

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

Development Application for _____
Name of Applicant

Address of site 54 Morella Road, Whale Beach

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

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

on this the 30/9/20 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 54 Morella Road, Whale Beach
Report Date: 30/9/20
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>54 Morella Road, Whale Beach</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>54 Morella Road, Whale Beach</u>
Report Date: <u>30/9/20</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 22/9/20
(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 22/9/20
- ☒ 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 Lift at **54 Morella Road, Whale Beach**

1. Proposed Development

- 1.1** Construct a new lift and pathway on the NE side of the house by excavating to a maximum depth of ~2.9m.
- 1.2** Extend the deck on the NE side of the house.
- 1.3** Details of the proposed development are shown on 7 drawings prepared by Blue Sky Building Designs, project number 2020028, drawings numbered A101 to A107, DA Issue, dated 28/8/20.

2. Site Description

- 2.1** The site was inspected on the 22nd of September, 2020.
- 2.2** This residential property is on the high side of the road and has a SE aspect. It is located on the moderate to steeply graded middle reaches of a hillslope. The natural slope rises from the downhill property boundary to the uphill side of the house at an average angle of ~14° before increasing in grade to an angle of ~25° on the uphill side of the property. The slope above the property increases in grade and the slope below the property decreases in grade.
- 2.3** At the road frontage a concrete driveway runs up the slope to a carport (Photos 1 & 2). A stable timber retaining wall up to ~1.2m high supports the cut for the road. Stable low concrete crib retaining walls support the cut and fill for the driveway. The suspended two storey steel and timber clad house is supported by steel posts and concrete piers (Photos 1 & 3). The supporting posts and piers stand vertical and show no significant signs of movement (Photo 4). Hawksbury Sandstone bedrock is outcropping underneath the uphill side of the house and on the slope above

(Photo 5). A timber deck extends off the uphill side of the house. Sandstone bedrock, boulders and detached joints blocks are located on the steep slope uphill of the property in stable positions (Photo 6). No signs of slope instability were observed on the property. The adjoining neighbouring properties were observed to be in good order as seen from the street and subject property

3. Geology

The Sydney 1:100 000 Geological sheet indicates the site is underlain by Hawkesbury Sandstone although the contact of the Narrabeen Group is shown close to the downslope boundary and at a residential scale the map is not always accurate. Our testing and observations indicate the contact is at the uphill side of the house and the proposed works are underlain by Narrabeen Shale. The Narrabeen Group rocks are described as interbedded laminite, shale, and quartz to lithic quartz sandstone.

4. Subsurface Investigation

One auger hole was put down to identify the soil materials. Four Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock. The locations of the tests are shown on the site plan. It should be noted that a level of caution should be applied when interpreting DCP test results. The test will not pass through hard buried objects so in some instances it can be difficult to determine whether refusal has occurred on an obstruction in the profile or on the natural rock surface. This is not expected to be an issue for the testing on this site. 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 (~RL45.6) – AH1 (photo 7)

Depth (m)	Material Encountered
0.0 to 0.2	TOPSOIL , sandy soil, dark brown, moist, fine to medium grained with fine trace organic matter.
0.2 to 0.4	CLAYEY SAND , light orange/brown, moist.
0.4 to 0.6	SANDY CLAY , light orange/brown, firm to stiff, moist.

End of hole @ 0.6m in firm to stiff sandy clay. 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 (~RL44.9)	DCP 2 (~RL45.8)	DCP 3 (~RL46.0)	DCP 4 (~RL46.9)
0.0 to 0.3	4	3	16	10
0.3 to 0.6	5	6	10	10
0.6 to 0.9	5	6	8	14
0.9 to 1.2	7	8	10	13
1.2 to 1.5	18	24	23	30
1.5 to 1.8	21	30	20	#
1.8 to 2.1	28	#	28	
2.1 to 2.4	40		#	
2.4 to 2.7	#			
	End of Test @ 2.3m	End of Test @ 1.8m	End of Test @ 2.1m	End of Test @ 1.4m

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

DCP Notes:

DCP1 – End of Test @ 2.3m, DCP still very slowly going down, orange/brown clay and topsoil on moist tip.

DCP2 – End of Test @ 1.8m, DCP still very slowly going down, orange clay and white impact dust on moist tip.

DCP3 – End of Test @ 2.1m, DCP still very slowly going down, orange clay and white rock fragments on dry tip.

DCP4 – End of Test @ 1.4m, DCP still very slowly going down, orange and white rock fragments on dry tip.

5. Geological Observations/Interpretation

Where sandstone bedrock is visible at the uphill edge of the house and above, the surface features are controlled by the outcropping and underlying sandstone bedrock that steps up the property forming sub-horizontal benches between the steps. Where the grade is steeper, the steps are larger, and the benches narrower. Where the slope eases, the opposite is true. Under the footprint of the house and the slope below the Narrabeen Group of rocks are present. In the test locations, the ground materials consist of fill, sandy soil and clayey sand over sandy clays. Fill provides level platforms for the driveway and garden areas below the house. The clays merge into the weathered zone of the underlying rock at depths from between ~1.4m to ~2.1m below the current surface. The weathered zone of the underlying rock is interpreted as Extremely Low Strength Shale. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

Normal ground water seepage is expected to move over the buried surface of the rock and through the cracks in the rock.

Due to the slope and elevation of the block, the water table in the location is expected to be many metres below the proposed works.

7. Surface Water

No evidence of surface flows were observed on the property during the inspection. It is expected that normal sheet wash will move onto the site from above the property during heavy down pours. Due to the steep slope above this is expected to flow at high velocities.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The moderate to steeply graded slope that falls across the property and continues above and below is a potential hazard (**Hazard One**). The proposed excavation is a potential hazard until retaining structures are in

place (**Hazard Two**). The proposed excavation undercutting the footings of the existing house is a potential hazard (**Hazard Three**).

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two	Hazard Three
TYPE	The moderate to steeply graded slope that 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.	The proposed excavation undercutting the footings of the existing house.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (15%)	'Medium' (35%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})	'Moderate' (2×10^{-4})
RISK TO LIFE	8.3×10^{-7} /annum	8.3×10^{-6} /annum	8.3×10^{-6} /annum
COMMENTS	This level of risk is 'ACCEPTABLE'.	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 'UNACCEPTABLE'. To move 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 fall is to Morella Road. All stormwater from the proposed development is to be piped to the street drainage system through any tanks that may be required by the regulating authorities.

11. Excavations

An excavation to maximum depth of ~2.9m will be required to construct the proposed new lift and pathway. The excavation is expected to be through topsoil, clayey sand and sandy clay with Extremely Low Strength Shale expected at depths from between ~1.4m to ~2.1m below the current surface. It is envisaged that excavations through soil, sand, clay and Extremely Low Strength Shale can be carried out with a machine and bucket.

12. Vibrations

It is expected the proposed excavation will be carried out with an excavator and bucket and the vibrations produced will be below the threshold limit for building or infrastructure damage.

13. Excavations Support Requirements

An excavation to maximum depth of ~2.9m will be required to construct the proposed new lift and pathway. The excavation tapers to a depth of ~2.5m on the NE side of the uphill cut. Allowing for backwall-drainage, the excavation will be set back ~0.6m from three of the steel posts supporting the subject house, ~1.1m from the NE common boundary and ~2.3m from the NE neighbouring house. The supporting wall of the NE neighbouring house will be outside the zone of influence of the excavation, provided the foundations are a minimum depth of 0.2m below the surface. The subject house steel posts may be in the zone of influence of the excavation depending on their embedment depth. The NE common boundary will be within the zone of influence of the excavation. In this instance, the zone of influence is the area above a theoretical 45° line through clay/shale from the base of the excavation towards the surrounding boundaries or structures.

Building records will need to be obtained to determine the depth of the steel posts and to determine if they are within the zone of influence of the excavation. If so the house is to be propped and supported with beams or underpinned to beyond the zone of influence of the excavation, prior to the excavation commencing.

The NE cut is to be permanently or temporarily supported. The support is to be installed either before the excavation commences, or systematically in a staged retaining wall/shoring construction as the excavation progresses to ensure the integrity of the neighbouring property. If the support is temporary, it is to remain in place until the retaining wall is built as a sacrificial-type system.

For the NW and SW cuts, the topsoil and clayey sand portion of the excavation is to be battered temporarily at 1.0 Vertical to 2.0 Horizontal (26°) until the retaining walls are in place. Excavations through clay and Extremely Low Strength Shale will stand unsupported for a short period of time until the retaining walls are in place, provided the cut batters are kept from becoming saturated.

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.

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 materials and labour to construct the retaining walls 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. If the retaining walls are not constructed within a few days of the excavation being completed temporary shoring will be required.

All excavation spoil is to be removed from site or be supported by engineered retaining walls.

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
Soil and Sand	20	0.40	0.55
Residual Clays	20	0.35	0.45
Extremely Low Strength Shale	22	0.25	0.35

For rock classes refer to Pells et al "Design Loadings for Foundations on Shale and Sandstone in the Sydney Region". Australian Geomechanics Journal 1978.

It is to be noted that the earth pressures in Table 1 assume a level surface above the structure, do not account for any surcharge loads and assume retaining structures are fully drained.

Rock strength and relevant earth pressure coefficients are to be confirmed on site by the geotechnical consultant.

All retaining structures are to have sufficient back-wall drainage and be backfilled immediately behind the structure with free draining material (such as gravel). This material is to be wrapped in a non-woven Geotextile fabric (i.e. Bidim A34 or similar), to prevent the drainage from becoming clogged with silt and clay. If no back-wall drainage is installed in retaining structures the full hydrostatic pressures are to be accounted for in the retaining structure design.

15. Foundations

The proposed lift and uphill portion of the walkway/retaining walls are expected to be seated in Extremely Low Strength Shale. This is a suitable bearing material. A maximum allowable bearing pressure of 600kPa can be assumed for footings on Extremely Low Strength Shale. The downhill portion of the walkway/retaining walls may be supported off the exposed sandy clay. A maximum allowable bearing pressure of 200kPa can be assumed for footings on sandy clay.

Any new footings that may be required for the proposed deck extension can be supported on piers taken to Extremely Low Strength Shale.

Ideally, footings should be founded on the same footing material across 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.

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.

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. 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.

- 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 is still onsite and before steel reinforcing is placed or concrete is poured.

White Geotechnical Group Pty Ltd.



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

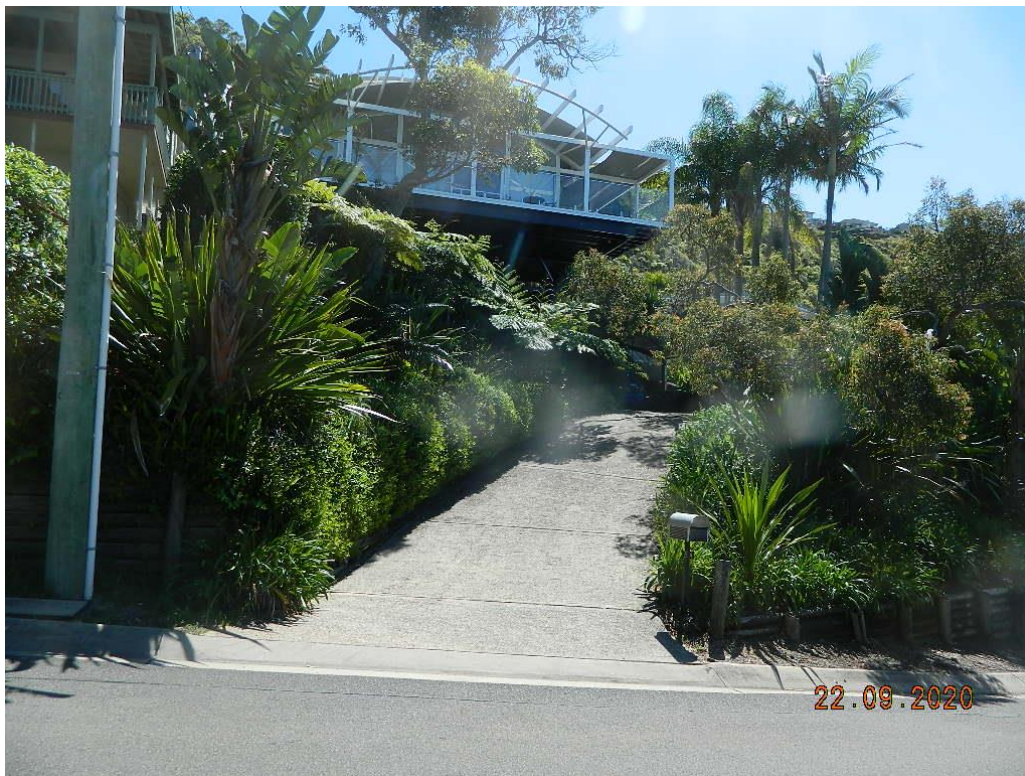


Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7: AH1 – 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:

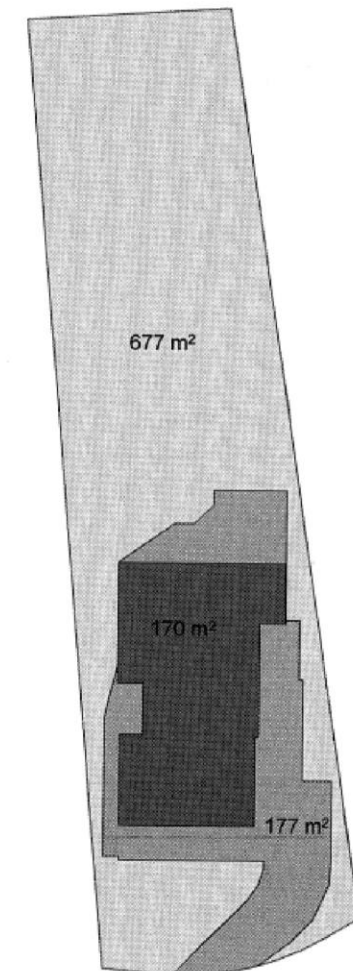
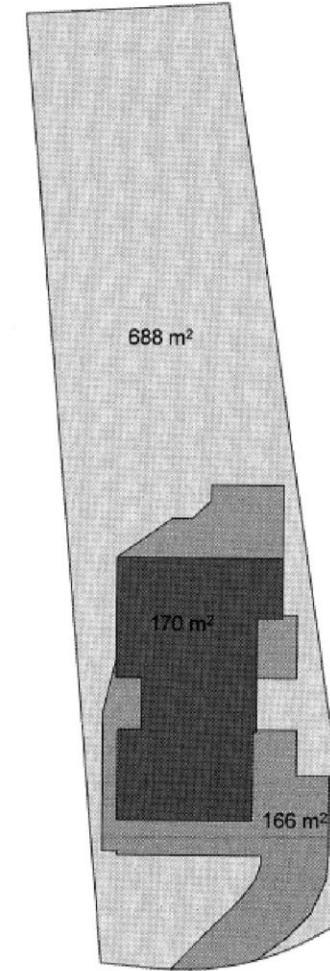
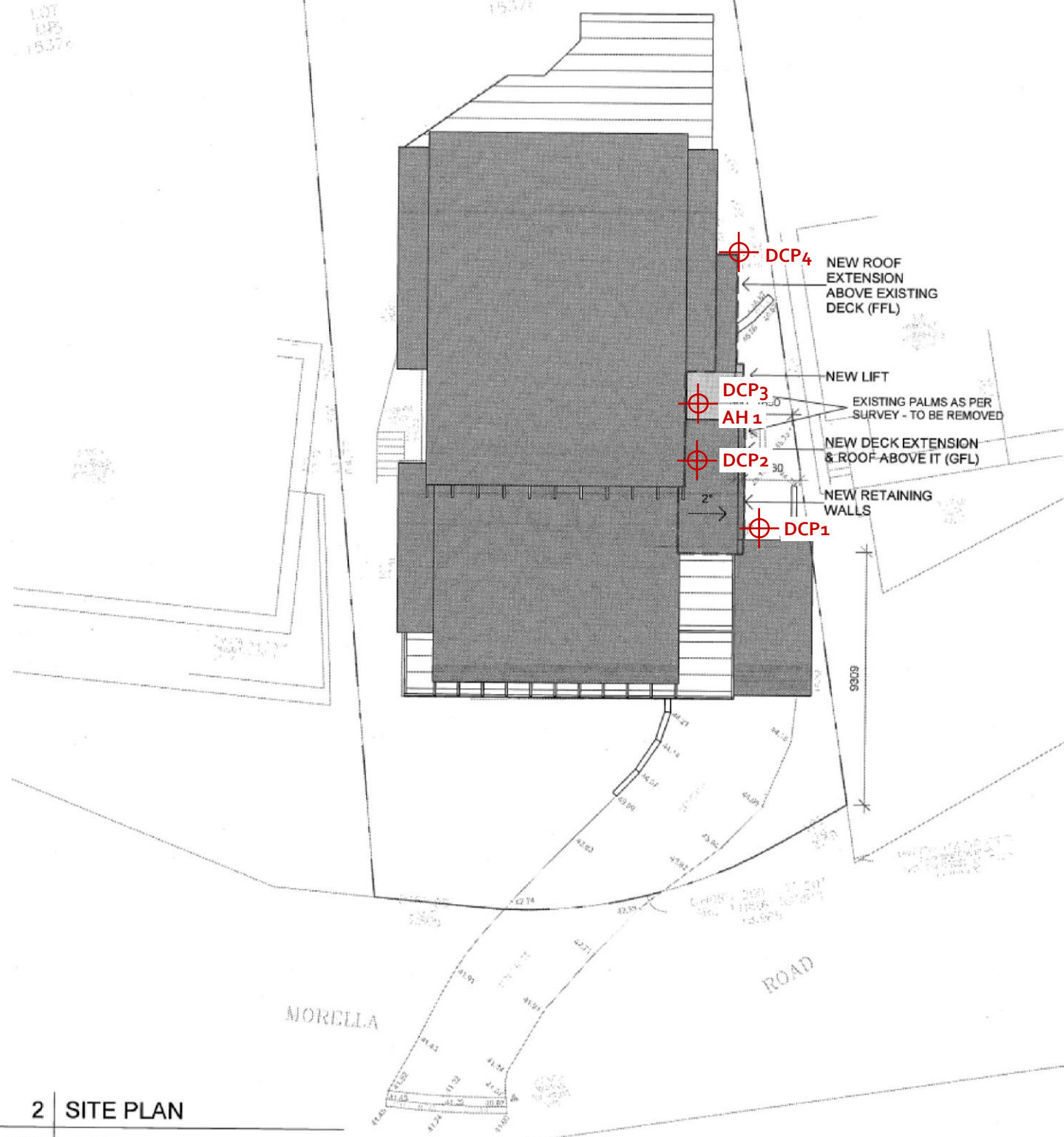
- If upon the commencement of the works the subsurface ground or ground water conditions prove different from those described in this report, it is advisable to contact White Geotechnical Group immediately, as problems relating to the ground works phase of construction are far easier and less costly 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.

SITE PLAN – showing test locations

LOT
15376

LOT
15376

LOT
15376



3 SITE PLAN CALC. - EXISTING

A101 1:500

4 SITE PLAN CALC. - PROPOSED

A101 1:500



Site Plan Calc. Legend

1:500

ALL BUILDING WORKS MUST BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF AUSTRALIA (BCA) AND AUSTRALIAN STANDARDS

CALCULATION TABLE

ZONE	E4 - ENVIRONMENTAL LIVING		
HAZARDS	GEOTECHNICAL HAZARD (H1), BUSHFIRE PRONE LAND (VEG. CATEGORY 2)		
SITE AREA	1024 m²		
MAX. BUILDING HEIGHT	Hmax = 8.5 m		
BUILDING ENVELOPE	3.5m - SIDE BOUNDARY ENVELOPES		
	EXISTING	DEMOLISHED	PROPOSED
TOTAL FLOOR AREA	203 m²	-	203 m²
SITE COVERAGE	170 m² / 16.6%	-	170 m² / 16.6%
HARD SURFACE	166 m² / 16.2%	-	177 m² / 17.3%
SOFT LANDSCAPING	688 m² / 67.2%	-	677 m² / 66.1%

2 SITE PLAN

A101 1:200

Do not scale from plans. All dimensions and levels shown on plan are subject to confirmation on site.

ISSUE	DATE	DESCRIPTION	DRWN	CHKD
-	23.09.2020	DA ISSUE DRAFT	MN	-

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PROJECT TITLE: Lift addition

PROJECT NO.: 2020028

AT: 54 Morella Rd, Whale Beach

FOR: Doug Flynn

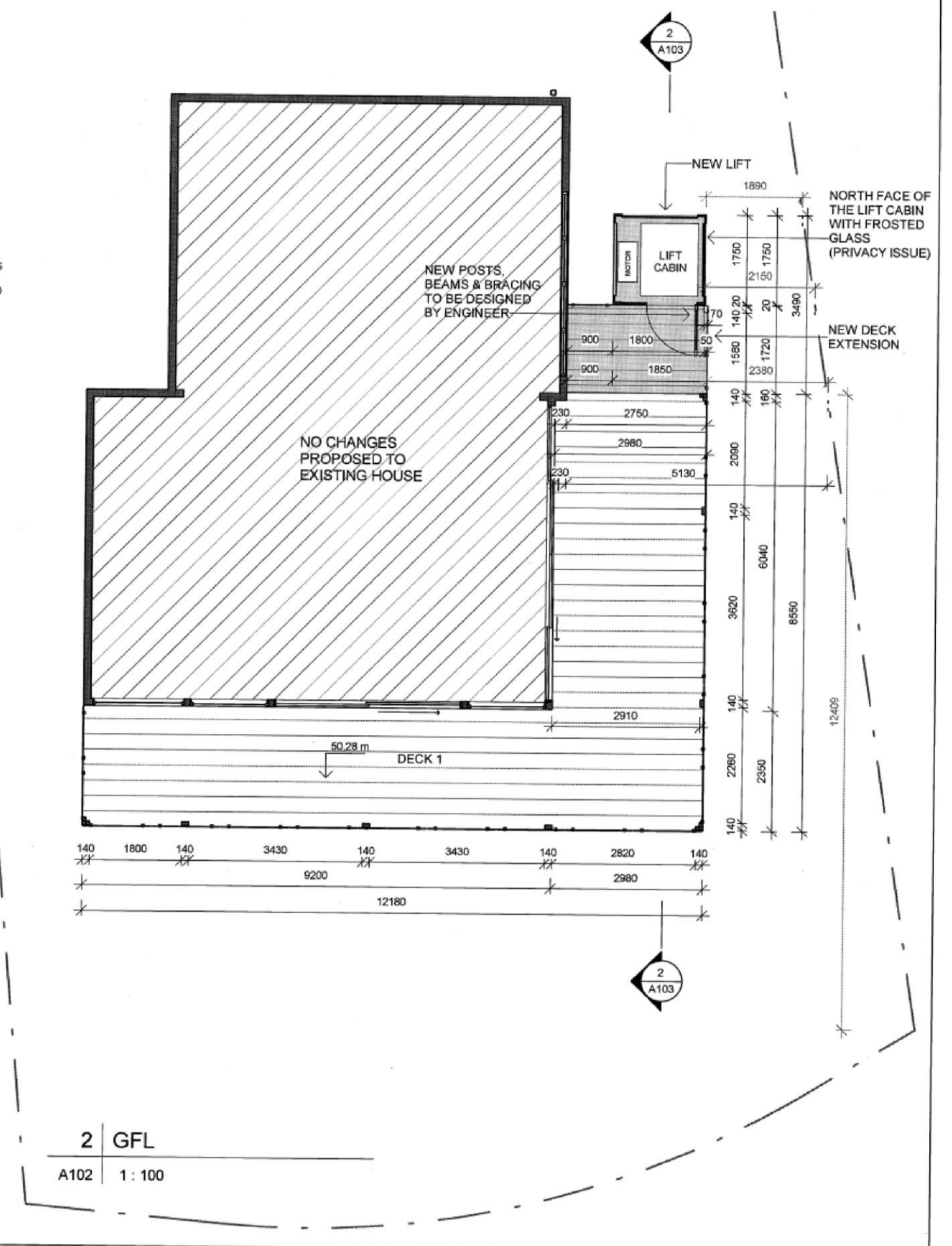
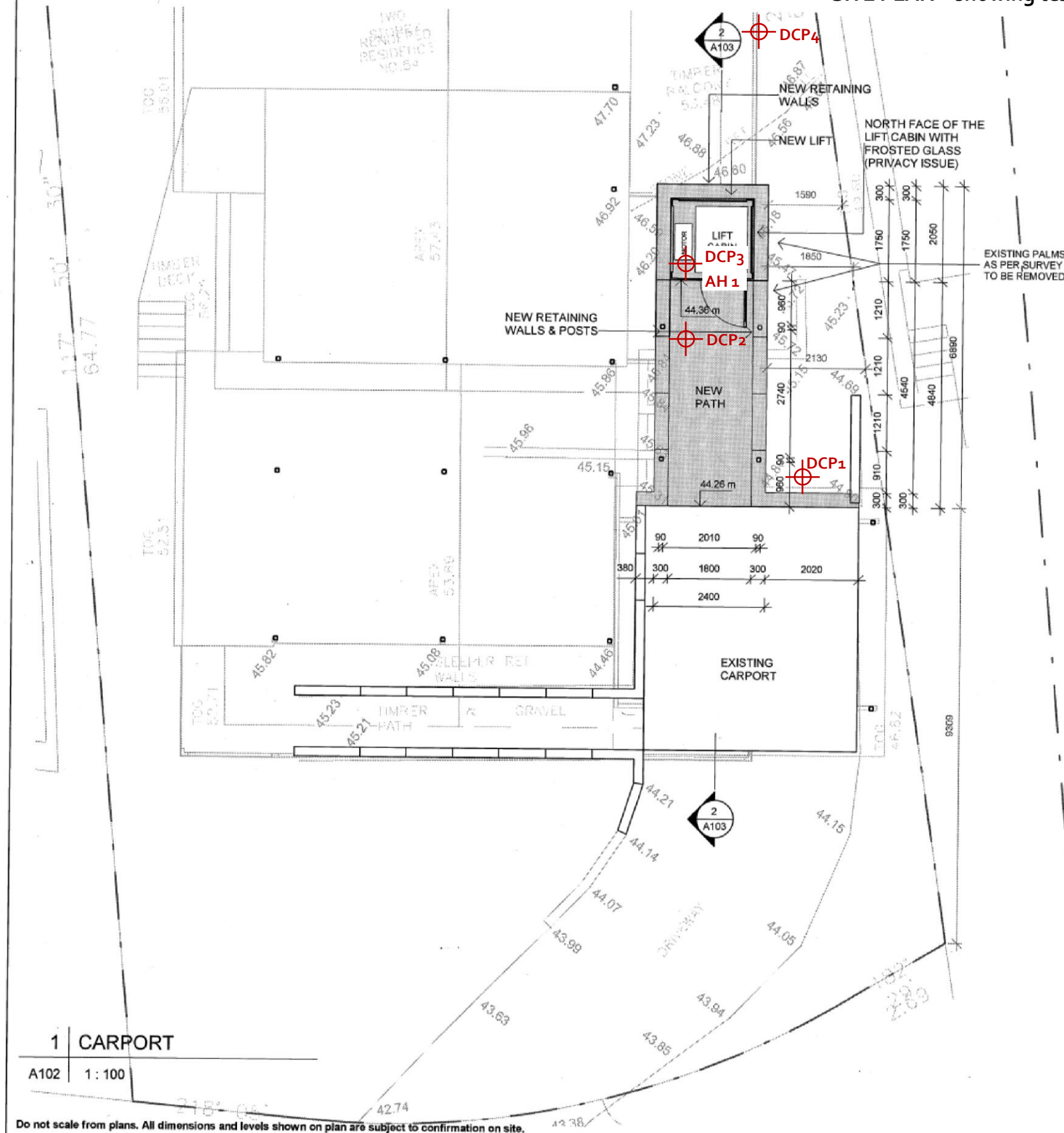
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SHEET NO: A101

SCALE A3: As indicated



SITE PLAN – showing test locations



ISSUE	DATE	DESCRIPTION	DRWN	CHKD
-	23.09.2020	DA ISSUE DRAFT	MN	-

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PROJECT TITLE: Lift addition

PROJECT NO.: 2020028

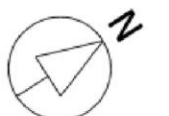
AT: 54 Morella Rd, Whale Beach

FOR: Doug Flynn

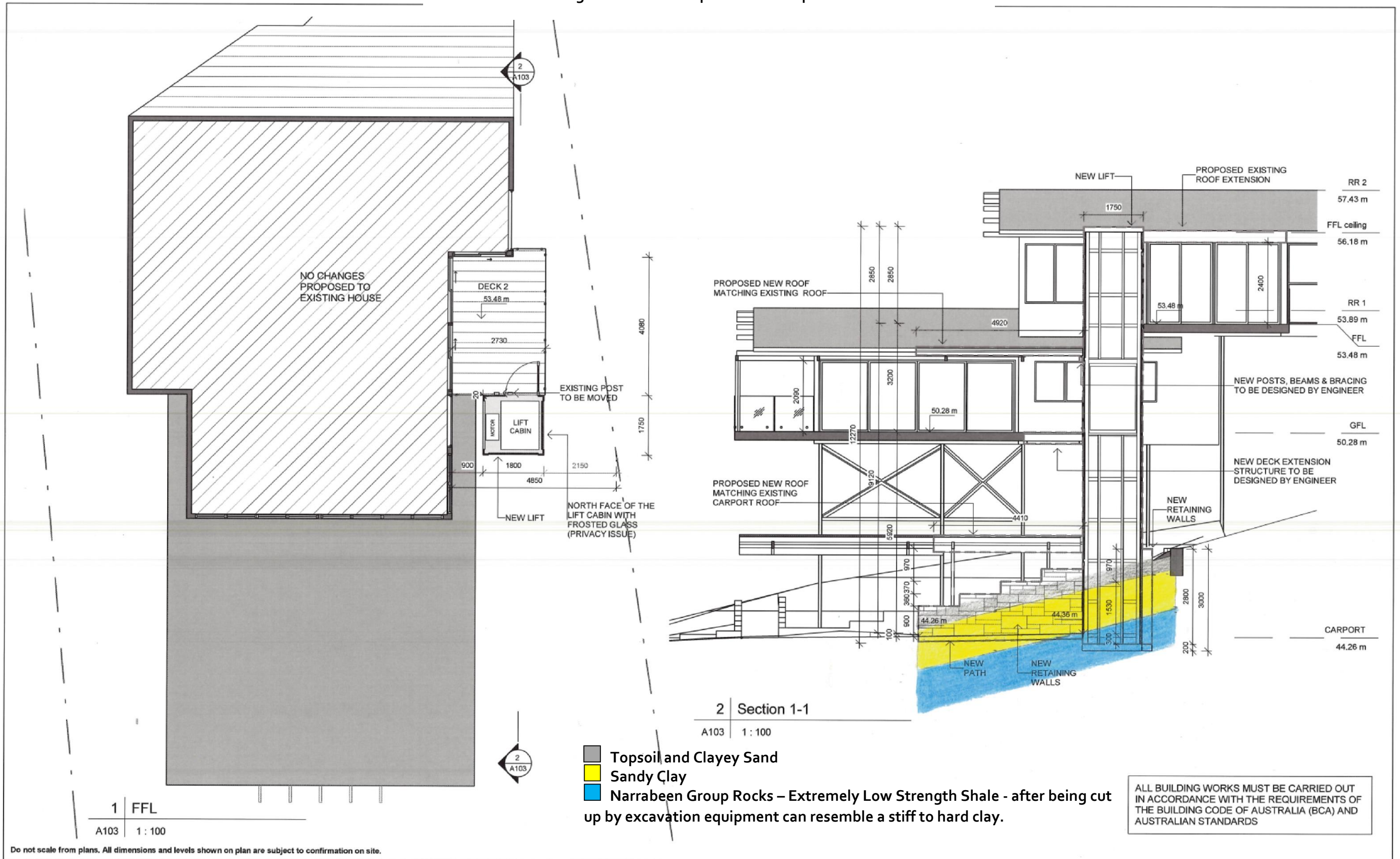
SHEET TITLE: CARPORT & GFL PLANS

SHEET NO: A102

SCALE A3: 1:100



TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



ISSUE	DATE	DESCRIPTION	DRWN	CHKD
-	23.09.2020	DA ISSUE DRAFT	MN	-

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PROJECT TITLE: Lift addition

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AT: 54 Morella Rd, Whale Beach

FOR: Doug Flynn

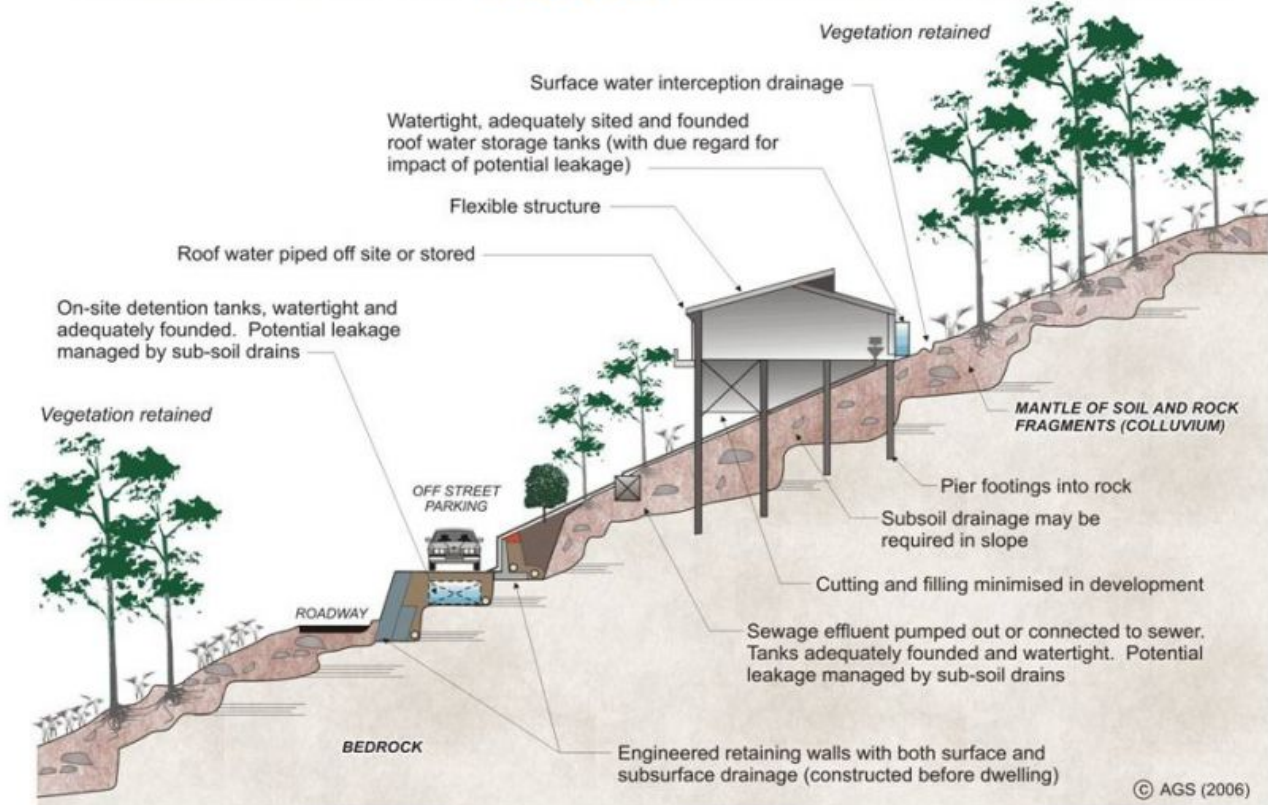
SHEET TITLE: FFL PLAN & SECTION

SHEET NO: A103

SCALE A3: 1 : 100



EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE

