J5227A
5th May, 2025

129 George Street, Avalon

Geotechnical Comments in Regards to New Plans

We have reviewed the existing geotechnical report, the original plans, and the 7 amended plans by J.D Evans and Company, drawings numbered 2141-1 to 2141-7. All Issue A. All dated 10/10/2024.

The changes are as follows:

- Reduce the extent of decking on the downhill side of the secondary dwelling.
- Alter the footprint of the water tanks under the decking on the downhill side of the secondary dwelling requiring excavation to a maximum depth of ~2.2m.
- Various other Internal and external alterations to the house layout.

The changes are considered minor from a geotechnical perspective. The changes do not alter the recommendations or the risk assessment in the original report carried out by this firm numbered J5227 and dated the 10th November, 2023.

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

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

Development Application for _____
Name of Applicant

Address of site 129 George Street, Avalon

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

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

on this the 17/11/23 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 **129 George Street, Avalon**
Report Date: 10/11/23

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 129 George Street, Avalon

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

Geotechnical Report Details:

Report Title: Geotechnical Report **129 George Street, Avalon**

Report Date: 10/11/23

Author: BEN WHITE

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

Please mark appropriate box

☒ Comprehensive site mapping conducted 8/11/23 (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 8/11/23

☒ Geotechnical model developed and reported as an inferred subsurface type-section
☒ Geotechnical hazards identified
- ☒ Above the site
- ☒ On the site
- ☒ Below the site
- ☐ Beside the site

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

☒ Risk calculation
☒ Risk assessment for property conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
☒ Risk assessment for loss of life conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
☒ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater - 2009
☒ Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.
☒ Design Life Adopted:
- ☒ 100 years
- ☐ Other _____ specify

☒ Geotechnical Conditions to be applied to all four phases as described in the Geotechnical Risk Management Policy for Pittwater - 2009 have been specified
☒ Additional action to remove risk where reasonable and practical have been identified and included in the report.
☐ Risk assessment within Bushfire Asset Protection Zone.

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

Signature _____

Name Ben White

Chartered Professional Status MScGEOLAusIMM CP GEOL

Membership No. 222757

Company White Geotechnical Group Pty Ltd

GEOTECHNICAL INVESTIGATION:

New Secondary Dwelling at **129 George Street, Avalon**

1. Proposed Development

1.1 Construct a secondary dwelling on the uphill side of the property at the Cabarita Road frontage, requiring a stepped excavation to a maximum depth of ~2.0m and fill to a maximum height of ~1.5m.

1.2 Details of the proposed development are shown on 7 drawings prepared by J.D Evans and Company, drawings numbered 2141-1 to 2141-7. All dated 03/10/2023.

2. Site Description

2.1 The site was inspected on the 8th November, 2023.

2.2 This residential property has dual access. It is on the uphill side of George Street, and the downhill side of Cabarita Road. The property has a NE aspect. It is located on the moderate to steeply graded lower reaches of a hillslope. The natural slope rises across the property from the George Street frontage at an average angle of ~18°. The slope above the property continues at similar steep angles before easing at the crest of a ridge. The slope below the property immediately decreases in grade to the waterfront.

2.3 At the road frontage to George Street (Photo 1), a sandstone paved driveway runs to a garage under the downhill side of the house. Between the road frontage and the house, stable low rendered masonry retaining walls support a cut for the driveway and fill for a level lawn area (Photo 2). The part three-story house is supported on rendered masonry walls. No significant signs of movement were observed in the supporting walls. A pool has been cut into the slope above the house (Photo 3). The water level indicates no ground movement has occurred in the shell of the pool since its construction. A stable sandstone clad concrete retaining wall reaching up to ~2.6m

supports the cut for the pool area (Photo 3). A stable low timber retaining wall supports the natural slope immediately above the cut for the pool (Photo 4). A partially constructed pool pavilion remains on the uphill slope (Photo 5) and is supported on concrete piers. Sandstone boulders are scattered across the moderate slope in the middle of the property (Photo 6). These rocks are partially embedded into the slope and are considered to be in stable positions. Competent Medium Strength Sandstone outcrops and underlies the remainder of the steep slope to the Cabarita Road frontage (Photo 7). The outcropping portions of rock were observed to be free from significant geological defects that could affect their stability.

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. Bands of Medium Strength Sandstone were observed to be outcropping across the location of the proposed works, extending through the otherwise shale-dominated profile. These bands are typically limited in thickness and extent.

4. Subsurface Investigation

One hand Auger Hole (AH) was put down to identify the soil materials. Nine Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock/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 have been an issue for this site. But due to the possibility that the actual ground conditions vary from our interpretation there should be allowances in the excavation and foundation budget to account for this. We refer to the appended “Important Information about Your Report” to further clarify. The results are as follows:

AUGER HOLE 1 (~RL29.9) **–** AH1 (Photo 8)

Depth (m)	Material Encountered
0.0 to 0.3	**TOPSOIL**, brown, Dense, dry, medium grained.
0.3 to 0.6	**SANDY TOPSOIL**, brown-maroon, Very Dense, dry, medium grained.

Refusal @ 0.6m in Very Dense Sandy Topsoil. 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 (~RL31.5)	DCP 2 (~RL32.5)	DCP 3 (~RL29.9)	DCP 4 (~RL24.4)	DCP 5 (~RL23.0)	DCP 6 (~RL24.3)	DCP 7 (~RL26.3)	DCP 8 (~RL27.0)	DCP 9 (~RL28.3)
0.0 to 0.3	8	6	10	16	7	9	7	Rock Exposed at Surface	8
0.3 to 0.6	28	7	36	#	12	23	13		30
0.6 to 0.9	24	12	39		37	25	17		28
0.9 to 1.2	#	30	#		#	34	#		10
1.2 to 1.5		#				#			#
	Refusal on Rock @ 0.8m	Refusal on Rock @ 1.1m	End of Test @ 0.9m	Refusal on Rock @ 0.3m	End of Test @ 0.9m	End of Test @ 1.2m	Refusal on Rock @ 0.7m		Refusal on Rock @ 1.0m

#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 @ 0.8m, DCP bouncing off rock surface, white impact dust on dry tip.
DCP2 – Refusal on Rock @ 1.1m, DCP bouncing off rock surface, maroon and white impact dust on dry tip, clayey soil in collar above tip.
DCP3 – End of test @ 0.9m, DCP still very slowly going down, maroon and orange impact dust on dry tip.
DCP4 – Refusal on Rock @ 0.3m, DCP bouncing off rock surface, clean dry tip.
DCP5 – End of test @ 0.9m, DCP still very slowly going down, clean dry tip.
DCP6 – End of test @ 1.2m, DCP still very slowly going down, yellow clay on dry tip.
DCP7 – Refusal on Rock @ 0.7m, DCP bouncing off rock surface, yellow clay on dry tip.
DCP8 – Medium Strength Sandstone exposed at surface.
DCP9 – Refusal on Rock @ 1.0m, DCP bouncing off rock surface, white impact dust and orange-maroon clay on dry tip.

5. Geological Observations/Interpretation

The slope materials are colluvial at the near surface and residual at depth. In the test locations, the ground materials consist of shallow soil over clays. The clay merges into the weathered zone of the underlying shale at depths of between ~0.6 to ~0.9m below the current surface being deeper due to a variable weathering profile. The weathered zone is interpreted to be Extremely Low to Low Strength Shale. DCPs 1, 2, 4, 7, and 9 bounced at refusal, indicating there is stronger rock or possible sandstone bands through the otherwise shale-dominated profile. From our previous experience in the Narrabeen Group, it is likely any sandstone bands will be limited in thickness and extent. 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 elevation of the block, the water table is expected to be many metres below the base of the proposed excavation.

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 Cabarita Road above. Should the owners be aware, or if at a later time, become aware that overland flows enter the property during prolonged heavy rainfall, our office is to be contacted so appropriate drainage can be designed and installed to intercept the flows. It is a condition of the risk assessment in **Section 8** that this be done.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The moderate to steeply graded slope that rises across the property, continuing steeply above and easing immediately below is a potential hazard (**Hazard One**). The proposed excavations are a potential hazard until

retaining walls are in place (**Hazard Two**). The proposed fill for the driveway is a potential hazard until retaining walls are in place (**Hazard Three**). The vibrations from the proposed excavation through Medium Strength Rock are a potential hazard (**Hazard Four**).

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The moderate to steep slope that rises across the property continuing steeply above and easing below failing, and impacting on the proposed works.	The proposed excavations (up to a depth of ~2.0m) collapsing onto the work site before retaining walls are in place.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (15%)	'Medium' (10%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (5×10^{-4})
RISK TO LIFE	9.1×10^{-7}/annum	5.9×10^{-5}/annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in **Section 7 & 17** are followed.	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.

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

RISK ANALYSIS SUMMARY CONTINUED ON THE NEXT PAGE

HAZARDS	Hazard Three	Hazard Four
TYPE	The proposed fills (up to a maximum height of 1.5m) failing and impacting the proposed works.	The vibrations produced during the proposed excavation impacting on the surrounding structures.
LIKELIHOOD	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Minor' (7%)	'Minor' (5%)
RISK TO PROPERTY	'Moderate' (5×10^{-5})	'Moderate' (5×10^{-5})
RISK TO LIFE	6.0×10^{-5}/annum	5.3×10^{-7}/annum
COMMENTS	This level of risk to life and property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels the recommendations in **Section 15** are to be followed.	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)

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 are proposed to bench the slope to fit the proposed secondary dwelling.

- The lower step will reach a maximum depth of ~2.0m.
- The middle step will reach a maximum depth of ~1.6m.
- The upper step will reach a maximum depth of ~1.5m.
- The minimum distance between each step is not less than ~3.6m

The excavation is expected to be through shallow topsoil, clay and shale, with Medium Strength Sandstone expected at depths of between 0.7 and 1.1m below the surface in the area of the proposed excavations.

It is envisaged that excavations through shallow soil, clay, and Extremely Low to Low Strength Shale can be carried out with an excavator and toothed bucket, and excavations through rock will require grinding or rock sawing and breaking.

12. Vibrations

Possible vibrations generated during excavations through soil, clay, and Extremely Low to Low Strength Shale will be below the threshold limit for building damage utilising a domestic sized excavator up to 16 tonnes. However, bands of Medium Strength Sandstone or better are expected to be encountered.

Excavations through Medium Strength Rock or better should be carried out to minimise the potential to cause vibration damage to the W neighbouring residence. Allowing ~0.5m for backwall drainage, the setbacks from the proposed excavation to the existing structures are as follows:

- ~9.4m from the W neighbouring residence.

Dilapidation reporting carried out on the W neighbouring property is recommended prior to the excavation works commencing to minimise the potential for spurious building damage claims.

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 W neighbouring 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 neighbouring houses.

13. Excavation Support Requirements

The excavation for the secondary dwelling will reach a maximum depth of ~2.0m at the lower step of the excavation, 1.6m at the middle step, and 1.5m at the upper step. Allowing 0.5m for backwall drainage, the setbacks from the proposed excavation to the existing structures are as follows:

- ~0.5m from the W neighbouring boundary.

As such, the W common boundary will lie within the zone of influence of the proposed excavation. In this instance, the zone of influence is the area above a theoretical 45° line from the base of the excavation towards the surrounding structures and boundaries. This line reduces to 30° through the topsoil.

Due to the steep grade of the slope at the location of the proposed development and the proximity of the excavation to the W common boundary, all cut faces through topsoil and clay will need to be temporarily or permanently supported prior to the commencement of the excavation, or during the excavation process in a staged manner, so cut batters are not left unsupported. Suitable temporary support includes the installation of bulka bags until retaining walls are in place. See the site plan attached for the minimum extent of the required shoring in blue. The support will need to be designed / approved by the structural engineer.

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 no additional temporary support is required.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. All unsupported cut batters through topsoil and 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 cannot blow off in a storm. 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. Retaining Walls

For cantilever or singly propped retaining walls 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 Walls

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
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 structures, do not account for any surcharge loads and assume retaining walls are fully drained. Rock strength and relevant earth pressure coefficients are to be confirmed on site by the geotechnical consultant.

All retaining walls 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 walls the full hydrostatic pressures are to be accounted for in the retaining wall design.

15. Fill

Fill will be placed on the uphill side of the property beneath the proposed driveway, as well as beneath the storeroom of the proposed secondary dwelling. We recommend the fill is used as formwork only and the structures above are suspended, and not supported on the fill. This simplifies the building process as the fill does not require compaction. If it is desired to support structures on fill, it is to be laid as an engineered fill. Our office can be contacted for advice on this procedure

16. Foundations

Due to the steep grade of the slope across the location of the proposed works, piers socketed at least ~1.0m into Extremely Low to Low Strength Rock are suitable footings for the proposed works. This material is expected at depths of between ~0.6 to ~0.9m below the current surface. As such, the required pier depths are expected to be between 1.6 to 1.9m below the current surface, as measured from the downhill side of each pier hole. A maximum allowable bearing pressure of 600kPa can be assumed for footings on Extremely Low Strength Rock or better.

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 then 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.

17. Site Maintenance/Remedial Works

Where slopes approach or exceed 20°, such as on this site, it is prudent for the owners to occasionally inspect the slope (say annually or after heavy rainfall events, whichever occurs first). Should any of the following be observed: movement or cracking in retaining walls, cracking in any structures, cracking or movement in the slope surface, tilting or movement in established trees, leaking pipes, or newly observed flowing water, or changes in the erosional process or drainage regime, then a geotechnical consultant should be engaged to assess the slope. We can carry out these inspections upon request. The risk assessment in **Section 8** is subject to this site maintenance being carried out.

18. 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.

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.

- 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 additional support is not required.
- 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.)
Engineering Geologist and Environmental Scientist.

Reviewed By:

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

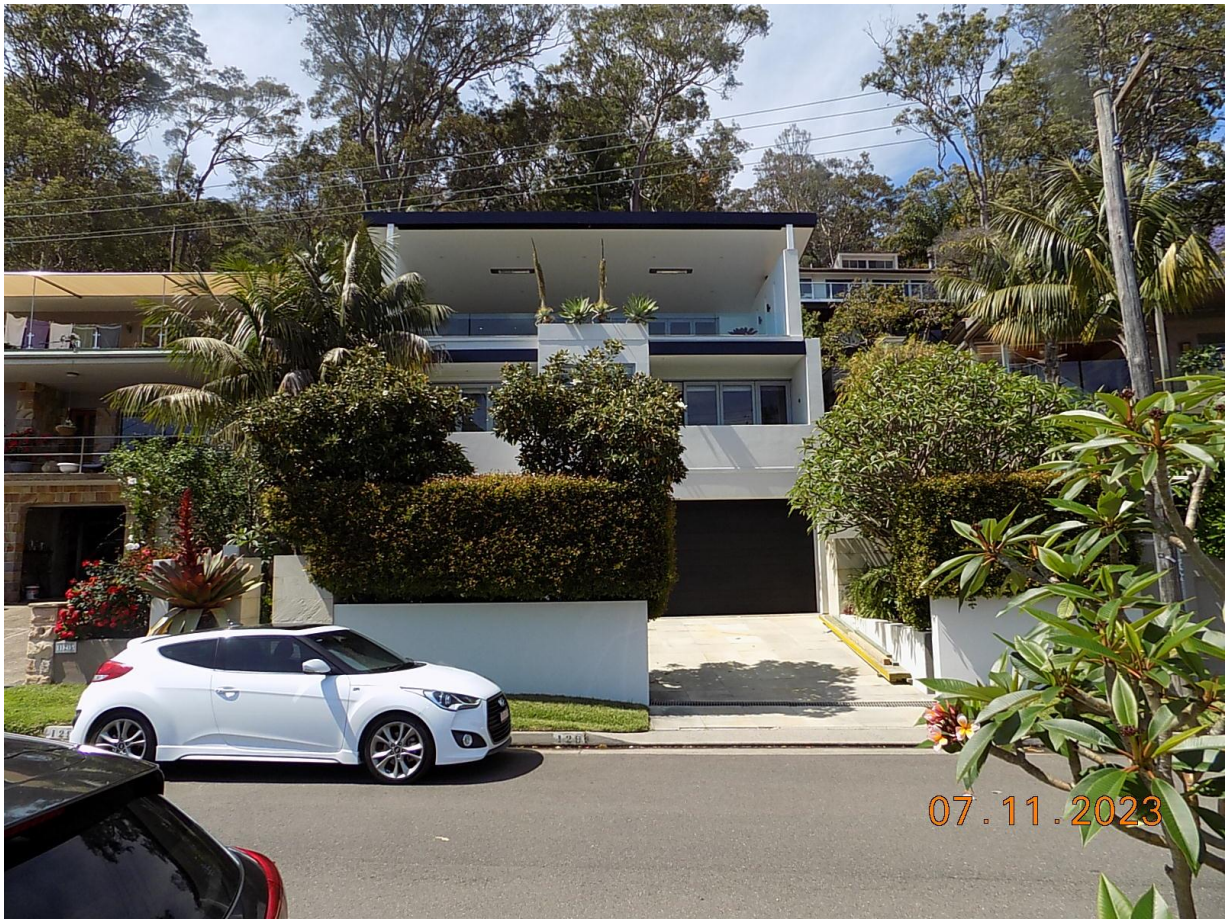


Photo 1

Photo 2

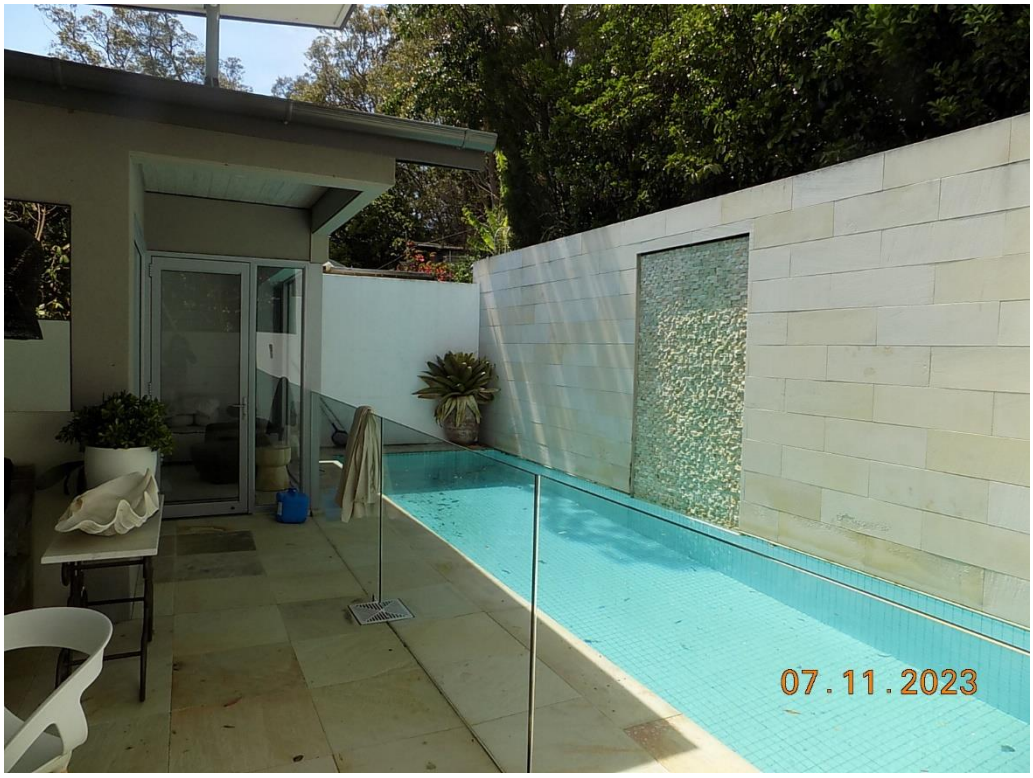


Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8 – AH1 - downhole is 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.

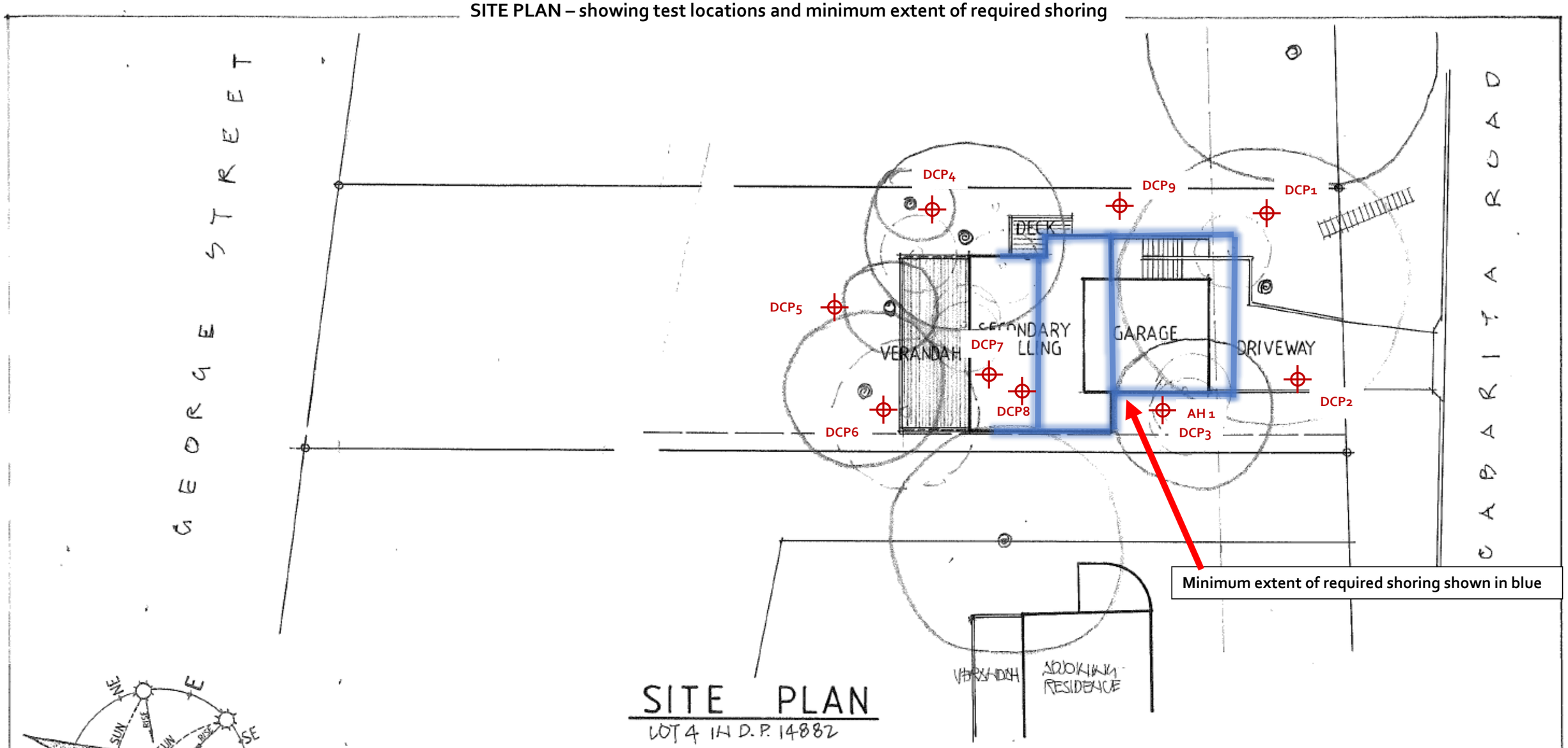
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

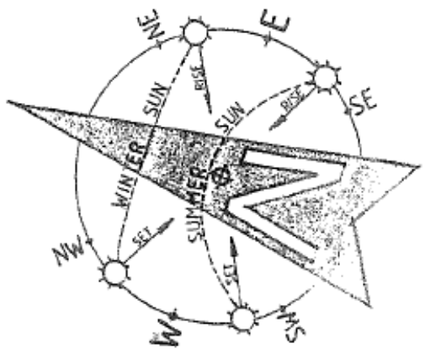
- This report should not be applied to any other project other than that outlined in section 1.0.

- 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 and minimum extent of required shoring





SITE PLAN

LOT 4 IN D.P. 14882

NOTES:

1. THE BUILDER IS TO CHECK AND CONFIRM ALL NECESSARY DIMENSIONS AND LEVELS ON SITE PRIOR TO ORDERING MATERIALS AND COMMENCING CONSTRUCTION. **DO NOT SCALE OFF THE DRAWING.**
2. SHOULD ANY DEVELOPMENT OR CONSTRUCTION OCCUR ON OR NEAR BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE BY THE REGISTERED LAND SURVEYORS.

1 Builder to check and confirm all necessary dimensions on site prior to construction. Do not scale the drawing.
2 All dimensions that relate to site boundaries and easements are subject to verification by a site survey.
3 All work to be in accordance with BUILDING CODE of AUSTRALIA & to the satisfaction of local council requirements & other authorities.
4 All timber construction to be in accordance with the "TIMBER FRAMING" code.
5 Any detailing in addition to what is supplied shall be resolved between the owner and the builder to the owner's approval, except for any structural details or design which is to be supplied by a Structural Engineer.
6 Roof water & sub-soil drainage to be disposed of in the approved manner or as directed by local council inspectors.
7 All electrical power & light outlets to be determined by owner.
8 Make good and repair all existing finishes damaged by new work. Reuse existing materials where possible.

No.	AMENDMENT	DATE

J.D. EVANS and COMPANY
DESIGN AND BUILDING CONSULTANTS
No. 5 ELAINE AVENUE, AVALON BEACH 2107
EMAIL JDECO.AVALON@GMAIL.COM
MOBILE 0418 976 596

PROJECT
PROPOSED SECONDARY DWELLING
No. 129 GEORGE STREET
AVALON BEACH N. S. W. 2107
CLIENT
GREIG & TRACEY WITNEY

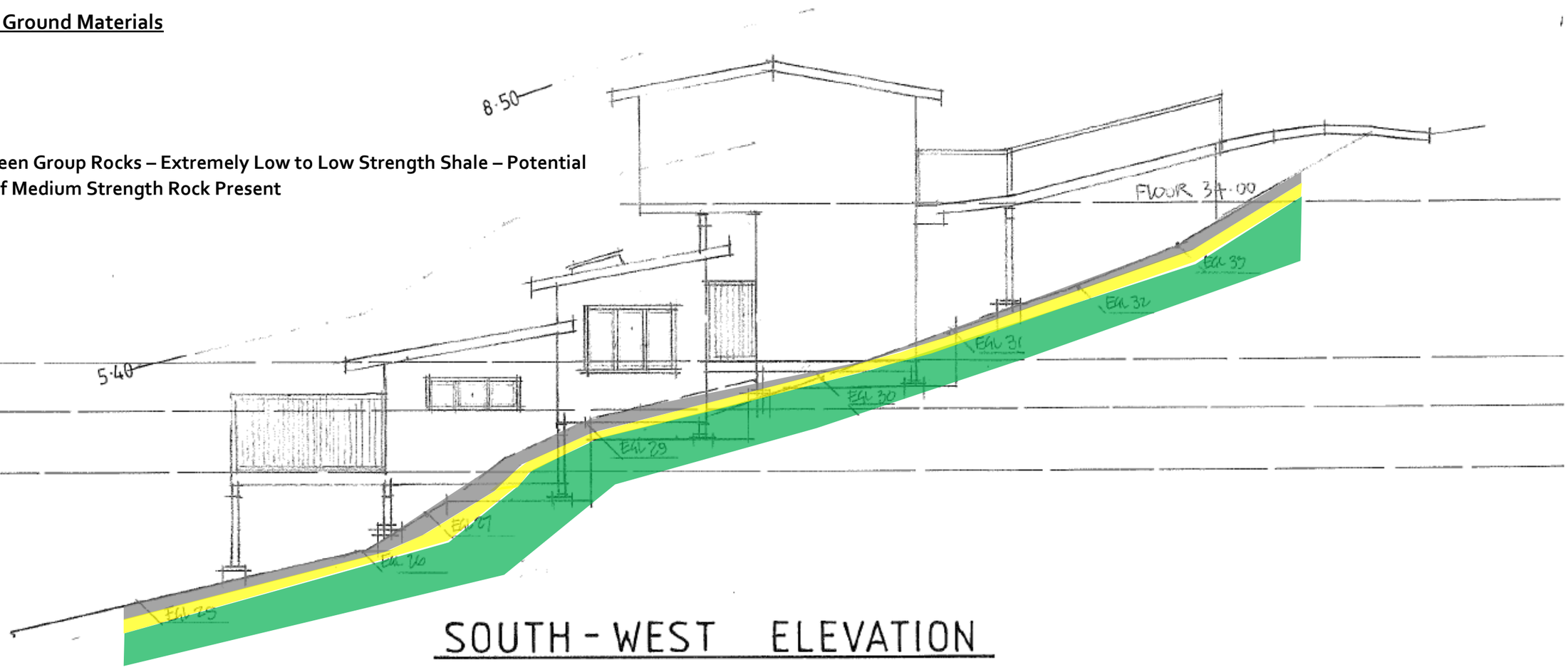
DATE	03/10/2023	SCALE	1:200
DRAWN	JDE.	CHECKED	

DRAWING No. 2141-1 ISSUE

ELEVATION – Diagrammatical Interpretation of expected Ground Materials

Expected Ground Materials

- Topsoil
- Clay
- Narrabeen Group Rocks – Extremely Low to Low Strength Shale – Potential bands of Medium Strength Rock Present



SOUTH - WEST ELEVATION

1 Builder to check and confirm all necessary dimensions on site prior to construction. Do not scale the drawing.
2 All dimensions that relate to site boundaries and easements are subject to verification by a site survey.
3 All work to be in accordance with BUILDING CODE of AUSTRALIA & to the satisfaction of local council requirements & other authorities.
4 All timber construction to be in accordance with the "TIMBER FRAMING" code.
5 Any detailing in addition to what is supplied shall be resolved between the owner and the builder to the owner's approval, except for any structural details or design which is to be supplied by a Structural Engineer.
6 Roof water & storm-soil drainage to be disposed of in the approved manner or as directed by local council inspectors.
7 All electrical power & light outlets to be determined by owner.
8 Make good and repair all existing finishes damaged by new work. Reuse existing materials where possible.

No.	AMENDMENT	DATE

J.D. EVANS and COMPANY
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No. 5 ELAINE AVENUE. AVALON BEACH 2107
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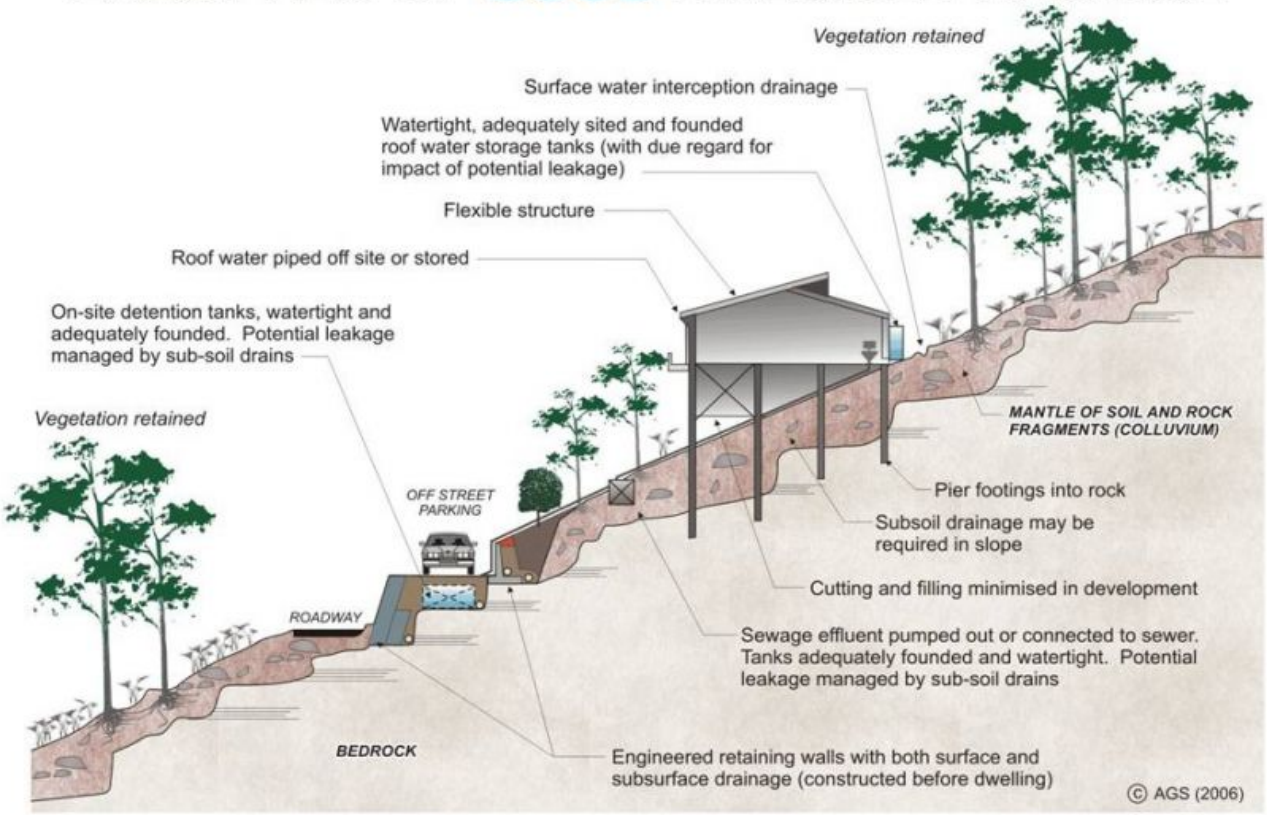
No. 129 GEORGE STREET
AVALON BEACH N. S. W. 2107
CLIENT
GREIG & TRACEY WITNEY

DATE 03/10/2023	SCALE 1:100.
DRAWN JDE.	CHECKED
DRAWING No. 2141-4	ISSUE -

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE