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

Development Application for _____
Name of Applicant

Address of site 316 Hudson Parade, Clareville

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 10/4/25 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 **316 Hudson Parade, Clareville**
Report Date: 10/4/25

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 MScGEOLAusIMM CP GEOL

Membership No. 222757

Company **White Geotechnical Group Pty Ltd**

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

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 316 Hudson Parade, Clareville

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 **316 Hudson Parade, Clareville**

Report Date: 10/4/25

Author: BEN WHITE

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

Please mark appropriate box

☒ Comprehensive site mapping conducted **25/11/22 and 21/8/24** (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 **25/11/22 and 21/8/24**

☒ 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 Ld**

GEOTECHNICAL INVESTIGATION:

Alterations and Additions at **316 Hudson Parade, Clareville**

1. Proposed Development

1.1 Demolish the existing garages, studio and driveway.

1.2 Construct a new underground parking area / den with car lift, store room and underground rainwater tank at the uphill side of the house. Construct a gym / studio above the proposed car lift. Construct a new driveway, garage, pavilion and pond above the parking area / den. These works require an excavation to a maximum depth of ~8.5m, noting this is total excavation height and part of the cut is already supported by a piled wall installed as part of the previous DA.

1.3 Demolish part of the existing house, leaving some of the existing floors and walls intact. Rebuild the house and add a new first floor addition.

1.4 Various other internal and external alterations and additions to the existing house.

1.5 Details of the proposed development are shown on 18 drawings prepared by Baxter and Jacobson Architects, job number 346-02, drawings numbered DA.0000, DA.0002, DA.0101 to DA.0103, DA.1201, DA.1202, DA.1211 to DA.1214, DA.1301 to DA.1304 and DA.1401 to DA.1403, Issue 1, dated 3/2/24.

2. Site Description

2.1 The site was inspected on the 21st August, 2024 and several times previously.

2.2 This residential property is on the low side of the road and has a W aspect. From the upper boundary the natural slope falls at an average angle of ~35° to the uphill side of the house. The natural slope above, beside and below the house has

been altered with cut and fills to create level platforms. The cuts reach a maximum depth of ~1.8m and the fills reach a maximum height of ~5.0m. The natural slope below the property falls at an average angle of ~30° that increases to ~45° where the slope falls to the waterfront.

2.3 At the road frontage, a steeply graded slope falls to the uphill side of the subject house (Photos 1). Vehicular access to the property is provided by a shared driveway from the S that cuts across the slope and runs to the existing house and a detached brick garage/studio beside the house (Photos 2 & 3). The detached garage and uphill side of the property is currently undergoing demolition/construction works previously approved. Two rows of contiguous piles have been constructed uphill of the existing house for these works (Photo 9). Additional piling will be required for the proposed works.

The two-storey brick house displays no significant movement in the external supporting walls that could be associated with slope instability. A concrete pool is located downslope of the N side of the house (Photo 4). The pool shell displays no visible signs of movement. The area downslope of house and beside the pool has been filled for a level lawn area. From visual observations on site, the fill reaches a maximum height of ~5.0m on the S side and reduces to ~1.4m on the N end. The S side of the fill is supported by a gabion basket retaining wall (Photos 5 & 6). Where the wall lines the S common boundary, the baskets are slightly bulging. To ensure the ongoing stability of the wall into the future, the recommendations in **Section 16** are to be followed. The remaining areas of the wall show no obvious bulging. The N side of the fill is supported by a concrete crib retaining wall that is obscured by thick vegetation (Photo 7). From what could be seen of the wall, it appears stable.

2.4 The area below the property has been partly terraced with treated pine retaining walls that appear well constructed. Below the walls, the slope falls steeply to the waterfront. Bands of Medium Strength Sandstone outcrop in this area

(Photo 8). The exposed sandstone is fractured and is relatively thinly bedded. The exposed rock does not display any significant undercutting or geological defects that could lead to a significant failure that could impact the retaining walls or house above.

3. Geology

The Sydney 1:100 000 Geological Sheet indicates the site is underlain by the Newport Formation of the Narrabeen Group. This is described as interbedded laminite, shale and quartz to lithic quartz sandstone.

4. Subsurface Investigation

One hand Auger Hole (AH) was put down to identify the soil materials. Ten Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock. The location 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 may have occurred for DCPs 5, 6 & 8. 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 (~RL19.2) **–** AH1

Depth (m)	**Material Encountered**
0.0 to 1.2	**FILL**, soil and clay, with rock fragments, brown, dry, fine to course grained.

Refusal @ 1.2m in fill. No watertable 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** (~RL21.2)	**DCP 2** (~RL21.2)	**DCP 3** (~RL21.2)	**DCP 4** (~RL21.3)	**DCP 5** (~RL21.8)
0.0 to 0.3	12	23	20	20	18
0.3 to 0.6	23	36	21	34	10
0.6 to 0.9	38	40	25	46	#
0.9 to 1.2	#	#	#	#	
	Refusal on Rock @ 0.8m	Refusal on Rock @ 0.9m	Refusal on Rock @ 0.8m	Refusal on Rock @ 0.8m	Refusal @ 0.4m

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

DCP TEST RESULTS – Dynamic Cone Penetrometer					
Equipment: 9kg hammer, 510mm drop, conical tip.				Standard: AS1289.6.3.2 - 1997	
Depth(m) Blows/0.3m	**DCP 6** (~RL18.0)	**DCP 7** (~RL19.2)	**DCP 8** (~RL14.3)	**DCP 9** (~RL13.1)	**DCP 10** (~RL16.2)
0.0 to 0.3	4	8	6	11	8
0.3 to 0.6	5	10	11	15	4
0.6 to 0.9	5	12	24	5	5
0.9 to 1.2	#	15	31	11	8
1.2 to 1.5		15	#	22	11
1.5 to 1.8		17		31	14
1.8 to 2.1		21		#	23
2.1 to 2.4		25			#
2.4 to 2.7		25			
2.7 to 3.0		24			
3.0 to 3.3		26			
3.3 to 3.6		#			
	Refusal @ 0.7m	Refusal on Rock @ 3.2m	Refusal @ 1.2m	Refusal on Rock @ 1.7m	Refusal on Rock @ 2.1m

#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, orange clay on dry tip.
DCP2 – Refusal on rock @ 0.9m, DCP bouncing off rock surface, orange clay on dry tip.

DCP3 – Refusal on rock @ 0.8m, DCP bouncing off rock surface, clean dry tip.
DCP4 – Refusal on rock @ 0.8m, DCP bouncing off rock surface, orange shale fragments on dry tip.
DCP5 – Refusal @ 0.4m, DCP bouncing, light brown clay or rock fragments on dry tip.
DCP6 – Refusal @ 0.7m, DCP bouncing, orange clay on wet tip.
DCP7 – Refusal on rock @ 3.2m, DCP bouncing off rock surface, orange shale fragments on dry tip.
DCP8 – Refusal @ 1.2m, DCP bouncing, light brown clay or rock fragments on dry tip.
DCP9 – Refusal on rock @ 1.7m, DCP bouncing off rock surface, orange clay on wet tip.
DCP10 – Refusal on rock @ 2.1m, DCP bouncing off rock surface, orange shale fragments on dry tip.

5. Geological Observations/Interpretation

The slope materials are colluvial at the near surface and residual at depth. In the test locations, the ground materials consist of fill and a thin sandy topsoil over firm to stiff clays. Fill to a maximum depth of ~5.0m provides level platforms for lawn, garden and paved areas across the property. In the test locations, the clays merge into the weathered zone of the under lying rocks at depths of between ~0.7m to ~3.0m below the current surface, being deeper where the fill is deeper. The weathered zone of the underlying rock is interpreted as Extremely Low to Low Strength Rock. It is to be noted that this material is a soft rock and can appear as a mottled stiff clay when it is cut up by excavation equipment. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

Ground water seepage is expected to move over the denser and less permeable clay and weathered rock 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 works.

7. Surface Water

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

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The steeply graded slope that falls across the property and continues above and below is a potential hazard (**Hazard One**). The proposed excavations are a potential hazard until retaining structures are in place (**Hazard Two**). The portion of the gabion basket retaining wall that lines the S boundary is a potential hazard (**Hazard Three**).

RISK ANALYSIS SUMMARY ON NEXT PAGE

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two	Hazard Three
TYPE	The steeply graded slope falls across the property and continues above and below failing and impacting on the property.	The proposed excavation collapsing onto the worksite and impacting the neighbouring properties before retaining walls are in place.	Further movement of the gabion basket retaining wall that lines the S common boundary and leads to failure (Photo 8).
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})	'Unlikely' (10^{-4})
CONSEQUENCES TO PROPERTY	'Medium' (15%)	'Medium' (25%)	'Medium' (20%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})	'Low' (2×10^{-5})
RISK TO LIFE	8.3×10^{-7}/annum	3.7×10^{-4}/annum	5.6×10^{-6}/annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in **Section 17** are carried out.	This level of risk to life and property is 'UNACCEPTABLE'. To move the risk to 'ACCEPTABLE' levels, the recommendations in **Section 13** are to be followed.	This level of risk to life and property is 'ACCEPTABLE' provided the recommendations in **Section 17** are 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

All stormwater from the proposed development is to be piped to Pittwater through any tanks that may be required by the regulating authorities.

11. Excavations

An excavation to a maximum depth of ~8.5m is required to construct the proposed underground parking area / den, store room, car lift, underground rainwater tank, driveway, garage, pavilion and pond.

The excavation is interpreted to be through fill, topsoil and clay, with Extremely Low to Low Strength Rock expected at depths of between ~0.7m to ~3.0m below the current surface, being deeper in the filled areas.

Excavations through fill, soil, clay and rock up to Low Strength can be carried out with an excavator and toothed bucket.

12. Vibrations

It is expected the proposed excavation will be carried out with an excavator and toothed bucket and the vibrations produced will be below the threshold limit for building or infrastructure damage using a domestic sized excavator up to 16 tonne.

13. Excavation Support Requirements

On steep sites such as this one, to help maintain excavation stability before retaining walls are in place, it is critical upslope runoff be diverted from the proposed excavations with temporary or permanent drainage measures. Temporary measures may be trenches and sandbag mounds and permanent measures could be a wide diameter dish drain or similar. These are to be installed before any excavation work commences.

As this job is considered technically complex and due to the depths of the excavations, we recommend it be carried out by builders and contractors who are well experienced in similar

work and can provide a proven history of completed work. We recommend a pre-construction meeting between the structural engineer, the builder, and the geotechnical consultant to discuss and confirm the excavation plan and to ensure suitable excavation equipment will be on site.

An excavation to a maximum depth of ~8.5m is required to construct the proposed underground parking area / den, store room, car lift, underground rainwater tank, driveway, garage, pavilion and pond.

Allowing 0.5m for backwall drainage, the setbacks are as follows:

- Flush with the N and S common boundaries.
- ~3.1m from the S neighbouring garage.

The above structure and boundaries will be within the zone of influence of the excavation. In this instance, the zone of influence is the area above a theoretical 30° line (from horizontal) through fill/soil and a 45° line through clay/weathered rock from the base of the excavation towards the surrounding structures and property boundaries.

Any trees immediately above the proposed cuts are to be assessed by an arborist and removed if their stability will be detrimentally impacted by the excavation.

Due to the depth of the excavation and its proximity to the surrounding structures and boundaries all sides of the excavation will require ground support installed prior to the commencement of the excavation. See the Level 1 and 2 floor plans attached for the minimum extent of the required shoring shown in blue.

Two rows of contiguous piles have been constructed uphill of the existing house (Photo 9) for the previously approved excavation works. Additional ground support will be required for the proposed works downslope of these piles.

Contiguous piles can be utilised for the additional ground support. The drilling for the existing piles only encountered rock up to Low Strength. However the additional required piles will

need to extend to greater depths than the existing piles. As such, to drill the pier holes for the walls, a pilling rig that can excavate through Medium to High Strength Rock will be required. If a machine of this type is not available, we recommend carrying out core drilling before the construction commences to confirm the strength of the rock and to ensure the excavation equipment is capable of reaching the required depths. The piers can be temporarily supported by embedment below the base of the excavation or with a combination of embedment and propping. The walls are to be tied into the Level 1 and 2 floor slabs to provide permanent bracing after which any temporary bracing can be released.

The geotechnical consultant is to inspect the drilling process of the entire first pile and the ground materials at the base of all pier holes/excavations installed for ground support purposes.

Where shoring is not required at the N, E and W sides of the underground rainwater tank excavation, the excavation is expected stand at near vertical angles for short periods of time until the tank structure is in place, provided the cut batters are kept from becoming saturated. If the cut batters remain unsupported for more than a few days before the construction of the tank structure they are to be temporarily supported until the tank structure is in place.

During the excavation process, the geotechnical consultant is to inspect the cut face in 1.5m intervals as it is lowered to ensure ground materials are as expected and that additional support is not required.

As pointed out above upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. All unsupported cut batters are to be covered to prevent access of water in wet weather and loss of moisture in dry weather. The 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 / tank structure are to be organised so on completion of the excavation they can be constructed as soon as possible. The excavation is

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

All excavation spoil is to be removed from site following the current Environmental Protection Agency (EPA) waste classification guidelines.

14. Retaining Structures

For cantilever or singly propped retaining structures it is suggested the design be based on a triangular distribution of lateral pressures using the parameters shown in Table 1.

Table 1 – Likely Earth Pressures for Retaining Structures

Unit	Earth Pressure Coefficients			
	Unit weight (kN/m^3)	'Active' K_a	'At Rest' K_0	Passive
Fill and Topsoil	20	0.40	0.55	N/A
Residual Clays	20	0.35	0.45	K_p = 2.0 'ultimate'
Extremely Low Strength Rock	22	0.25	0.38	K_p = 2.5 'ultimate'
Very Low Strength Rock	22	0.22	0.35	400kPa 'ultimate'
Low Strength Rock	24	0.20	0.35	1000kPa 'ultimate'

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 and do not account for any surcharge loads, noting that surcharge loads from the slope, existing structures and existing contiguous piles (Photo 9) above will be acting on the wall. It also assumes retaining structures are fully drained. It should be noted that passive pressure

is an ultimate value and should have an appropriate safety factor applied. No passive resistance should be assumed for the top 0.4m to account for any disturbance from the excavation. Ground materials and relevant earth pressure coefficients are to be confirmed on site by the geotechnical consultant.

A multi-propped or anchored shoring system can be designed using a rectangular lateral earth pressure distribution using a pressure of 4H kPa for soil/clay and 3H kPa for rock up to low strength, where H is the depth of the excavation in metres (or to the top of competent medium strength rock). Where small movements are not tolerable, the wall can be designed using a pressure of 6H kPa for soil/clay and 4H kPa for rock up to low strength. Using these values will give relatively conservative support. More refined design can be obtained using an appropriate retaining wall design program.

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.

15. Site Classification

The site classification in accordance with AS2870-2011 is Class P due to the depth of the fill and the steep grade of the slope. The natural clays below the fill are interpreted to be moderately reactive.

16. Foundations

The proposed underground parking area / den is expected to be seated in Extremely Low Strength Rock or better. This is a suitable foundation material. The other proposed additions (where they are not supported off the underground parking structure) are to be supported on piers taken to and embedded no less than 1.0m into Extremely Low Strength Rock or better

from the downhill edge of the footing. This ground material is expected at depths of between ~0.7m to ~3.0m below the current surface. A maximum allowable bearing pressure of 600kPa can be assumed for footings embedded in Extremely Low Strength Rock or better. It should be noted that this material is a soft rock and a rock auger will cut through it so the builders should not be looking for refusal to end the footings.

As the bearing capacity of weathered rock reduces when it is wet we recommend the footings be dug, inspected and poured in quick succession (ideally the same day if possible). If the footings get wet they will have to be drained and the soft layer of weathered rock on the footing surface will have to be removed before concrete is poured.

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

The foundations supporting the existing house are currently unknown. Ideally, footings should be founded on the same footing material across the old and new portions of the structure. Where the footing material does change across the structure construction joints or similar are to be installed to prevent differential settlement, where the structure cannot tolerate such movement.

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

17. Ongoing Maintenance

The S side of the gabion basket retaining wall is slightly bulging (Photo 8). This structure is currently considered stable but to ensure the ongoing stability into the future we recommend they be inspected by the owners on a biennial basis or after heavy prolonged rainfall, whichever occurs first. A photographic record of the inspections is to be kept. Should further

movement be observed the Geotechnical Consultant is to be engaged to assess the structure and provide remedial advice should it be required.

Where slopes are steep and approach or exceed 30°, such as on this site, it is prudent for the owners to occasionally inspect the slope (say annually or after heavy and prolonged 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 ongoing maintenance being carried out.

18. Geotechnical Review

The structural plans are to be checked and certified by the geotechnical engineer as being in accordance with the geotechnical recommendations. On completion, a Form 2B will be issued. This form is required for the Construction Certificate to proceed.

REQUIRED INSPECTIONS ON NEXT PAGE

19. 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 Occupation Certificate if the following inspections have not been carried out during the construction process.

- The geotechnical consultant is to inspect the ground materials while the first pile for the ground support is being dug to assess the ground strength and to ensure it is in line with our expectations. All finished pile holes for piled wall/excavations for ground support are to be inspected and measured before concrete is placed.
- During the excavation process, the geotechnical consultant is to inspect the cut face in 1.5m intervals as it is 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.

Reviewed By:

Dion Sheldon
BEng(Civil)(Hons) MIEAust NER,
Geotechnical Engineer.

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

Photo 1

Photo 2

Photo 3

Photo 4

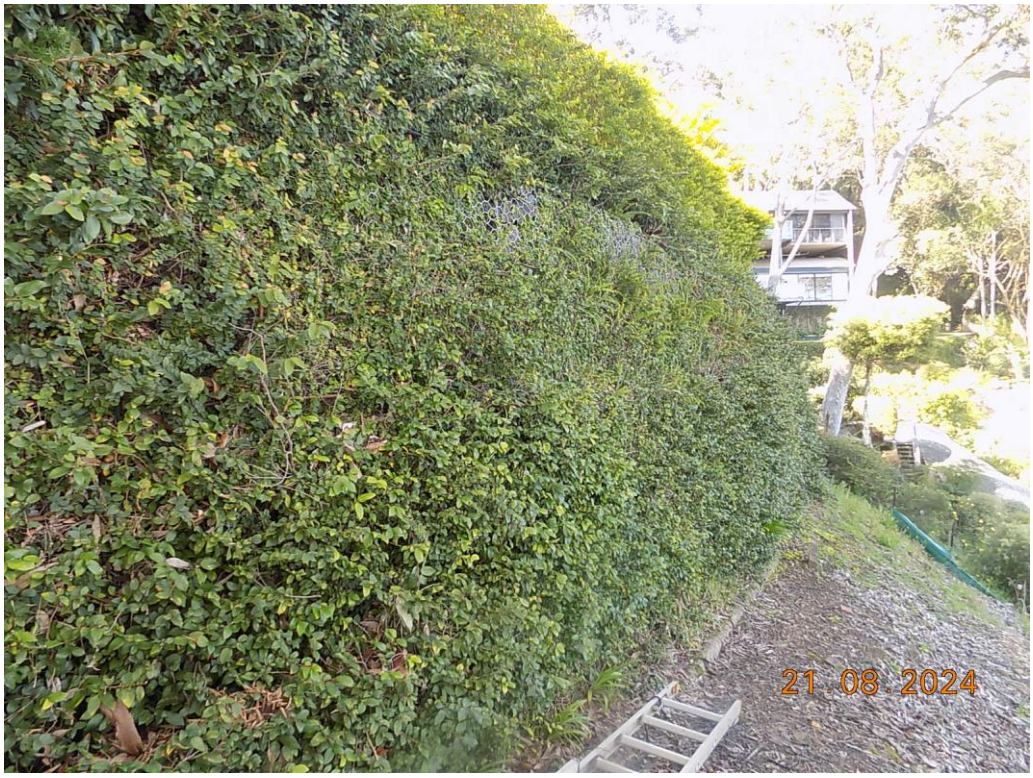


Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

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 tests 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 professional. 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.

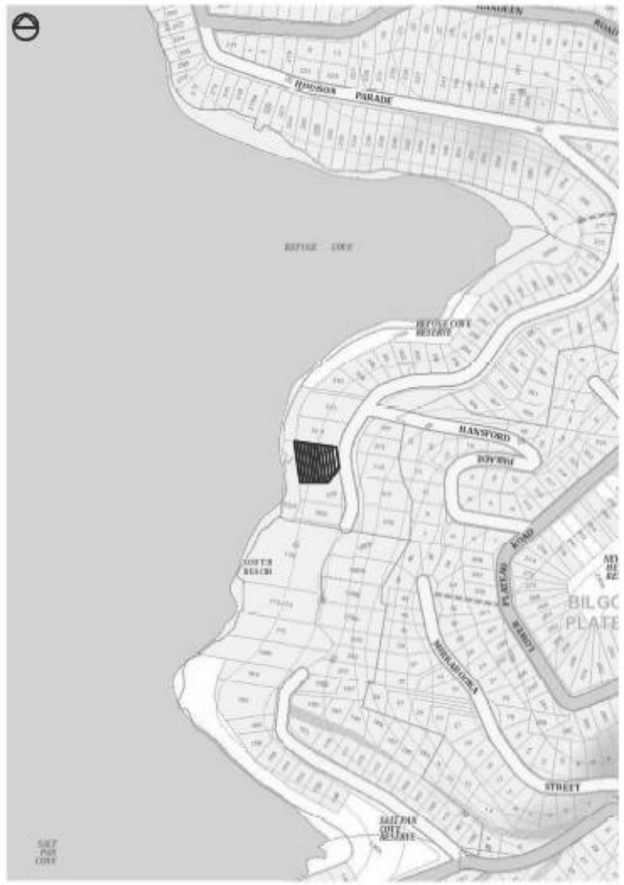
- If this report is used by other professionals during the design or construction process any questions should be directed to White Geotechnical Group as only we understand the full methodology behind the report's conclusions.

- 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

existing Wall.
"The proposed works remain largely outside the TPZ of these trees and the proposed retaining walls will be constructed below existing walls to reduce impacts."

HUDSON PARADE
PROPERTY BOUNDARY
ACCESS TO HIBBSON PARADE R.O.W
RIDGE RL24.70
GARAGE
RIDGE RL23.86
RIDGE RL23.81
DCP4
DCP1
DCP3
DCP2
DCP5
SETBACK FROM BOUNDARY
1800
PAVILION
GYM/STUDIO
DCP7
AH 1
RIDGE RL24.73
DCP6
HOUSE
FORESHORE BUILDING LINE
DCP10
314 HUDSON PARADE
DP 233469
POOL FENCE
6000
316 HUDSON PARADE
DP 827733 LOT 1
316A HUDSON PARADE
DP 261693 LOT 2
DCP8
DCP9
DP 827733 LOT 2
DP 261693 LOT 5

1	03/02/24	DA-P	
Issue	Date	Amendment	

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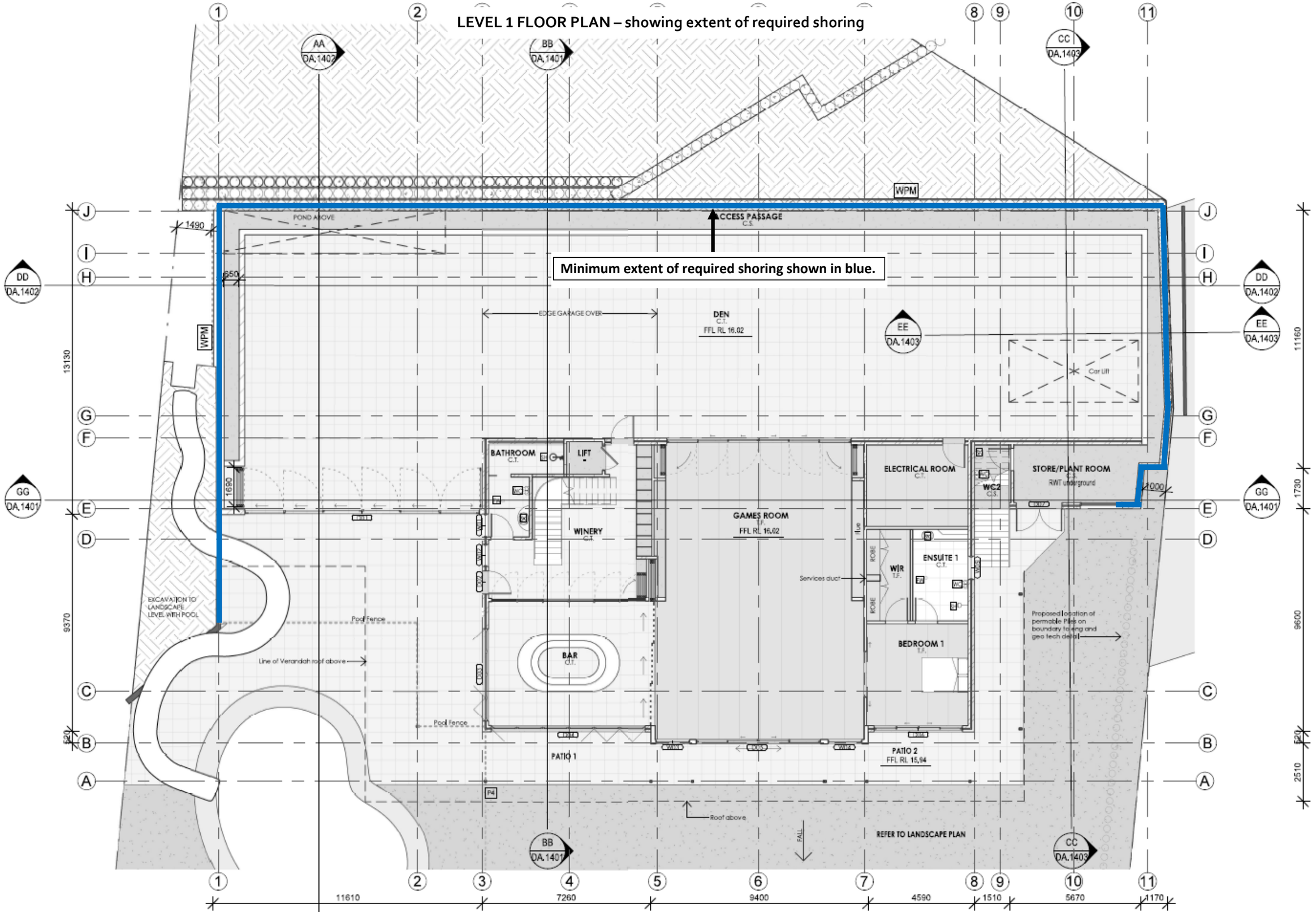
Job No	346-02 316 Hudson Pde
Client	TONY WALLS
Address	316 Hudson Parade Clareville
Drawn	TT
Checked	MB
Scale	1 : 250
Design Stage	DA
Title	LOCATION PLAN
No	DA.0002
Issue	-

8/04/2025 4:42:18 PM

LEVEL 1 FLOOR PLAN – showing extent of required shoring



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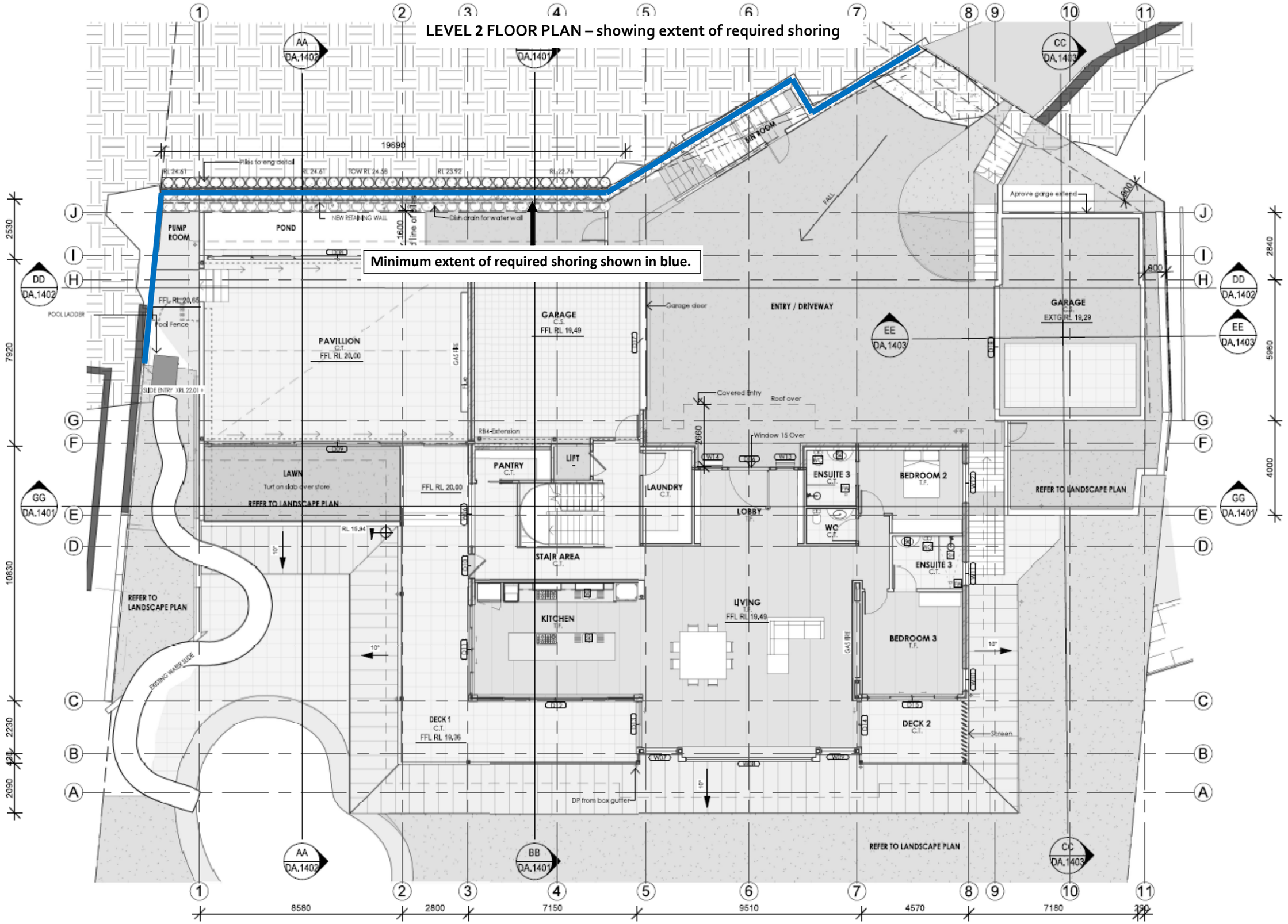
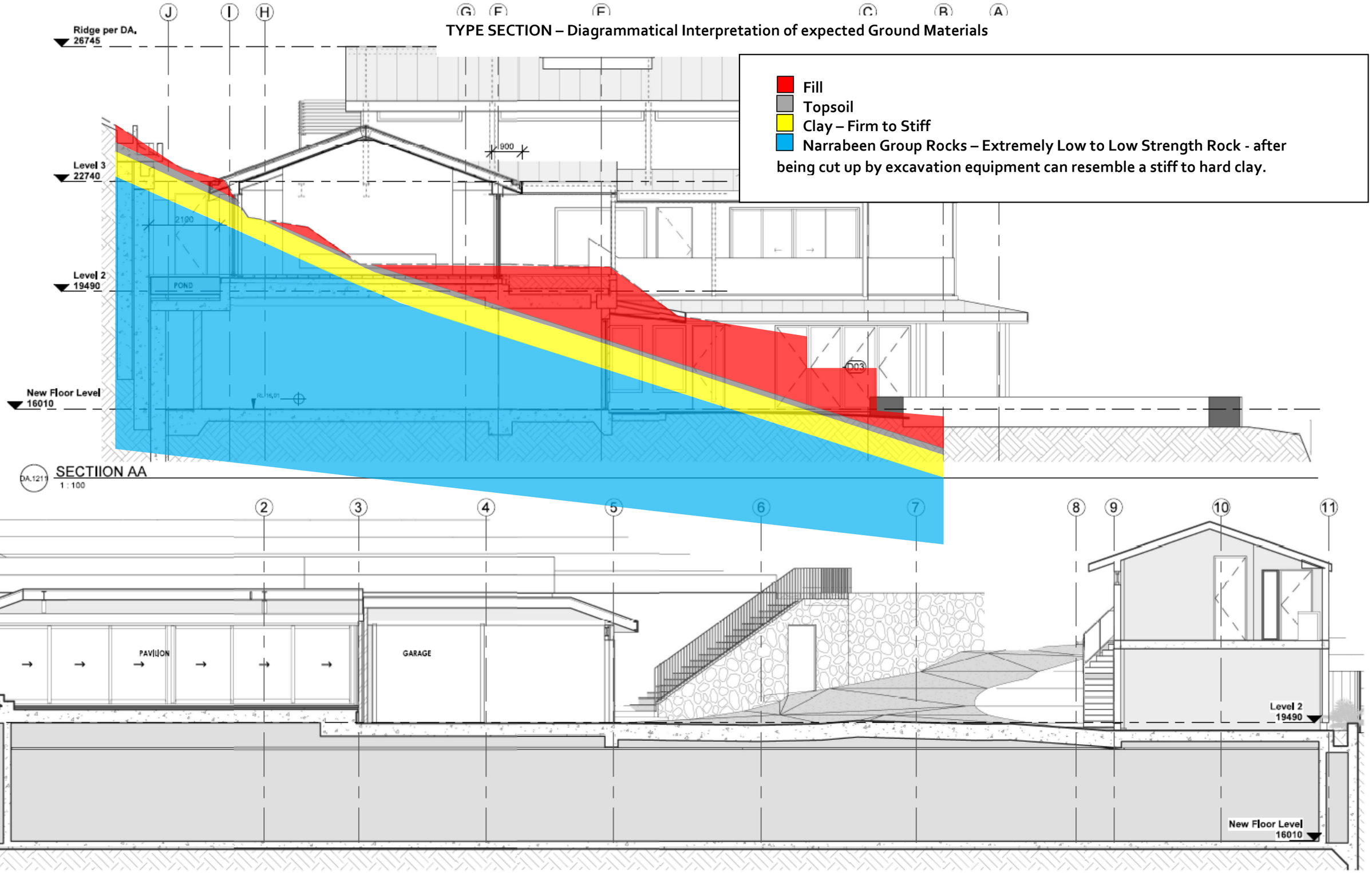
LEVEL 2 FLOOR PLAN – showing extent of required shoring



General Notes: *Any discrepancies to be brought to Architects attention *Use figure dimensions in preference to scaling *Drawings under direction from architect *Builder to examine site and verify conditions and dimensions *This drawing remains the property of the Architect *Client is granted conditional license to use the drawings *Transfer of the Licence is prohibited *Architect reserves the right to terminate the Licence *Electronic data transfer should be scanned for viruses before use *Architect is not liable for any loss or damage (including consequential damage) caused to the recipient of electronic data, by its direct or indirect use, is not the liability of the Architect *Refer to hard copies for accuracy of electronic data *Copyright reserved by the Architect	1 Issue	03/02/24 Date	DA-P Amendment	BAXTER & JACOBSON ARCHITECTS SYDNEY MANLY, NSW AUSTRALIA BYRON BAY NSW AUSTRALIA Nominated Architects D Jacobson #4259 & M Baxter #4831 PHONE +612 9977 7648 EMAIL mark@bja.net.au WEB www.bja.net.au	Job No Client Address	346-02 316 Hudson Pde TONY WALLS 316 Hudson Parade Clareville	Drawn TT Checked MB Scale 1 : 150	Design Stage DA Title PROPOSED LEVEL 2	No DA.1212 Issue -	8/04/2025 4:42:57 PM

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



DA.1211 SECTIION AA
1 : 100

DA.1211 SECTION DD
1 : 100

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Job No	346-02 316 Hudson Pde	Drawn	TT	Design Stage	No
Client	TONY WALLS	Checked	MB	DA	DA.1402
Address	316 Hudson Parade Clareville	Scale	1 : 100	Title SECTION PAVILION - AA AND BB	Issue –

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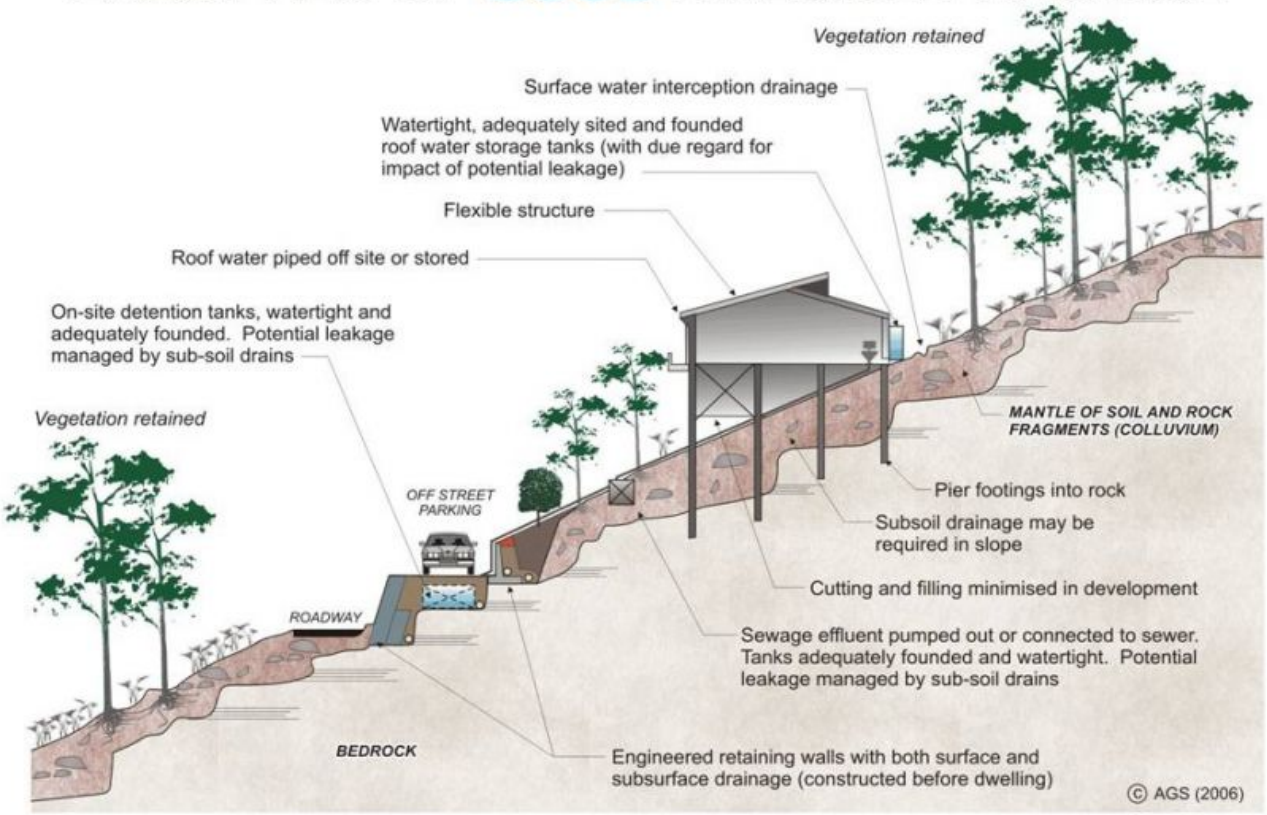
EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE