organic matter and rock fragments.
0.3 to 0.5	**SAND**, brown, medium dense, wet, coarse grained.
0.5 to 0.8	**SANDY CLAY**, derived from weathered sandstone, orange and mottled brown, firm to very stiff, wet, fine to coarse grained with a sugary texture.

End of test @ 0.8m in sandy 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 (~RL97.9)	DCP 2 (~RL97.4)	DCP 3 (~RL97.5)	DCP 4 (~RL97.1)
0.0 to 0.3	F	2F	Rock Exposed at Surface	1F
0.3 to 0.6	3	7		5
0.6 to 0.9	12	17		11
0.9 to 1.2	30	44		14
1.2 to 1.5	#	#		20
1.5 to 1.8				25
1.8 to 2.1				30
2.1 to 2.4				36
2.4 to 2.7				#
	Refusal on Rock @ 1.1m	Refusal on Rock @ 1.2m		End of Test @ 2.4m

#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 @ 1.1m, DCP thudding, brown sandy soil on wet tip.
DCP2 – Refusal on rock @ 1.2m, DCP thudding, brown sandy soil on wet tip.
DCP3 – Medium Strength Sandstone exposed at surface.
DCP4 – End of test @ 2.4m, DCP still very slowly going down into possible joint, light brown sand on wet tip, white sand in collar above tip.

5. Geological Observations/Interpretation

The surface features of the block are controlled by the outcropping and underlying sandstone bedrock that steps down the property forming sub-horizontal benches between the steps. Where the grade is steeper, the steps are larger and the benches narrower. Where the slope eases, the opposite is true. Where the rock is not exposed, it is overlain by sandy soils and sandy clays that fill the bench step formation. Filling has been placed across the downhill side of the property for landscaping. In the test locations, where it was not exposed, the rock was encountered at an average depth of ~1.2m below the current surface. DCP4 is likely to have encountered a joint in the rock as it reached a much greater depth than the other tests. It is interpreted that a thin layer of Very Low Strength Sandstone overlies the buried rock on the downhill side of the property as every test in this location ended after a high blow count. The outcropping sandstone on the property and nearby is estimated to be Medium Strength or better and similar strength rock is expected to underlie the entire site. 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.

Due to the slope and elevation of the block, 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 Bynya Road above.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed above, below, or beside the property. The gentle to moderately graded slope that falls across the property is a potential hazard (**Hazard One**). The vibrations from the proposed excavations are a potential hazard (**Hazard Two**). The proposed excavation undercutting the footings for the pool is a potential hazard (**Hazard Three**). The proposed fill for landscaping on the downhill side of the property is a potential hazard (**Hazard Four**).

Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The gentle to moderate slope that falls across the site 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%)	'Medium' (15%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})
RISK TO LIFE	5.5×10^{-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)

Risk Analysis Summary

HAZARDS	Hazard Three	Hazard Four
TYPE	The proposed excavation undercutting the footings of the pool causing failure.	The proposed fill failing and impacting on the subject property before the retaining walls are in place.
LIKELIHOOD	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (35%)	'Medium' (25%)
RISK TO PROPERTY	'Moderate' (2×10^{-4})	'Moderate' (2×10^{-4})
RISK TO LIFE	5.3×10^{-5}/annum	7.3×10^{-5}/annum
COMMENTS	This level of risk to life and property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels, the recommendations in **Section 13** are to be followed.	This level of risk to life and property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels, the recommendations in **Section 14** 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 Pacific Road. Roof water from the proposed development is to be piped to the street drainage system through any tanks that may be required by the regulating authorities.

11. Excavations

An excavation to a maximum depth of ~1.8m is required to construct the proposed garage. The excavation is expected to be through a thin manmade fill over sands and sandy clays with

Medium Strength Sandstone expected at an average depth of ~1.2m below the current surface.

It is envisaged that excavations through fill, sands, and sandy clays can be carried out with a bucket and excavations through rock will require grinding or rock sawing and breaking.

12. Vibrations

Possible vibrations generated during excavations through fill, sands, and sandy clays will be below the threshold limit for building damage. The majority of the proposed excavation is expected to be taken through Medium Strength Sandstone.

Excavations through Medium Strength Sandstone should be carried out to minimise the potential to cause vibration damage to the subject pool and NW and SE neighbouring houses. Allowing for back-wall drainage, these structures will be set back as follows:

- The subject pool will be immediately adjacent to the proposed excavation;
- The supporting walls of the NW neighbouring house will be as close as ~7.0m; and
- The supporting walls of the SE neighbouring house will be as close as ~3.0m.

Close controls by the contractor over rock excavation are recommended so excessive vibrations are not generated.

Dilapidation reporting carried out on the NW and SE neighbouring properties is recommended prior to the excavation works commencing to minimise the possibility of spurious claims.

Excavation methods are to be used that limit peak particle velocity to 5mm/sec at the property boundaries. Vibration monitoring will be required to verify this is achieved. The vibration monitoring equipment must include a light/alarm so the operator knows if vibration limits have been exceeded. It also must 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.

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

13. Excavation Support Requirements

The proposed excavation will be taken immediately downslope and flush with the subject pool. The excavation will be sufficiently set back from any other surrounding structures of boundaries.

Given the depth to rock, we think it likely the pool is supported on rock. However, this is to be confirmed with building records or with exploration pits put down by the builder along the downhill edge of the pool to determine the foundation material. These are to be inspected by the geotechnical consultant.

If the foundations are determined to be supported on competent rock or below the base of the proposed excavation, the excavation may commence. If they are not on rock, the pool will need to be underpinned prior to the excavation commencing.

Where underpinning is not required, the fill, sand, and sandy clay portions of the cut are to be temporarily battered at 1.0 Vertical: 1.7 Horizontal (30°) until the permanent retaining walls are in place, provided they are prevented from becoming saturated. Excavations

through Medium Strength Sandstone will stand at vertical angles unsupported subject to approval by the geotechnical consultant.

During the excavation process, the geotechnical consultant is to inspect the cut face in 1.5m intervals as it is lowered to ensure the ground materials are as expected and no wedges or other geological defects are present that could require additional support.

Upon completion of the excavation, it is recommended all cut faces be supported with retaining walls to prevent any potential future movement of joint blocks in the cut face that can occur over time, when unfavourable jointing is obscured behind the excavation face. Additionally, retaining walls will help control seepage and to prevent minor erosion and sediment movement.

All unsupported cut batters through fill, sand, and sandy clay are to be covered to prevent access of water in wet weather and loss of moisture in dry weather. The covers are to be tied down with metal pegs or other suitable fixtures so they can't blow off in a storm. Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. The materials and labour to construct the retaining 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

A fill will be placed on the downhill side of the property for landscaping. No fills are to be laid until retaining walls are in place. The fill will reach a maximum depth of ~1.8m. The surface is to be prepared before any fills are laid by removing any organic matter and topsoil. 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 fill is to be compacted with light weight equipment such as a hand-held plate compactor so as not to damage the retaining wall. 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 fill.

15. Retaining Structures

For cantilever or singly-propped retaining structures, it is suggested the design be based on a triangular pressure 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, Sandy Soil, and Residual Clay	20	0.4	0.55
Medium Strength Sandstone	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 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 likely hydrostatic pressures are to be accounted for in the structural design.

16. Foundations

A concrete slab and pads or shallow piers supported directly off Medium Strength Sandstone are suitable footings for the proposed garage. This ground material is expected to be exposed across a portion of the base of the excavation. Where sandstone is not exposed, it is expected at an average depth of ~1.2m below the current ground surface.

Any footings for the additional works to the house are to be supported on shallow piers taken to the underlying Medium Strength Sandstone at an average depth of ~1.2m below the current surface. A maximum allowable bearing pressure of 1000kPa can be assumed for footings on Medium Strength Sandstone.

Naturally occurring vertical cracks (known as joints) commonly occur in sandstone. These are generally filled with soil and are the natural seepage paths through the rock. They can extend to depths of several metres and are usually relatively narrow but can range between 0.1 to 0.8m wide. If a footing falls over a joint in the rock, the construction process is simplified if with the approval of the structural engineer the joint can be spanned or alternatively the footing can be repositioned so it does not fall over the joint.

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 consultant 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 geotechnical certification for the owner or the regulating authorities if the following inspections have not been carried out during the construction process.

- The geotechnical consultant is to inspect any exploration pits that may be required to expose the foundation materials of the pool.

- During the excavation process the geotechnical consultant is to inspect the cut faces in 1.5m intervals as they are lowered to ensure ground materials are as expected and that there are no wedges or other defects present in the rock that may require additional support

- 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.

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: AH1 – Downhole is from left to right.

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.

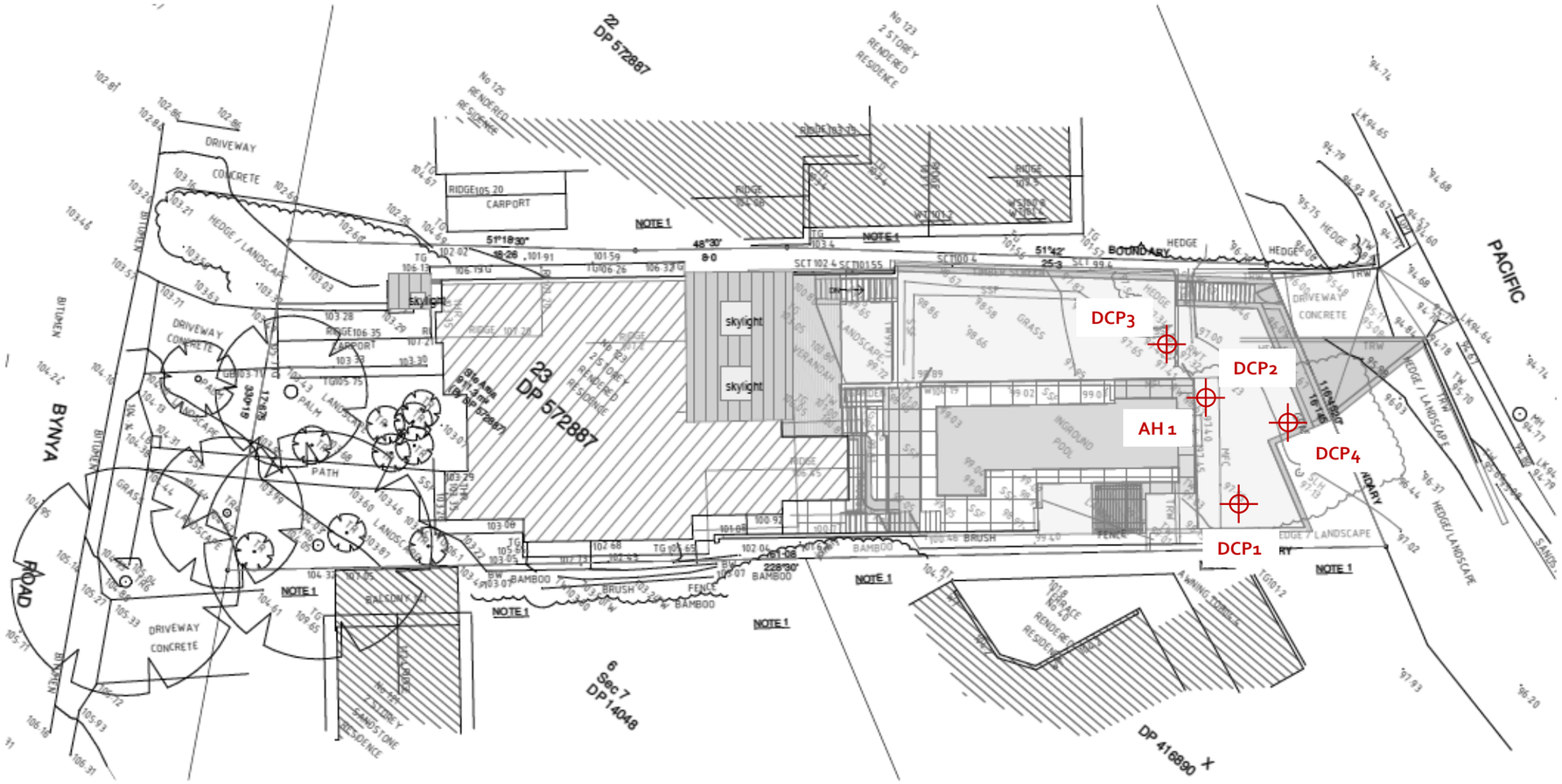
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



1 **PROPOSED SITE PLAN**
1 : 200

COLOUR CODES / LEGEND

- BRICKWORK
- TIMBER
- STONE
- GLASS
- METAL
- ROOF TILE
- CONCRETE
- CEMENT RENDER
- EXISTING WALLS
- WALLS TO BE DEMOLISHED

notes:
- do not scale from drawings.
- all dimensions are to be check measured onsite prior to commencement of work.
- written dimensions take precedence.
- this document is copyright and the property of the property of the author, and must not be retained, copied in whole or part.

Rev.	Description	Date
A	issue for DA	06.06.2022

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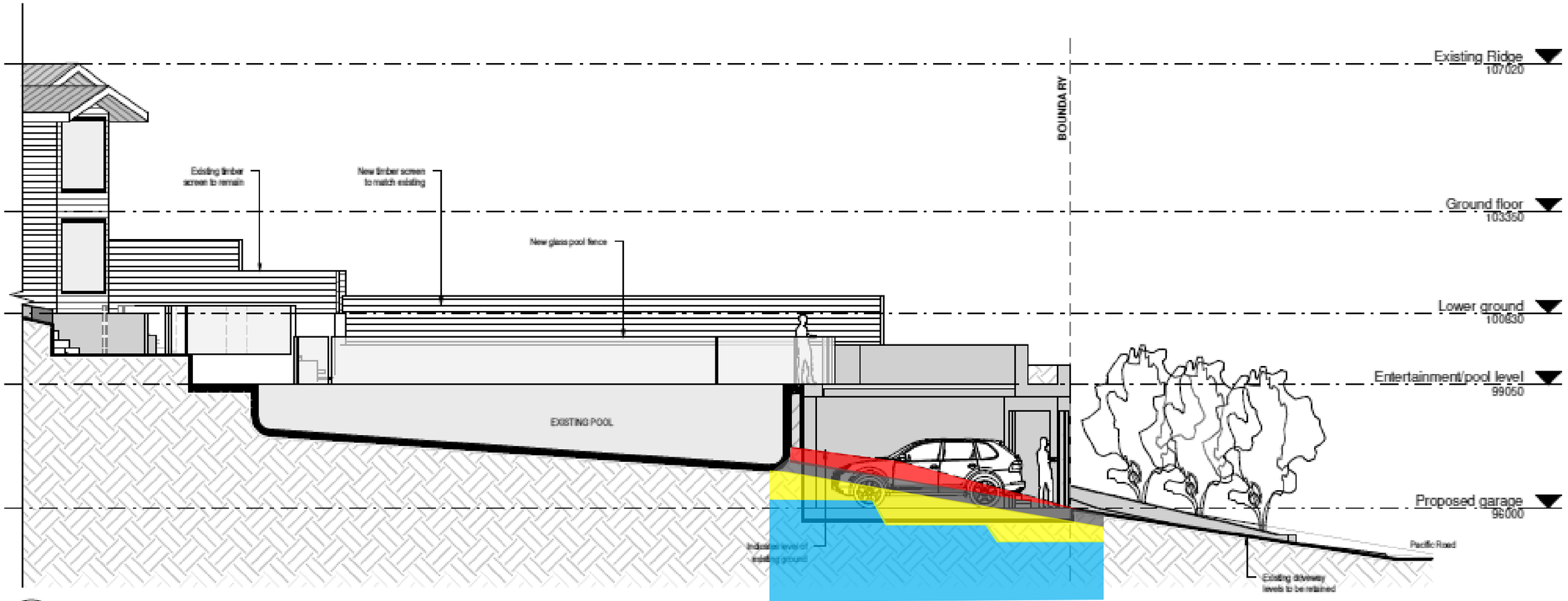
client Anna & Niall Lenahan	**drawing title** Proposed site plan	**scale** As indicated @A2	
		date Dec 2021	
project 123 Bynya Road, Palm Beach NSW 2108 - DP 572887	**drawing no.** DA1.02	**revision** A	**drawn** KL
			job ref. PB 2021

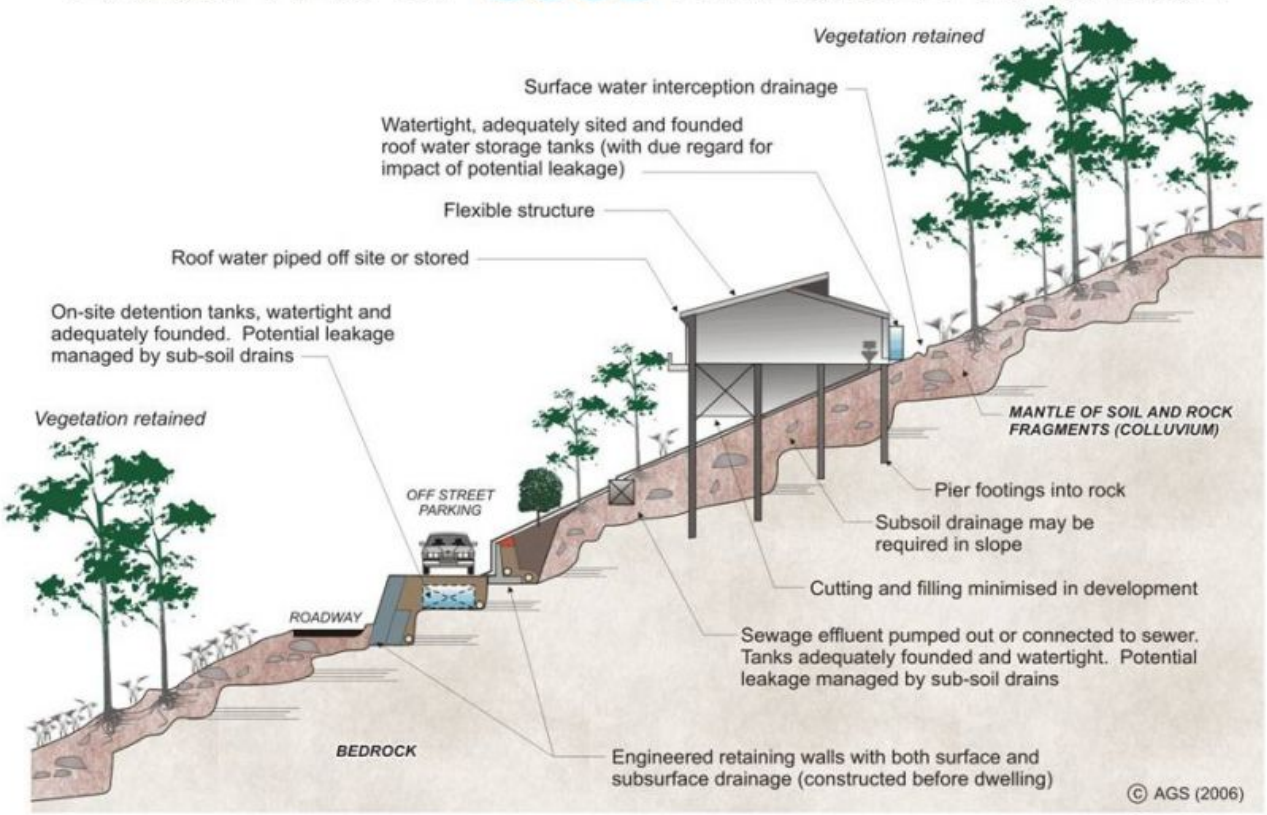
TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

- Fill
- Topsoil
- Sandy Clay – Firm to Stiff
- Hawkesbury Sandstone – Medium Strength



2 **PROPOSED SECTION BB'**
1 : 100

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE