

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

Development Application for _____
Name of Applicant

Address of site 52 Hilltop Road, 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 4/9/23 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 52 Hilltop Road, Avalon

Report Date: 4/9/23

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	<u>52 Hilltop Road, Avalon</u>

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 <u>52 Hilltop Road, Avalon</u>
Report Date: <u>4/9/23</u>
Author: <u>BEN WHITE</u>
Author's Company/Organisation: <u>WHITE GEOTECHNICAL GROUP PTY LTD</u>

Please mark appropriate box

- ☒ Comprehensive site mapping conducted 22/2/23
(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 22/2/23
- ☒ 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:

Alterations and Additions at **52 Hilltop Road, Avalon**

1. Proposed Development

- 1.1** Construct a new driveway and suspended carport in the NE corner of the property.
- 1.2** Extend part of the mid ground floor of the existing house on the uphill side by excavating to a maximum depth of ~2.5m. Add a new upper ground floor addition above the proposed mid ground floor extension.
- 1.3** Other minor internal and external alterations to the existing house.
- 1.4** Construct a seating area with pergola on the downhill side of the house requiring minor levelling.
- 1.5** Construct a new studio with deck on the NW side of the house by excavating to a maximum depth of ~3.3m.
- 1.6** Construct a new carport on the SW side of the existing garage, construct a firepit area and terrace the slope on the downhill side of the house requiring minor levelling and minor filling.
- 1.7** Details of the proposed development are shown on 18 drawings prepared by Matt Day Architect, job number 1903, drawings numbered 050.01, 051.01, 100.01, 150.01, 151.01, 200.01 to 203.01, 300.01 to 303.01, 400.01, 401.01, 600.01 to 602.01, Issue 01, dated 10/8/23. Additional details are shown on 10 landscape drawings prepared by Secret Gardens, drawings numbered DA-000, DA-101 to DA-104, DA-201, DA-202 and DA-301 to DA-303, Revision A, dated 25/7/23.

2. Site Description

2.1 The site was inspected on the 22nd February, 2023.

2.2 This residential property is on the low side of the road and has a W aspect. It is located on the gentle to steeply graded middle reaches of a hillslope. The upper portion of the property is located on a bench in the slope. The slope falls at an average angle of $\sim 8^\circ$ from the uphill property boundary to the downhill side of the house before increasing in grade and reaching a maximum angle of $\sim 25^\circ$ on the SW side of the house. The slope above the property quickly increases in grade to steep angles for some 80m before reaching the crest of the hill. The slope below the property continues at steep angles for some 100m before reaching Pittwater.

2.3 At the road frontage, a concrete driveway runs down the slope to a garage on the lower ground floor of the house (Photos 1 & 2). A stable stack rock retaining wall up to ~ 1.5 m high supports a fill for the road reserve and a cut for a garden area on the subject property (Photo 3). Between the road reserve and the house are gently sloping lawn and garden areas (Photos 4 & 5). Stable low stack rock retaining walls support cuts and fills for the lawn/garden areas and a cut for the house. The part two storey rendered masonry house is supported by masonry walls and brick piers (Photos 5 & 6). The external supporting walls show no significant signs of movement. The supporting piers stand vertical (Photo 7).

A pool that shows no significant signs of movement is located on the downhill side of the house (Photo 8). Fill provides level platforms for lawn and garden areas beside and downhill of the pool (Photo 9). The fills are supported by stack rock and timber retaining walls up to ~ 1.5 m high (Photos 10 & 11). The timber posts that support timber retaining walls on the SW side of the pool (Photo 12) are tilting downslope slightly, but due to their low height and location, they are not considered a significant threat to life or property. Other lawn and garden areas extend from the downhill side of the retaining walls to the downhill property boundary (Photos 13 & 14). A pathway

on the subject property runs beside the downhill neighbouring properties and provides access to Hudson Parade (Photo 15). Sandstone bedrock outcrops at the entrance to the pathway above Hudson Parade (Photo 16).

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

Two hand Auger Holes (AH) were put down to identify the soil materials. Six Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock. The locations of the tests are shown on the site plan attached. It should be noted that a level of caution should be applied when interpreting DCP test results. The test will not pass through hard buried objects so in some instances it can be difficult to determine whether refusal has occurred on an obstruction in the profile or on the natural rock surface. This is 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:

TEST RESULTS ON NEXT PAGE

AUGER HOLE 1 (~RL49.3) – AH1 (Photo 17)

Depth (m)	Material Encountered
0.0 to 0.2	FILL , sandy soil and clay, dark brown, grey, orange brown, moist to damp, fine to course grained.
0.2 to 0.5	TOPSOIL , sandy soil, dark brown, damp, fine to medium grained with fine trace organic matter.
0.5 to 0.9	SAND , grey, moist to damp, fine to medium grained.
0.9 to 1.2	CLAYEY SOIL , brown, dry to moist, fine to medium grained.
1.2 to 1.3	CLAY , light brown orange, grey, mottled, stiff, moist.

End of hole @ 1.3m in stiff clay. No watertable encountered.

AUGER HOLE 2 (~RL45.0) – AH2 (Photo 18)

Depth (m)	Material Encountered
0.0 to 1.1	FILL , sandy soil and clay, dark brown, orange, damp, fine to course grained.
1.1 to 1.4	TOPSOIL , sandy soil, dark brown/grey, damp, fine to medium grained with fine trace organic matter.
1.4 to 1.6	CLAY , light yellow/orange brown, grey, mottled, firm, moist.

End of hole @ 1.6m in firm clay. No watertable encountered.

DCP TEST RESULTS ON NEXT PAGE

DCP TEST RESULTS – Dynamic Cone Penetrometer						
Equipment: 9kg hammer, 510mm drop, conical tip.				Standard: AS1289.6.3.2 -1997		
Depth(m) Blows/0.3m	DCP 1 (~RL51.0)	DCP 2 (~RL49.9)	DCP 3 (~RL49.3)	DCP 4 (~RL46.9)	DCP 5 (~RL45.0)	DCP 6 (~RL41.5)
0.0 to 0.3	5	12	5	9	6	4
0.3 to 0.6	6	5	12	17	6F	4
0.6 to 0.9	30	6	16	14	4F	5
0.9 to 1.2	#	9	21	12	4	20
1.2 to 1.5		13	22	16	4	14
1.5 to 1.8		10	23	13	4	#
1.8 to 2.1		47	33	23	14	
2.1 to 2.4		#	#	21	60	
2.4 to 2.7				17	#	
2.7 to 3.0				#		
	End of Test @ 0.9m	End of Test @ 2.0m	Refusal on Rock @ 2.0m	Refusal on Rock @ 2.6m	End of Test @ 2.4m	Refusal on Rock @ 1.5m

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

DCP Notes:

DCP1 – End of Test @ 0.9m, DCP still very slowly going down, orange red shale fragments and dark brown soil on moist tip.

DCP2 – End of Test @ 2.0m, DCP still very slowly going down, orange red shale fragments and dark brown soil on damp tip.

DCP3 – Refusal on Rock @ 2.0m, DCP bouncing off rock surface, orange and white grey shale fragments and dark brown soil on moist tip.

DCP4 – Refusal on Rock @ 2.6m, DCP bouncing off rock surface, orange shale fragments and brown sandy soil on moist tip.

DCP5 – End of Test @ 2.4m, DCP still very slowly going down, orange shale fragments and brown sandy soil on moist tip.

DCP6 – Refusal on Rock @ 1.5m, DCP bouncing off rock surface, white rock fragments, orange red shale fragments and dark brown soil on moist 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, a sandy topsoil, sand and clayey soil over firm to stiff clays. Fill to a maximum depth of ~1.5m provides level platforms for lawn and garden areas across the property. In the test locations, the clays merge into the weathered zone of the underlying rock at depths of between ~0.9m to ~2.6m below the current surface, being deeper in the filled areas (DCP4 and 5) and shallower on the downhill side of an existing cut (DCP1). 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 layers in the profile including the surface of the natural clay buried under the fill/soil/sand and the buried surface of the weathered rock under the clay.

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 Hilltop Road above.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The gentle to 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 (**Hazard Two**).

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The gentle to steep slope that falls across the property and continues above and below mass failing and impacting on the property.	The proposed excavations for the house additions and studio collapsing onto the worksite and impacting the neighbouring properties during the excavation process.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (20%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})
RISK TO LIFE	8.3×10^{-7} /annum	7.4×10^{-5} /annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in Section 16 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.

(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 proposed carport has fall to Hilltop Road. The proposed house addition and studio have fall to Hudson Parade. All stormwater from the proposed development is to be piped to the street drainage systems through any tanks that may be required by the regulating authorities.

11. Excavations

An excavation to a maximum depth of ~2.5m is required for the proposed house additions. Another excavation to a maximum depth of ~3.3m is required to construct the proposed new studio.

The excavations are expected to be through fill, topsoil, sand, clayey soil and clay, with Extremely Low to Low Strength Rock expected at depths of between ~1.5m to ~2.6m below the current surface, being deeper in the filled areas.

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

12. Vibrations

It is expected the proposed excavations 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 20 tonne.

13. Excavation Support Requirements

An excavation to a maximum depth of ~2.5m is required for the proposed house additions. Another excavation to a maximum depth of ~3.3m is required to construct the proposed new studio. The studio excavation comes flush with the N common boundary.

Due to the depths of the excavations and the proximity of the studio excavation to the N common boundary, all sides of the excavations will require ground support installed prior to the commencement of the excavations. See the Mid Ground Floor Plan and Studio Floor Plan attached for the minimum extent of the required shoring shown in blue.

Spaced piled retaining walls are one of the suitable methods of support. Pier spacing is typically ~2.0m but can vary between 1.6 to 2.4m depending on the design. As the excavations are lowered in 1.5m lifts, infill sprayed concrete panels or similar are added between the piers to form the wall. Drainage is to be installed behind the panels. 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 floor and roof 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.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. The excavations are to be carried out during a dry period. No excavations are to commence if heavy or prolonged rainfall is forecast.

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

14. Retaining Structures

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 ON NEXT PAGE

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, Topsoil, Sand, Clayey Soil	20	0.40	0.55	N/A
Residual Clays	20	0.35	0.45	K _p = 2.0 'ultimate'
Extremely Low to Low Strength Rock	22	0.25	0.38	K _p = 2.5 '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, do not account for any surcharge loads and assume 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.

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. Foundations

The proposed mid ground floor additions and new studio are expected to be seated in Extremely Low Strength Rock or better on the uphill side. This is a suitable foundation

material. On the downhill side, where the weathered rock drops away with the slope, piers taken to and embedded no less than 0.6m into Extremely Low Strength Rock or better from the downhill edge of the footing will be required to maintain a uniform foundation material across the structure. The proposed carports and driveway are to be supported on piers embedded to a similar depth into this ground material. Provided the footings are taken to and embedded into this ground material no additional loads will be transferred onto the existing retaining wall (Photo 3). In our experience, retaining walls of this kind are gravity walls where stones are stacked behind the wall face to provide the mass. As such, to ensure the stability of the retaining wall is not compromised, footings on the uphill side of the wall are to be set back at least 1.0m from the wall. A maximum allowable bearing pressure of 600kPa can be assumed for footings embedded in Extremely Low Strength Rock or better. This ground material is expected at depths of between ~0.9m to ~2.6m below the current surface, being deeper in the filled areas. 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.

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 in accordance with a 'Class M' site.

The proposed pergola can be supported on spread footings embedded into the Firm to Stiff Clays of the natural profile where some movement in accordance with a 'Class M' site can be tolerated. A maximum allowable bearing pressure of 200kPa can be assumed for footings embedded in Firm to Stiff Clay. For better quality footings or where little movement can be tolerated, piers can be embedded into Extremely Low Strength Rock or better.

As the bearing capacity of clay and 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 clay or 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.

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.

16. Ongoing Maintenance

Where slopes are steep and approach or exceed 30°, such as on the SW side of the house, 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.

17. Geotechnical Review

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

18. Inspections

The client and builder are to familiarise themselves with the following required inspections as well as council geotechnical policy. We cannot provide 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.
- 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.



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

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



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17: AH1 – Downhole is from top to bottom.



Photo 18: AH2 – Downhole is from 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.

SURVEY PLAN – showing test locations

NOTES:

- 1) CAUTION: SHOULD ANY DEVELOPMENT OR CONSTRUCTION BE PLANNED ON OR NEAR THE BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE.
- 2) AREA AND DIMENSIONS HAVE BEEN SURVEYED FROM PLANS MADE AVAILABLE AT LAND REGISTRY SERVICES.
- 3) ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM S.S.M. 10024 RL 34.873 A.H.D.
- 4) TREE SPREADS ARE DIAGRAMMATIC ONLY AND ARE NOT SYMMETRICAL.
- 5) UNDERGROUND (NON VISIBLE) SERVICE LINES HAVE BEEN SHOWN FROM 'DIAL BEFORE YOU DIG' SERVICE AUTHORITY RECORDS & ARE DIAGRAMMATIC ONLY IN REGARD TO THEIR POSITION & WIDTH UNLESS STATED OTHERWISE.
- 6) SPOT LEVELS ARE ACCURATE.
- 7) BEARINGS SHOWN ARE ON I.S.G. (TRUE NORTH)



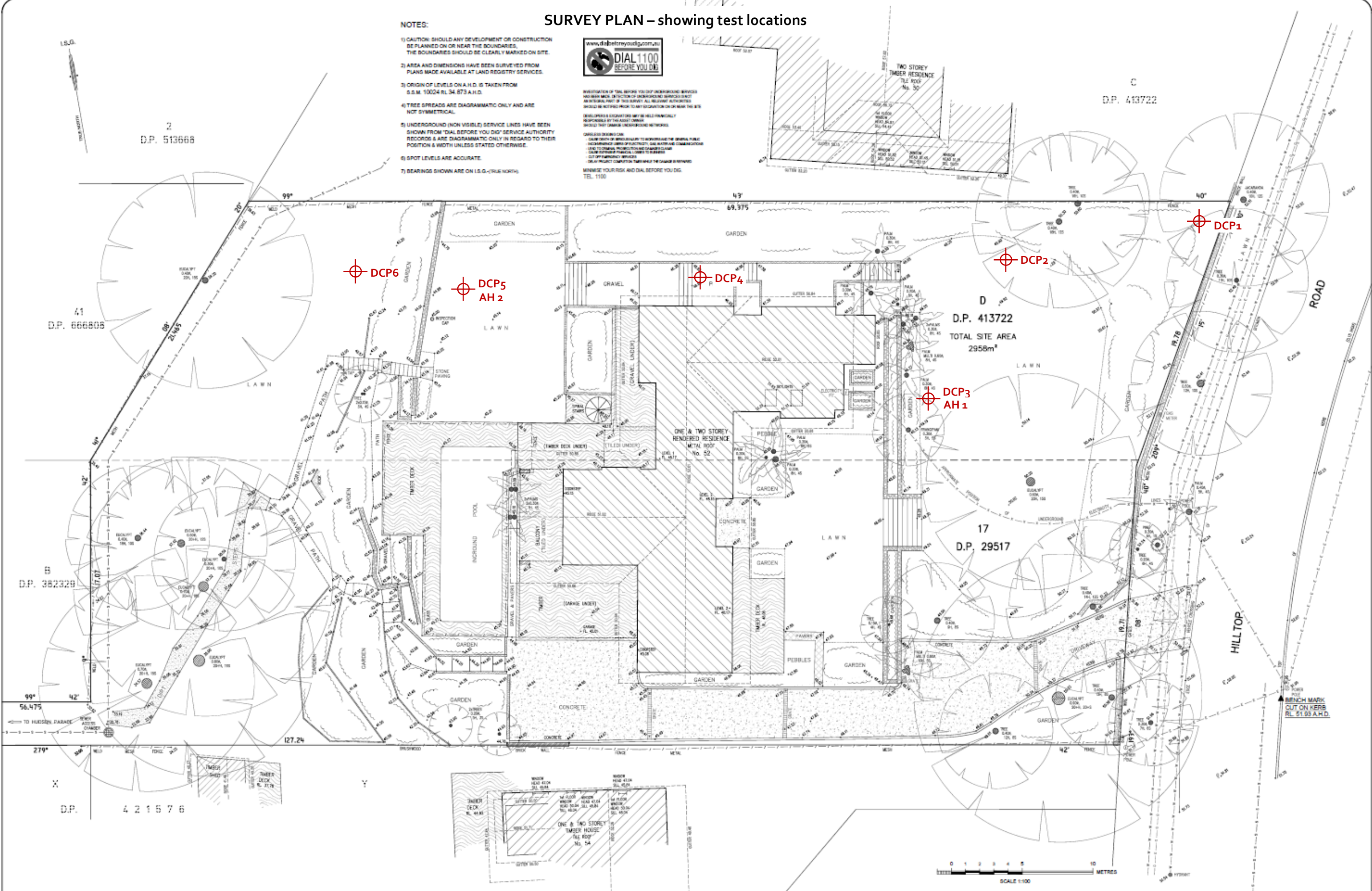
INVESTIGATION OF TELL TALE SIGNS OF UNDERGROUND SERVICES AND NON-MARKED EXISTING OR UNDERGROUND SERVICES (NOT AN EXHAUSTIVE LIST) OF THIS SURVEY ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION OR ON NEAR THIS SITE.

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ADJUT OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CHANGING DESIGN CAN:

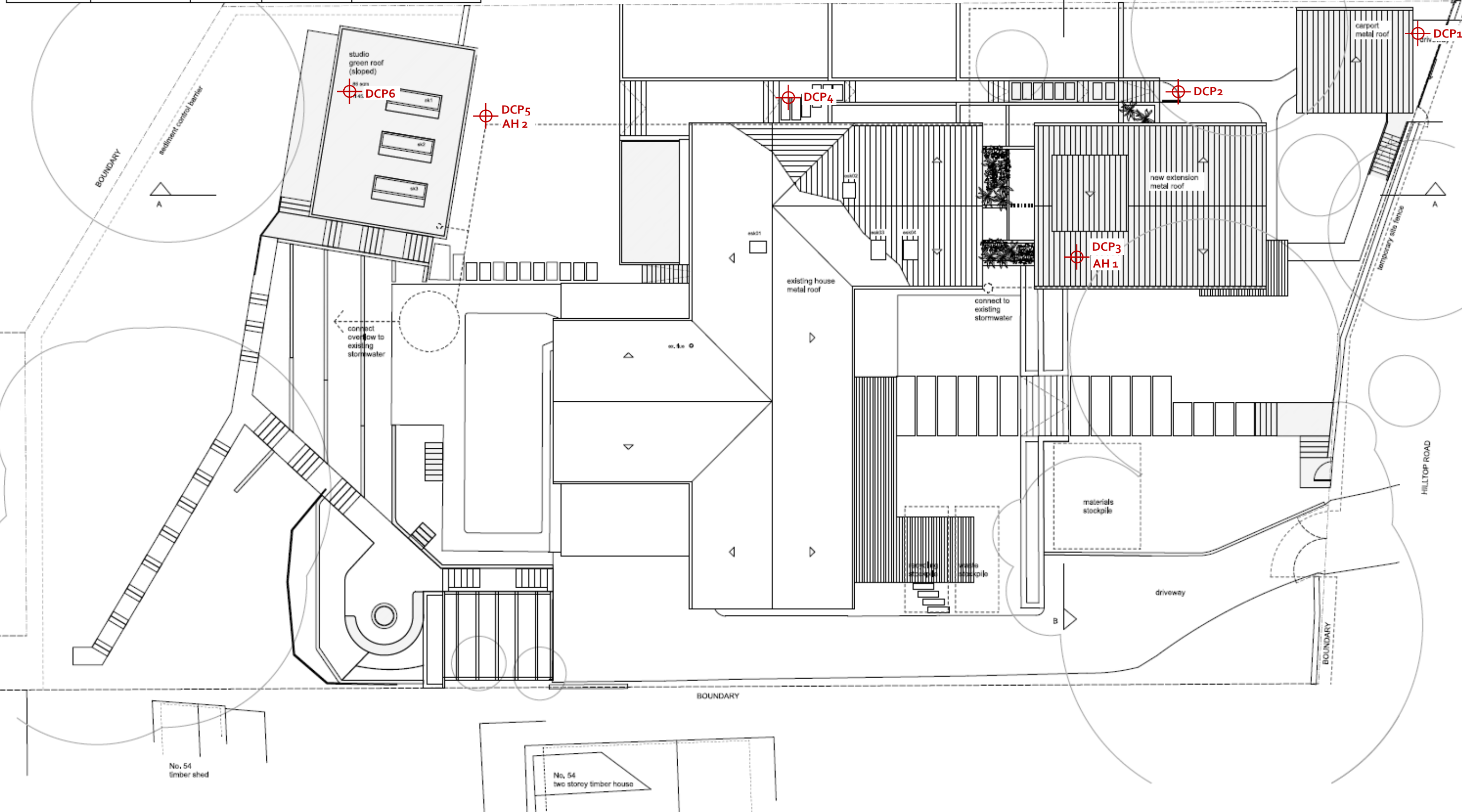
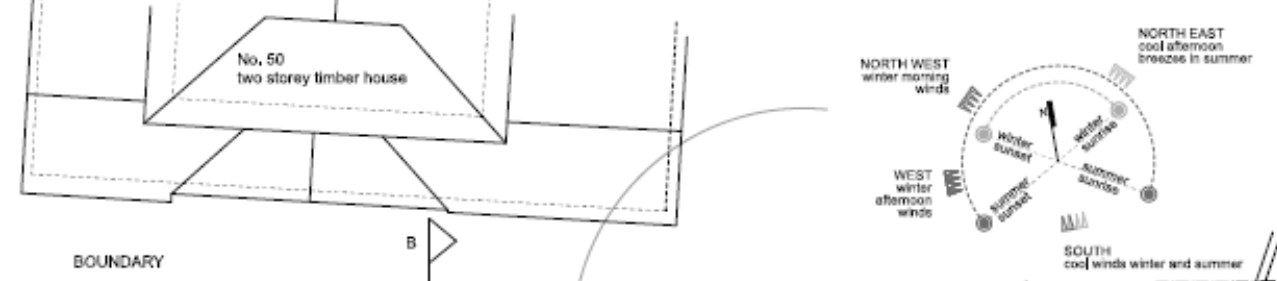
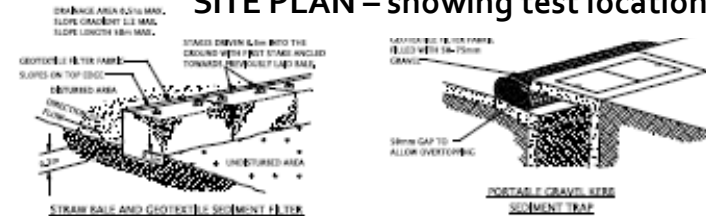
- CAUSE DAMAGE TO WORKING AND THE GENERAL PUBLIC
- INCURRING COSTS OF REPAIRS, GAS, WATER AND COMMUNICATIONS
- LEAD TO DAMAGE, INJURY, LOSS OF LIFE AND PROPERTY
- CAUSE DELAYS TO PROJECTS
- CAUSE DELAYS TO PROJECTS
- CAUSE DELAYS TO PROJECTS

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DEVELOPMENT STATISTICS				
	proposed development	existing building	DCP and LEP, SEPP	LEGEND
site area	2958 sq m	2958 sq m		new work
gross floor area	467,8 sqm	303 sqm		sediment control barrier
height	6,3m	5,5m	N/A	site fence
private open space	>353 sqm	>353 sqm	max 8,5m	stockpile
landscaped area	1931 sqm / 65%	2176 sqm / 74%	min. 60sqm	stormwater
			min. 60%	slope of roof

SITE PLAN – showing test locations



MATT DAY ARCHITECT
Suite 1 & 2
6 Waratah Street, Mona Vale NSW 2103
email : matt@mattdayarchitect.com.au
mob. 0400 661 788
registered architect : matt day no. 7748

SPECIFICATION :
The proposed building works must comply with all relevant Australian Standards and the Building Code of Australia.



Project:	52 Hilltop Road, Avalon Beach
Client	Adoncello
Job no.:	1903

drawing: Proposed Site Plan & Site Analysis
Waste Management Plan
Construction Plan
Erosion and Sediment Control Plan
Stormwater Management Plan

drawn by: lw checked by: md

scale: 1 : 100 @ A1
1 : 200 @ A3

DA

100.01

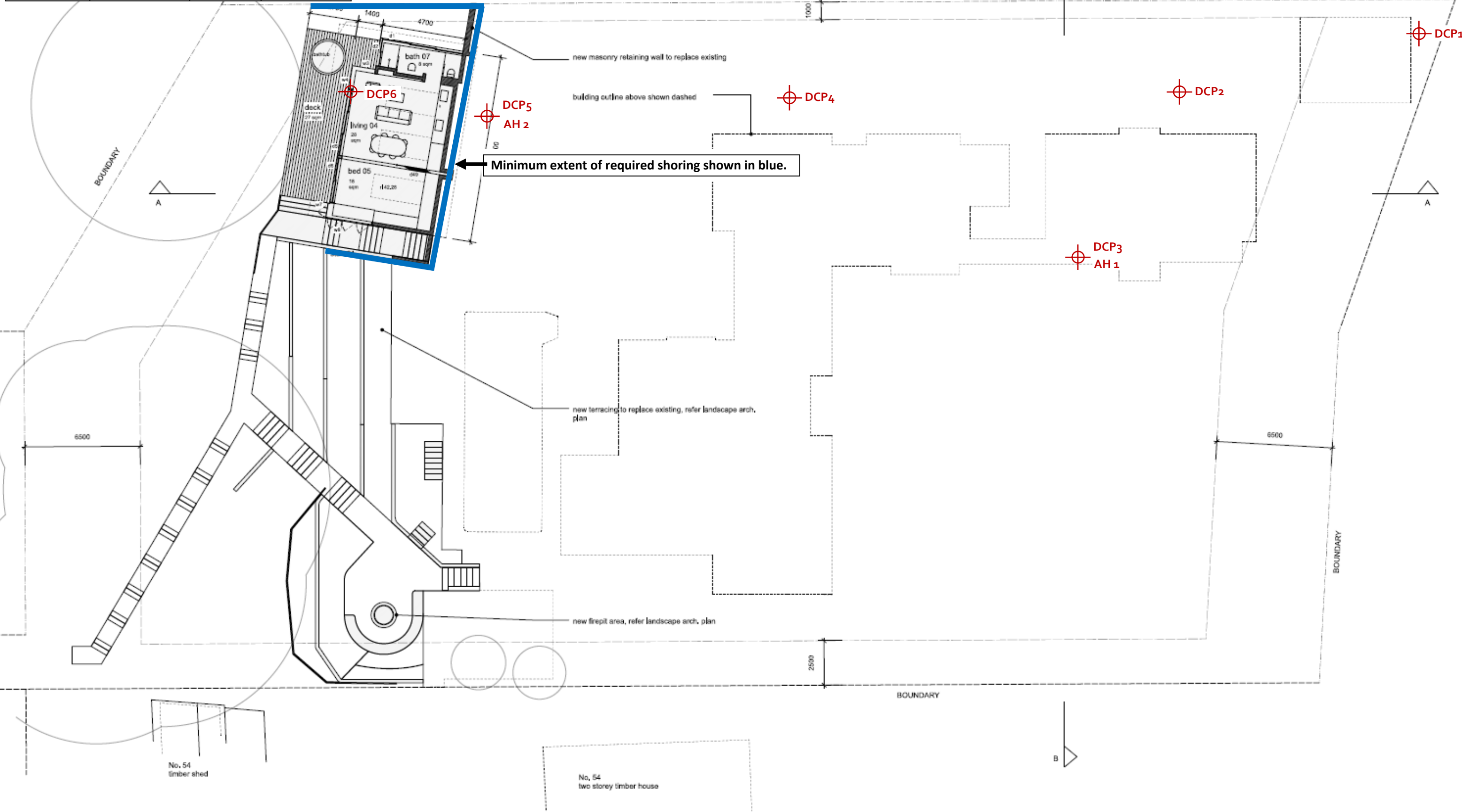
ISSUE 01: 10.08.2023

DEVELOPMENT STATISTICS			
	proposed development	existing building	DCP and LEP, SEPP
site area	2958 sq m	2958 sq m	
gross floor area	467,8 sqm	303 sqm	N/A
height	6,3m	5,5m	max 6,5m
private open space	>353 sqm	>353 sqm	min. 60sqm
landscaped area	1931 sqm / 65%	2176 sqm / 74%	min. 60%

LEGEND	
	new work
	masonry (new work)
	lightweight wall (new work)
	green roof / garden (new work)
	existing

conc	off form concrete	glw	glazed timber framed window
cpd	cupboa	ldy	laundry
d1	new do	mr	metal roof
emr	existing metal roof	sk	skylight
erb	existing rendered brickwork	stn	stone cladding
ew1	existing window	w1	new window
fc	fibre cement cladding, painted		
m	finished floor level		
gaw	glazed al. framed window		

STUDIO FLOOR PLAN – showing test locations



MATT DAY ARCHITECT Suite 1 & 2 6 Waratah Street, Mona Vale NSW 2103 email : matt@mattdayarchitect.com.au mob. 0400 661 788 registered architect : matt day no. 7748	SPECIFICATION : The proposed building works must comply with all relevant Australian Standards and the Building Code of Australia.		Project:	52 Hilltop Road, Avalon Beach	drawing: Proposed Studio Floor Plan	DA 200.01	scale: 1 : 100 @ A1 1 : 200 @ A3	ISSUE 01: 10.08.2023
			Client	Adoncello				
			Job no.:	1903	drawn by: lw checked by: md			

	proposed development	existing building	DCP and LEP, SEPP
site area	2958 sq m	2958 sq m	
gross floor area	467,8 sqm	303 sqm	N/A
height	6,3m	5,5m	max 8,5m
private open space	>353 sqm	>353 sqm	min, 80sqm
landscaped area	1931 sqm / 65%	2176 sqm / 74%	min, 60%

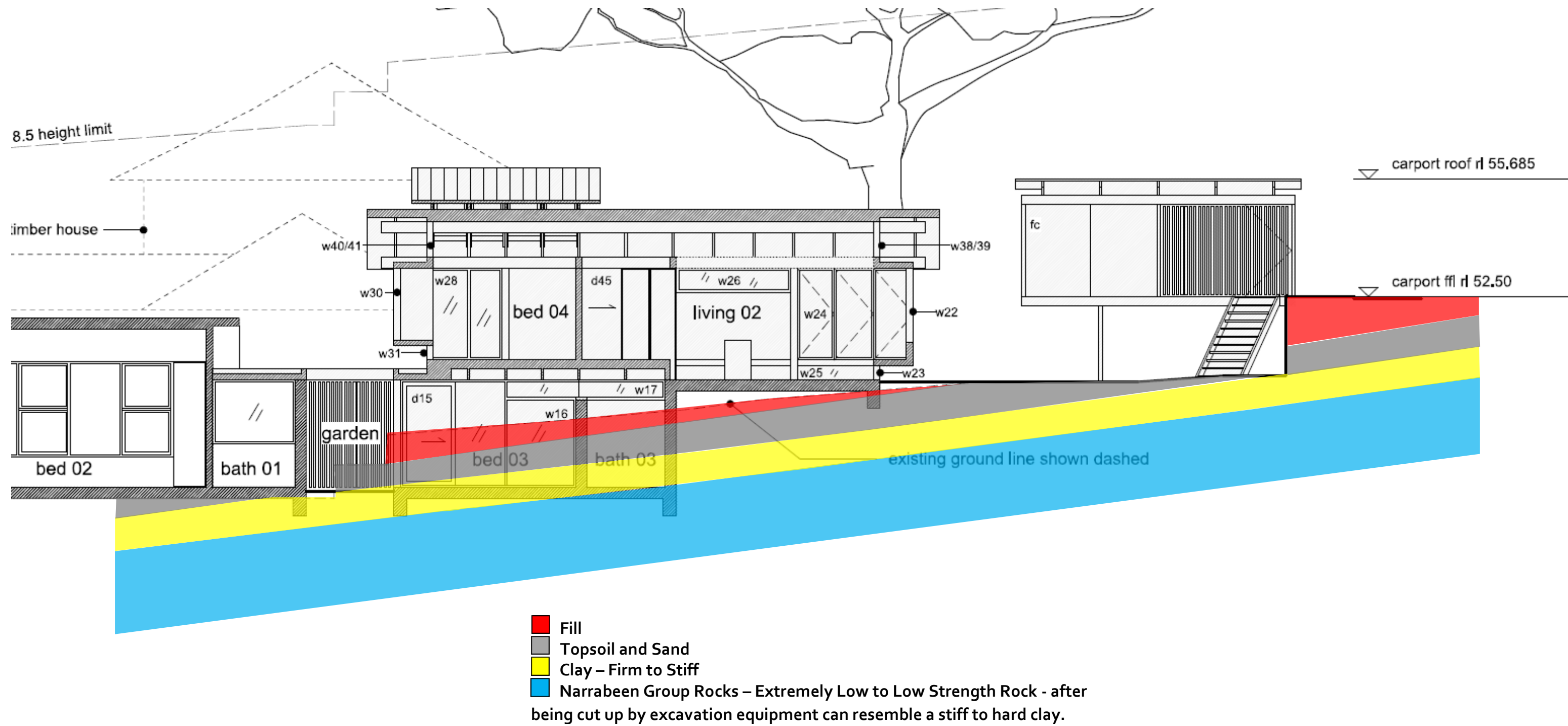
LEGEND

- new work
- masonry (new work)
- lightweight wall (new work)
- green roof / garden (new work)
- existing

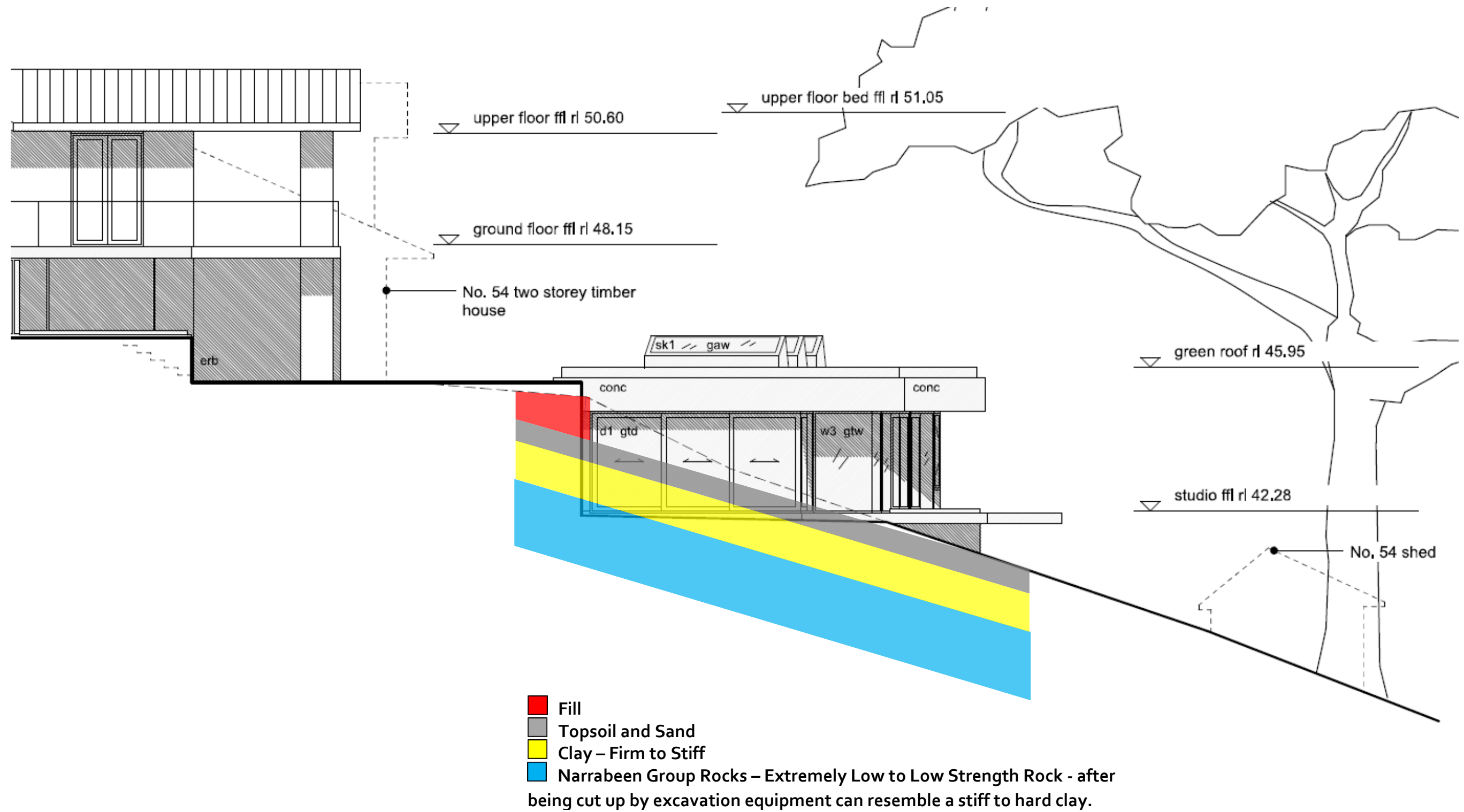
d1	new door	gld	glazed timber framed door
emr	existing metal roof	glw	glazed timber framed window
erb	existing rendered brickwork	ldy	laundry
ew1	existing window	mr	metal roof
fc	fibre cement cladding, painted	sk	skylight
fl	finished floor level	stn	stone cladding
gaw	glazed al. framed window	w1	new window



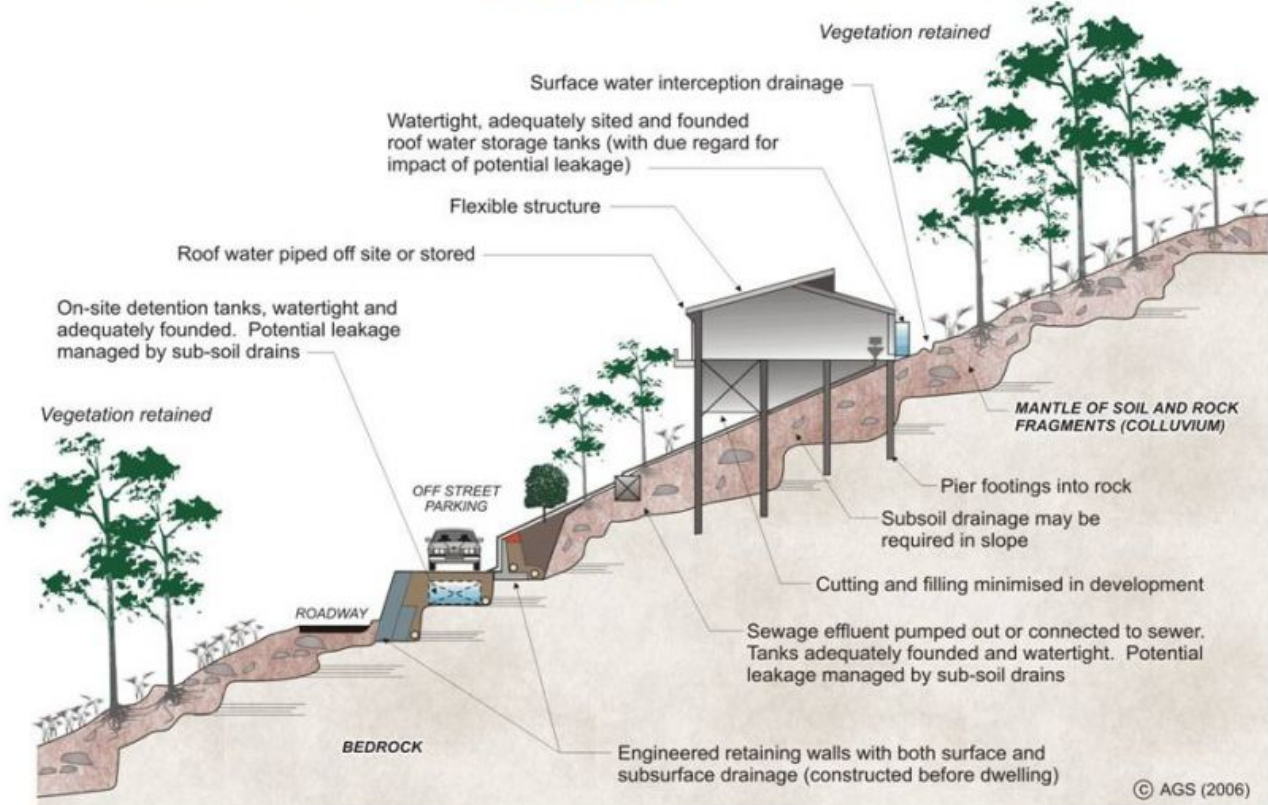
TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE

