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

Development Application for _____
Name of Applicant

Address of site 34 Lumeah Avenue, Elanora Heights

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 1/3/21 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 **34 Lumeah Avenue, Elanora Heights**
Report Date: 1/3/21

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 34 Lumeah Avenue, Elanora Heights

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 **34 Lumeah Avenue, Elanora Heights**

Report Date: 1/3/21

Author: BEN WHITE

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

Please mark appropriate box

- ☒ Comprehensive site mapping conducted **9/12/20** (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 **9/12/20**
- ☒ 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 House and Pool at **34 Lumeah Avenue, Elanora Heights**

1. Proposed Development

1.1 Demolish the existing house, leaving the existing garage walls and garage foundations intact.

1.2 Construct a new house. Construct a new store room and lift connecting the garage level and ground floor level of the house.

1.3 Install a new pool by excavating to a maximum depth of ~2m.

1.4 Details of the proposed development are shown on 13 drawings prepared by Envirotecture, project number K35, drawings numbered 10.01, 11.01 to 03, 21.01 to 03, 30.01, 30.02, 40.01, 60.01, 63.01, 70.01 and 91.01, Revision A, dated 23/2/21.

2. Site Description

2.1 The site was inspected on the 9th of December, 2020.

2.2 This residential property is on the high side of the road and has a W aspect. It is located on the gently graded middle reaches of a hillslope. The natural slope falls across the property at an average angle of ~6°. The slopes above and below the property continue at similar angles.

2.3 At the road frontage, a concrete driveway runs to a garage under the downhill side of the house (Photos 1 & 2). Between the road frontage and the house is a gently sloping lawn. Medium Strength Hawkesbury Sandstone bedrock is outcropping on the S side of the house (Photo 3). The single storey brick house with garage below is supported by brick walls and a concrete slab (Photos 2 & 4). The external supporting walls show no significant signs of movement. A concrete patio with roof above extends

off the uphill side of the house (Photo 5). A gently sloping lawn extends from the uphill side of the patio (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. It is described as a medium to coarse grained quartz sandstone with very minor shale and laminite lenses.

4. Subsurface Investigation

One auger hole was put down to identify the soil materials. Five 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:

AUGER HOLE 1 (~RL78.6) **–** AH1 (photo 7)

Depth (m)	Material Encountered
0.0 to 0.6	**TOPSOIL**, sandy soil, dark brown, moist, fine to medium grained with fine trace organic matter.
0.6 to 1.0	**SANDY CLAY**, light orange/brown, soft to firm, damp.
1.0 to 1.3	**SANDY CLAY**, white and orange red, firm to stiff, damp.

Refusal @ 1.3m auger grinding on rock surface. 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** (~RL75.4)	**DCP 2** (~RL76.0)	**DCP 3** (~RL78.1)	**DCP 4** (~RL78.6)	**DCP 5** (~RL77.6)
0.0 to 0.3	9	#	7	4	5
0.3 to 0.6	8		21	5	8
0.6 to 0.9	15		33	6	21
0.9 to 1.2	15		40	15	40
1.2 to 1.5	#		#	10	#
1.5 to 1.8				#	
	Refusal @ 0.9m	Rock exposed at surface	End of Test @ 1.1m	Refusal @ 1.3m	End of Test @ 1.2m

#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 @ 0.9m, DCP bouncing off rock surface, white sandstone fragments on dry tip.

DCP2 – Rock exposed at surface.

DCP3 – End of Test @ 1.1m, DCP still very slowly going down, white sandstone fragments on dry tip.

DCP4 – Refusal on rock @ 1.3m, DCP bouncing thudding, white impact dust and dark brown soil on dry tip

DCP5 – End of Test @ 1.2m, DCP still very slowly going down, white impact dust on dry tip and orange red clay on collar.

5. Geological Observations/Interpretation

The surface features of the block are controlled by the underlying sandstone bedrock that steps down the property forming sub-horizontal benches between the steps. Where the grade is steeper, the steps are larger and the benches narrower. Where the slope eases, the opposite is true. The rock is overlain by sandy topsoil and sandy clays that fill the bench step formation. In the test locations, the depth to rock ranged from the surface to ~1.3m below. The sandstone underlying the property is estimated to be Medium Strength or better. 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.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed above, below or beside the property. The proposed excavation is a potential hazard until retaining structures are in place (**Hazard One**). The vibrations from the proposed excavation are a potential hazard (**Hazard Two**).

RISK ANALYSIS SUMMARY ON NEXT PAGE

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The proposed excavation for the pool collapsing onto the worksite before retaining structures are in place.	The vibrations produced during the proposed excavation for the pool impacting on the surrounding structures.
LIKELIHOOD	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (15%)	'Medium' (15%)
RISK TO PROPERTY	'Moderate' (2×10^{-4})	'Moderate' (2×10^{-4})
RISK TO LIFE	8.3×10^{-6}/annum	5.3×10^{-7}/annum
COMMENTS	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 property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels the recommendations in **Sections 11 & 12** are to be followed.

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

9. Suitability of the Proposed Development for the Site

The proposed development is suitable for the site. No geotechnical hazards will be created by the completion of the proposed development provided it is carried out in accordance with the requirements of this report and good engineering and building practice.

10. Stormwater

The fall is to Lumeah Avenue. 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 a maximum depth of ~2m will be required to install the proposed pool. The excavation is expected to be through topsoil and sandy clay, with Medium Strength Sandstone expected at depths from between ~1.2m to ~1.3m below the current surface.

It is envisaged that excavations through soil and clay can be carried out with a machine and bucket and excavations through Medium Strength Sandstone or better will require grinding or rock sawing and breaking.

12. Vibrations

Possible vibrations generated during excavations through soil and clay will be below the threshold limit for building damage.

Excavations through Medium Strength Rock or better should be carried out to minimise the potential to cause vibration damage to the N neighbouring house. The excavation for the pool is set back ~2.5m from the N neighbouring house. Close controls by the contractor over rock excavation are recommended so excessive vibrations are not generated.

Excavation methods are to be used that limit peak particle velocity to 10mm/sec at the property boundaries. Vibration monitoring will be required to verify this is achieved.

If a milling head is used to grind the rock, vibration monitoring will not be required. Alternatively, if rock sawing is carried out around the perimeter of the excavation boundaries in not less than 1.0m lifts, a rock hammer up to 300kg could be used to break the rock without vibration monitoring. Peak particle velocity will be less than 10mm/sec at the property boundaries using this method provided the saw cuts are kept well below the rock to broken.

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

13. Excavations Support Requirements

An excavation to maximum depth of ~2m will be required to install the proposed pool. Given the depth to rock shown by the test results, the excavation is set back sufficiently from the surrounding structures and boundaries.

The cut batters through soil and clay will stand at near-vertical angles for a short period of time until the pool structure is installed, provided the cut batters are kept from becoming saturated. Medium Strength Sandstone or better will stand at vertical angles unsupported subject to approval by the geotechnical consultant.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. All unsupported cut batters through soil and clay 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 pool 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. If the cut batters remain unsupported for more than a few days before the commencement of pool construction they are to be temporarily supported with typical pool shoring such as form ply or similar until the pool structure is in place.

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 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
Topsoil	20	0.40	0.55
Residual Clays	20	0.35	0.45
Medium Strength Sandstone	24	0.00	0.01

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

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

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

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

15. Foundations

The proposed pool is expected to be seated in Medium Strength Sandstone. This is a suitable bearing material. Any new foundations for the proposed house is to be supported on spread footings or piers taken to Medium Strength Sandstone. A maximum allowable bearing pressure of 1000kPa can be assumed for footings on Medium Strength Sandstone.

The foundations of the existing garage are currently unknown (but are expected to be supported on Medium Strength Sandstone). 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.

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

NOTE: If the contractor is unsure of the footing material required it is more cost effective to get the geotechnical 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 inspection as well as council geotechnical policy. We cannot provide geotechnical certification for the Occupation Certificate if the following inspection has not been carried out during the construction process.

- 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.

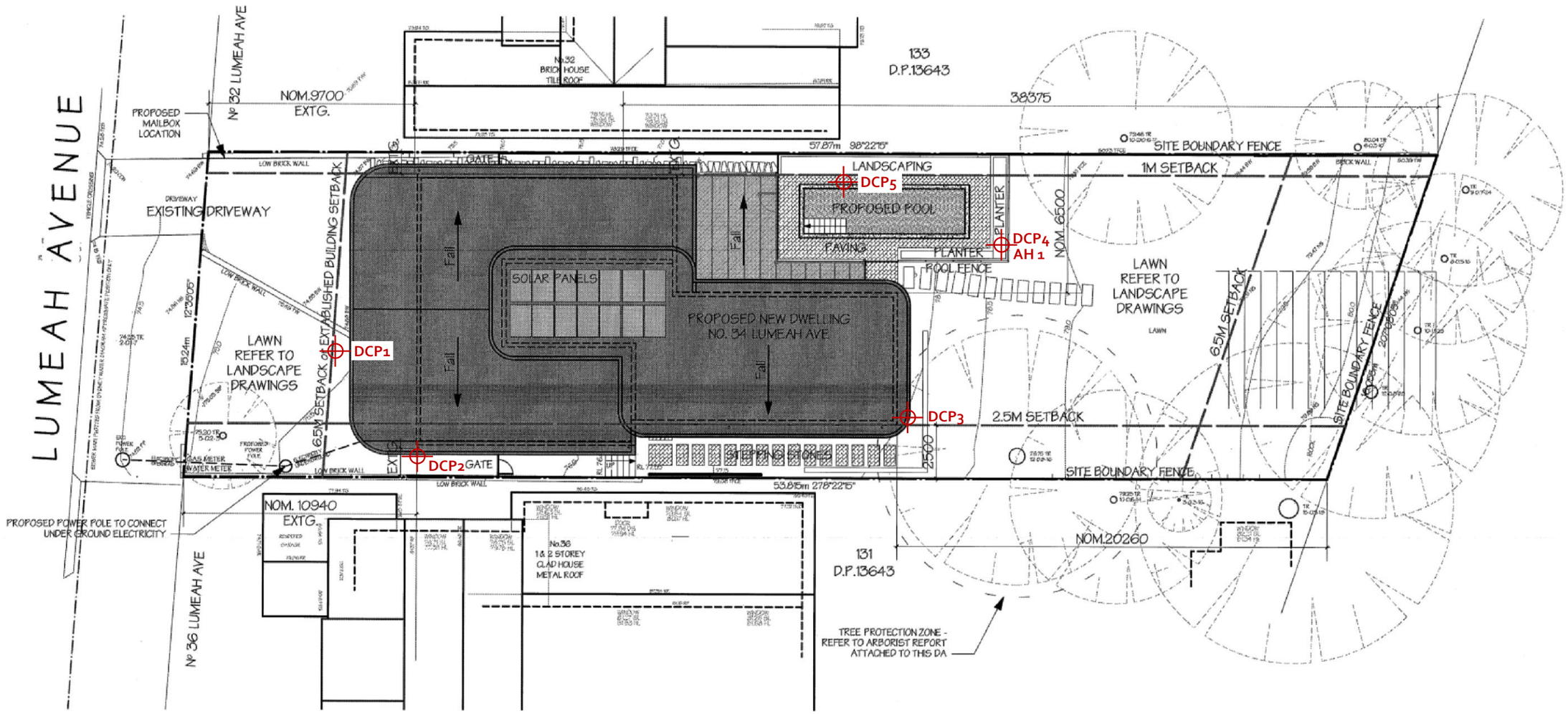
- This report should not be applied to any other project other than that outlined in section 1.0.

- 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.

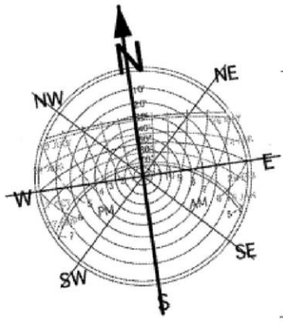
SITE PLAN – showing test locations

GENERAL NOTES
- BUILDING TO INCORPORATE BASIX COMMITMENTS TO COMPLY WITH THE ATTACHED BASIX CERTIFICATE NUMBER: 1163084S DATED 23 FEBRUARY 2021
- SMOKE ALARMS TO BE INSTALLED IN ACCORDANCE WITH AS 3786-2014 'SMOKE ALARMS' AND PART 3.7.2 - 'SMOKE ALARMS' OF THE BCA (NB. SMOKE ALARMS TO BE INTERCONNECTED WHERE THERE IS MORE THAN ONE ALARM
- TERMITE MANAGEMENT TO COMPLY WITH AS3660-2014 'TERMITE MANAGEMENT - NEW BUILDING WORK'
- GLAZING TO COMPLY WITH AS1288-2006 'GLASS IN BUILDINGS - SELECTION AND INSTALLATION' AND AS 2047-1999 'WINDOWS IN BUILDINGS - SELECTION AND INSTALLATION'
- WATERPROOFING OF WET AREAS TO COMPLY WITH AS3740 'WATERPROOFING OF WET AREAS IN RESIDENTIAL BUILDINGS'. NO AIR DRIED LIQUID APPLIED TO MEMBRANES SHALL BE USED.
- ALL HOT WATER PIPES SHOULD BE INSULATED AS PER AS3500.4:2018
- ALL REQUIRED FACILITIES FOR A CLASS 1 BUILDING TO BE INSTALLED AS REQUIRED BY PART 3.8.2.2 'REQUIRED FACILITIES' OF THE BCA
- DOORS TO FULLY ENCLOSED SANITARY COMPARTMENTS TO COMPLY WITH PART 3.8.3 'FACILITIES' OF THE BCA
- STAIR CONSTRUCTION TO COMPLY WITH PART 3.9.1 - 'STAIR CONSTRUCTION OF THE BCA (NB. ALL STAIR TREADS TO HAVE A SURFACE THAT IS SLIP RESISTANT IN ACCORDANCE WITH PART 3.9.1.3 OF THE BCA
- BALUSTRADES CONSTRUCTION TO COMPLY WITH PART 3.9.2.3 - 'BALUSTRADES' OF THE BCA
- ALL NEW OPENABLE WINDOWS WITHIN A BEDROOM WITH A FLOOR LEVEL 2M OR MORE ABOVE A SURFACE BENEATH TO BE PROTECTED IN ACCORDANCE WITH PART 3.9.2.5 OF THE BCA
- DAMP PROOF MEMBRANE MUST BE 'HIGH IMPACT', 0.2mm THICK POLYETHYLENE FILM
- ALL BUILDING WORK TO BE LOCATED WHOLLY WITHIN THE ALLOTMENT BOUNDARIES



1 SITE PLAN 1:200

DRAWING NOTES:
- REFER TO ROOF PLAN ON "A3 21.03" FOR FURTHER DETAIL AND INFORMATION
- REFER TO ATTACHED LANDSCAPE PLAN FOR FURTHER DETAILS ON LANDSCAPING
- REFER TO STORMWATER PLANS PROVIDED WITH THIS APPLICATION FOR FURTHER INFORMATION ON STORMWATER INFRASTRUCTURE

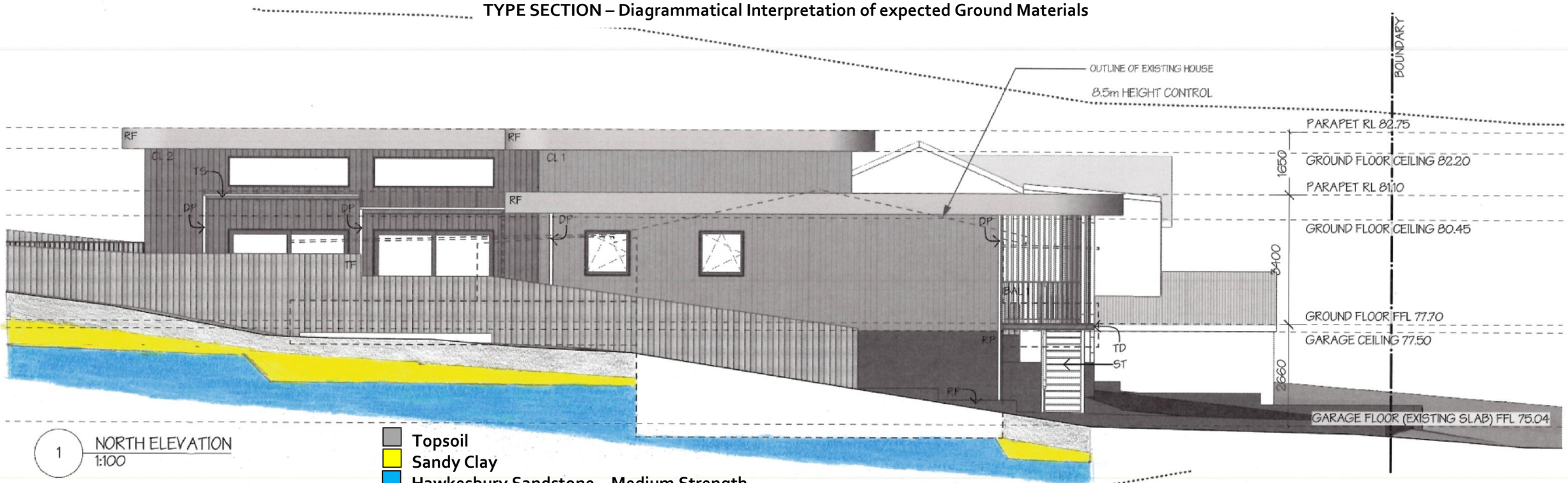


NOT FOR CONSTRUCTION

REV# A	BY KR	DATE 23/2/21	DA SUBMISSION	PROJECT #	K35
PROJECT NEW DWELLING				PROJECT STATUS	DA
ADDRESS 34 LUMEAH AVE, ELANORA HEIGHTS					
CLIENT ANTJE KUEHNAST & MARKUS BISPING		DATE # FEBRUARY 2021		DRG #	A3 11.03
		SCALE AS SHOWN @ A3			
DWG PROPOSED SITE PLAN		DRAWN KR		REVISION #	A
		CHKD AM			

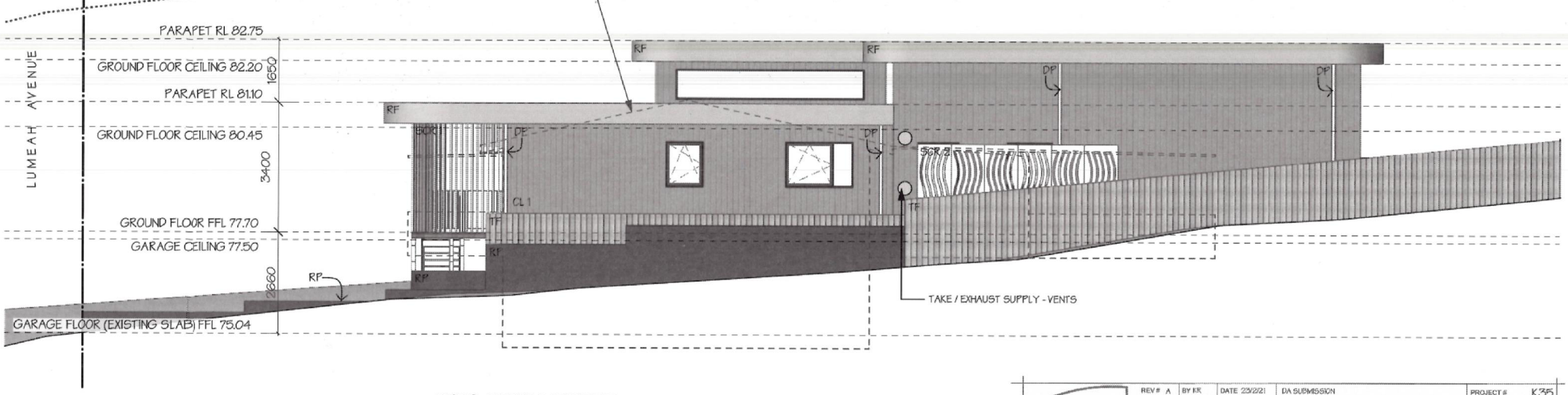
envirotecture
envirotecture projects pty ltd ABN 49 078 853 577
48 KALANG ROAD ELANORA HTS NSW 2101
OFFICE 02 9913 3997
www.envirotecture.com.au
ACCREDITED BUILDING DESIGNER: DICK CLARKE #6029
NOMINATED ARCHITECT: ANDY MARLOW NSW #5597 TAS #1280

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



1 NORTH ELEVATION
1:100

Topsoil
Sandy Clay
Hawkesbury Sandstone – Medium Strength



2 SOUTH ELEVATION
1:100

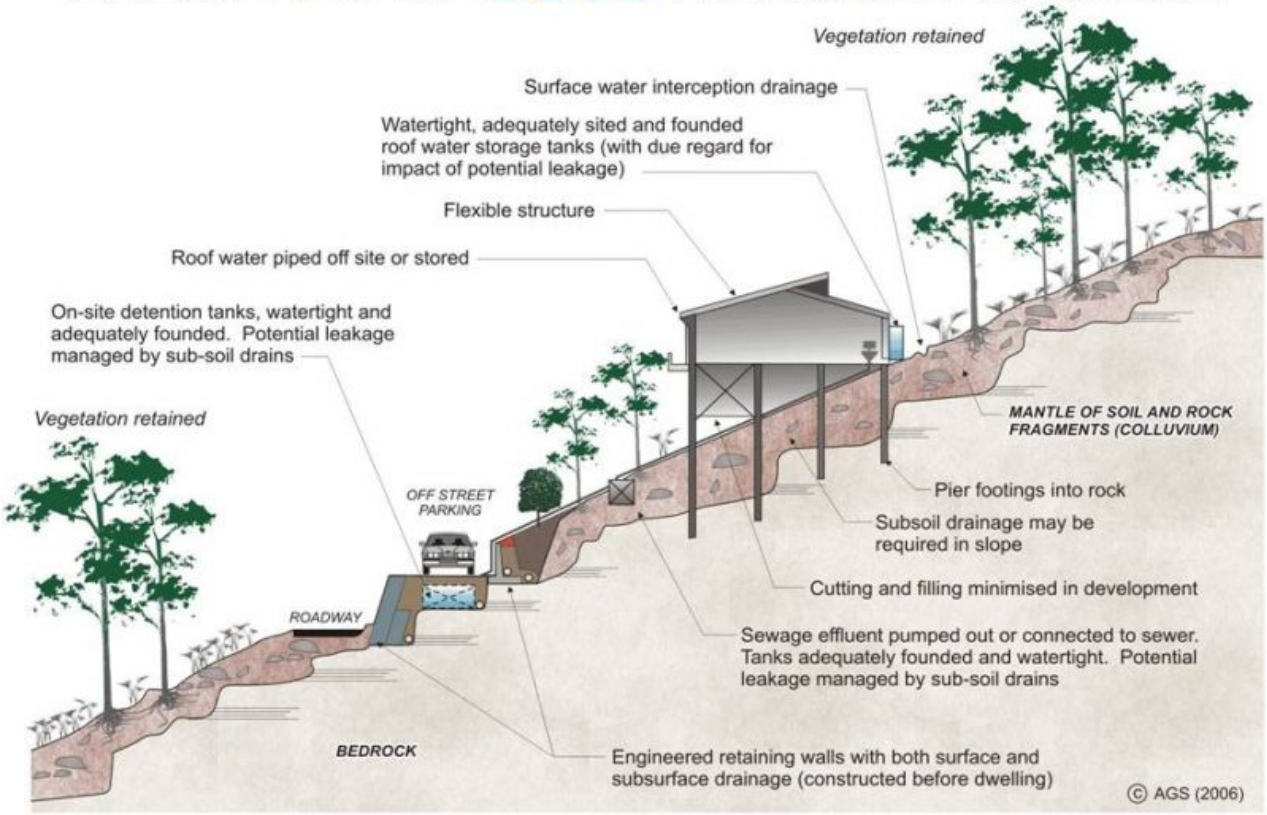
LEGEND - MATERIALS AND FINISHES

CL 1	CLADDING - VERTICAL GROOVES MID GREY PAINT FINISH	SCR 1	VERTICAL TIMBER SCREEN - PAINT FINISH - MID GREY TONE
CL 2	CLADDING - AUSTRALIAN HARDWOOD TIMBER	SCR 2	DECORATIVE METAL SCREEN - PAINT FINISH - MID GREY TONE
DP	DOWNPIPE - COLORBOND TO MATCH ROOF COLOUR	ST	STAIR - TIMBER PAINT FINISH - DARK TONE
GD	GARAGE DOOR - PAINT FINISH TO MATCH ADJACENT WALL	TD	TIMBER DECK OR VERANDAH
PF 2	POOL FENCE - METAL	TS	TIMBER STRUCTURE - POLYCARBONATE ROOF OVER
PF 1	POOL FENCE - GLASS	TF	TIMBER FENCE
RF	ROOF - TIMBER CLAD FACIA - MID GREY TONE PAINT FINISH		
RP	RENDER AND PAINT (DULUX MONUMENT COLOUR)		

envirotecture
envirotecture projects pty ltd ABN 49 078 853 577
48 KALANG ROAD ELANORA HTS NSW 2101
OFFICE 02 9913 3997
www.envirotecture.com.au
ACCREDITED BUILDING DESIGNER: DICK CLARKE #6029
NOMINATED ARCHITECT: ANDY MARLOW NSW #9597 TAS #1280

REV # A	BY KR	DATE 23/2/21	DA SUBMISSION	PROJECT #	K35
PROJECT	NEW DWELLING			PROJECT STATUS	DA
ADDRESS	34 LUMEAH AVE, ELANORA HEIGHTS				
CLIENT	ANTJE KUEHNAST & MARKUS BISPING		DATE # FEBRUARY 2021	DRG #	A3 30.01
			SCALE A3 SHOWN @ A3		
DWG	ELEVATIONS		DRAWN KR	REVISION #	A
			CHKD AM		

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE