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

Development Application for _____
Name of Applicant

Address of site 41 Wallumatta Road, Newport

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 2/12/20 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 **41 Wallumatta Road, Newport**
Report Date: 2/12/20

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 41 Wallumatta Road, Newport

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 **41 Wallumatta Road, Newport**

Report Date: 2/12/20

Author: BEN WHITE

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

Please mark appropriate box

- ☒ Comprehensive site mapping conducted **23/11/20** (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 **23/11/20**
- ☒ 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:

Alterations and Additions at **41 Wallumatta Road, Newport**

1. Proposed Development

1.1 Construct two new parking platforms. One of the parking platforms is suspended.

1.2 Extend the house on the uphill side.

1.3 Construct a new awning over the existing deck on the downhill side of the house.

1.4 Construct a new split level secondary dwelling with suspended decks by excavating to a maximum depth of ~1.5m.

1.5 Construct a suspended timber walkway connecting the house to the proposed secondary dwelling.

1.6 Details of the proposed development are shown on 9 drawings prepared by Belli Design Building Plans, dated May 2020. Drawing number 2001-00 is revision P1, drawings numbered 2001-01 and 2001-02 are Revision P5, drawings numbered 2001-03 and 2001-04 are Revision P4 and drawings numbered 2001-05 to 2001-08 are Revision P3.

2. Site Description

2.1 The site was inspected on the 23rd of November, 2020.

2.2 This residential property is on the high side of the road and has a S aspect. It is located on the moderately graded middle reaches of a hillslope. The natural slope falls across the property at an average angle of ~17°. The slope above the property continues at similar angles and the slope below the property gradually decreases in grade.

2.3 At the road frontage a concrete driveway runs down the slope to the house (Photos 1 & 2). Fill provides a level platform for a pavement next to the driveway (Photo 3). A stable rendered brick retaining wall up to ~2.1m high supports the fill. The two storey brick and timber clad house is supported by brick walls (Photos 2, 4 & 5). The external supporting walls show no significant signs of movement. A suspended deck supported by steel posts in good condition extends off the downhill side of the house (Photo 5). Fill provides a level lawn and pavement on the downhill side of the house (Photo 6). The fill is supported by stable sandstone flagging and rendered retaining walls up to ~1.3m high. A stable suspended timber deck supported by timber posts is located on the downhill side of the filled lawn (Photo 7). Medium Strength Hawkesbury Sandstone bedrock outcrops on the downhill side of the property (Photos 7 & 8). Stable sandstone joint blocks are embedded in the moderate slope on the downhill side of the property (Photos 9 & 10). No signs of slope instability that could have occurred since the site was developed 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. Ten Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock. The 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 (~RL50.1) **–** AH1 (photo 11)

Depth (m)	**Material Encountered**
0.0 to 0.5	**TOPSOIL**, sandy soil, dark brown, moist, fine to medium grained with fine trace organic matter.
0.5 to 0.6	**CLAYEY SAND**, grey and orange, damp.

Refusal @ 0.6m in clayey sand. 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** (~RL60.3)	**DCP 2** (~RL56.1)	**DCP 3** (~RL58.4)	**DCP 4** (~RL51.9)	**DCP 5** (~RL49.8)
0.0 to 0.3	4	17	3	9	#
0.3 to 0.6	15	8	3	10	
0.6 to 0.9	31	#	15	#	
0.9 to 1.2	28		18		
1.2 to 1.5	29		#		
1.5 to 1.8	18				
1.8 to 2.1	#				
	Refusal on rock @ 1.7m	Refusal on rock @ 0.4m	Refusal on rock @ 1.0m	Refusal on rock @ 0.5m	Rock exposed at surface

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

DCP TEST RESULTS CONTINUE 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 6** (~RL47.8)	**DCP 7** (~RL45.0)	**DCP 8** (~RL46.6)	**DCP 9** (~RL50.1)	**DCP 10** (~RL52.0)
0.0 to 0.3	6	7	4	3	5
0.3 to 0.6	9	15	19	10	#
0.6 to 0.9	2	#	19	19	
0.9 to 1.2	#		10	10	
1.2 to 1.5			#	16	
1.5 to 1.8				12	
1.8 to 2.1				#	
	Refusal on rock @ 0.6m	Refusal on rock @ 0.4m	Refusal on rock @ 1.0m	Refusal on rock @ 1.6m	Refusal on rock @ 0.2m

DCP Notes:

DCP1 – Refusal on rock @ 1.7m, DCP bouncing off rock surface, brown orange and white sandstone fragments on dry tip.

DCP2 – Refusal on rock @ 0.4m, DCP bouncing off rock surface, white impact dust on dry tip.

DCP3 – Refusal on rock @ 1.0m, DCP bouncing off rock surface, white sandstone fragments on dry tip.

DCP4 – Refusal on rock @ 0.5m, DCP bouncing off rock surface, brown orange sandstone fragments on dry tip.

DCP5 – Rock exposed at surface.

DCP6 – Refusal on rock @ 0.6m, DCP bouncing off rock surface, white sandstone fragments on dry tip.

DCP7 – Refusal on rock @ 0.4m, DCP bouncing off rock surface, brown soil on dry tip.

DCP8 – Refusal on rock @ 1.0m, DCP bouncing off rock surface, clean dry tip.

DCP9 – Refusal on rock @ 1.6m, DCP bouncing off rock surface, dark brown soil on moist tip.

DCP10 – Refusal on rock @ 0.2m, DCP bouncing off rock surface, white sandstone fragments on dry tip.

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 fill, topsoil, clayey sand and sandy clays that fill the bench step formation. Fill provides a level platform for the pavement on the uphill side of the house and the lawn/pavement on the downhill side of the house. In the test locations, the depth to rock ranged from the surface to a depth of ~1.6m 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. Normal sheet wash from the slope above will be intercepted by the street drainage system for Wallumatta Road above.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The moderate slope that falls across the property and continues above and below is a potential hazard (**Hazard One**). The proposed excavations are a potential hazard until retaining walls are in place (**Hazard Two**). The vibrations from the proposed excavations are a potential hazard (**Hazard Three**).

RISK ANALYSIS SUMMARY ON NEXT PAGE

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two	Hazard Two
TYPE	The moderate slope that falls across the property and continues above and below failing and impacting on the property.	The proposed excavations for the secondary dwelling collapsing onto the worksite before retaining walls are in place.	The vibrations produced during the proposed excavations for the secondary dwelling impacting on the surrounding structures.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (15%)	'Medium' (15%)
RISK TO PROPERTY	'Low' (2 x 10^{-5})	'Moderate' (2 x 10^{-4})	'Moderate' (2 x 10^{-4})
RISK TO LIFE	8.3 x 10^{-7}/annum	8.3 x 10^{-6}/annum	5.3 x 10^{-7}/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 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

It is recommended a drainage easement be obtained from the downhill neighbouring property and all stormwater or drainage runoff from the proposed development be piped to the street below. If this option is not feasible, a spreader/dispersion trench is suitable as a

last resort, provided flows are kept close to natural runoff for the site. All stormwater is to be piped through any tanks that may be required by the regulating authorities.

11. Excavations

Two excavations will be required to construct the proposed secondary dwelling. The upper and lower excavations will reach maximum depths of ~1.5m and ~1.1m respectively.

The excavations are expected to be through topsoil, clayey sand and sandy clay, with Medium Strength Sandstone expected to be encountered from the surface to a depth of ~1.6m below. It is envisaged that excavations through soil, sand 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, sand 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 subject timber deck, neighbouring deck to the E and neighbouring pool to the E. Allowing for backwall-drainage, the upper excavation is set back ~1.4m from the subject timber deck, ~7.9m from the neighbouring deck to the E and ~6.7m from the neighbouring pool to the E. The lower excavation is set back ~6.7m from the neighbouring pool to the E.

Close controls by the contractor over rock excavation are recommended so excessive vibrations are not generated.

Excavation methods are to be used that limit peak particle velocity to 5mm/sec at the subject deck and 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 5mm/sec at the subject deck and 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 subject house and neighbouring properties.

13. Excavations Support Requirements

Two excavations will be required to construct the proposed secondary dwelling. The excavations are set back sufficiently from the surrounding structures and boundaries.

Loose boulders or detached joint blocks on the surface above and immediately upslope of the proposed excavations are to be removed before any excavation commences.

The low cut batters through topsoil, clayey sand and sandy clay and will stand at near-vertical angles for a short period of time until the retaining walls are in place, 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.

Should any large boulders be encountered in the excavation face the geotechnical consultant is to assess the rock for stability before the excavation proceeds further.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. All unsupported cut batters through soil, sand 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 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
Topsoil and Clayey Sand	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 suspended parking platform is to be supported on piers taken to Medium Strength Sandstone. A maximum allowable bearing pressure of 1000kPa can be assumed for footings on Medium Strength Sandstone. The proposed concrete driveway transition and non-suspended parking platform can be supported off the natural surface after any organic matter has been stripped. Where the foundation material across the driveway structure changes, expansion joints are to be installed to separate the different foundation materials and to accommodate minor differential movement. A maximum allowable bearing pressure of 100kPa can be assumed for soil of the natural surface. Alternatively, the concrete driveway transition and non-suspended parking platform can be supported on piers taken to rock.

The proposed house extension, suspended walkway, secondary dwelling and suspended decks are to be to be supported on piers taken to Medium Strength Sandstone. The NE corner of the secondary dwelling is expected to be seated in Medium Strength Sandstone.

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

Photo 8

Photo 9

Photo 10

Photo 11: 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.

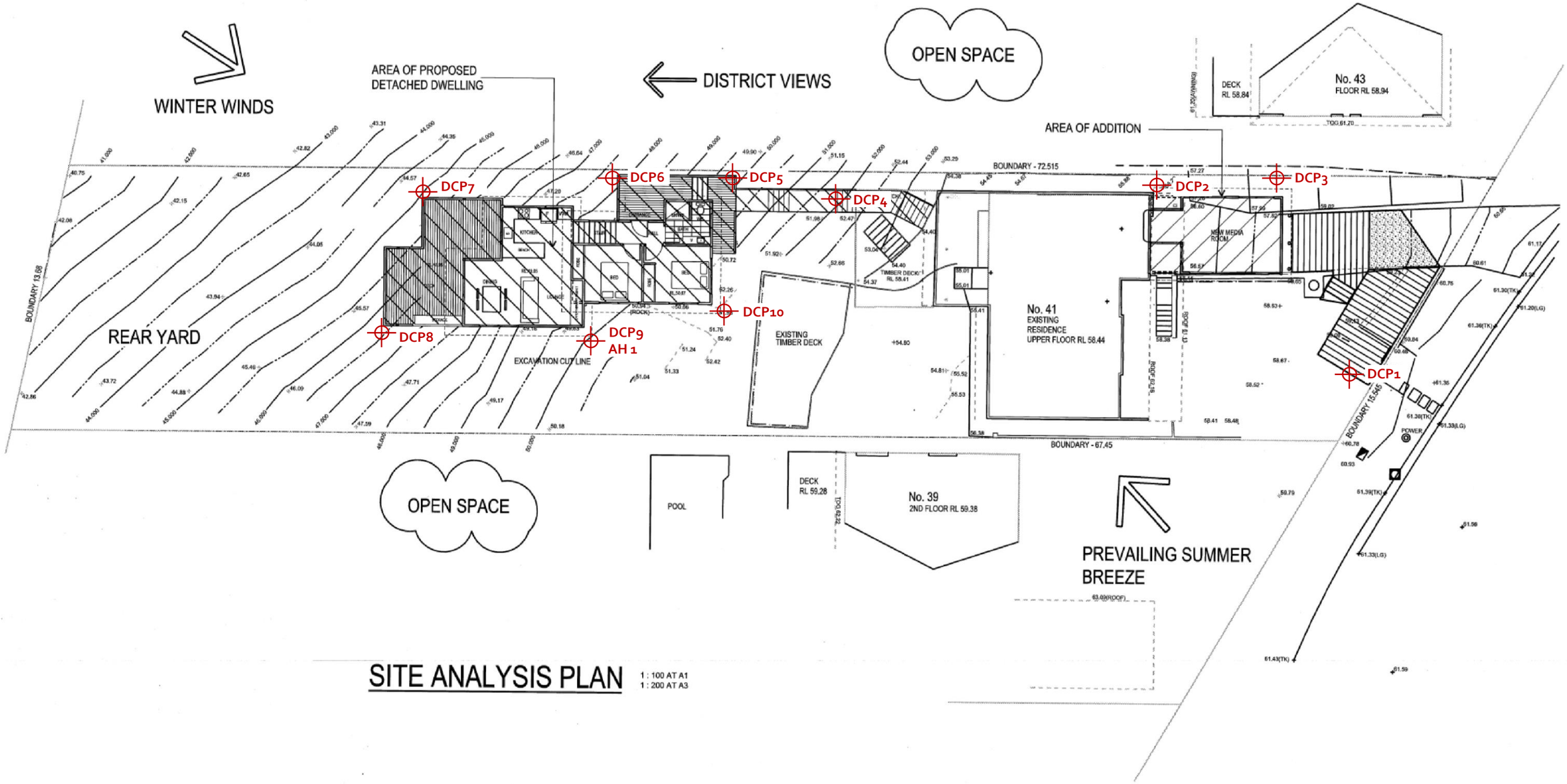
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



SITE ANALYSIS PLAN

1 : 100 AT A1
1 : 200 AT A3

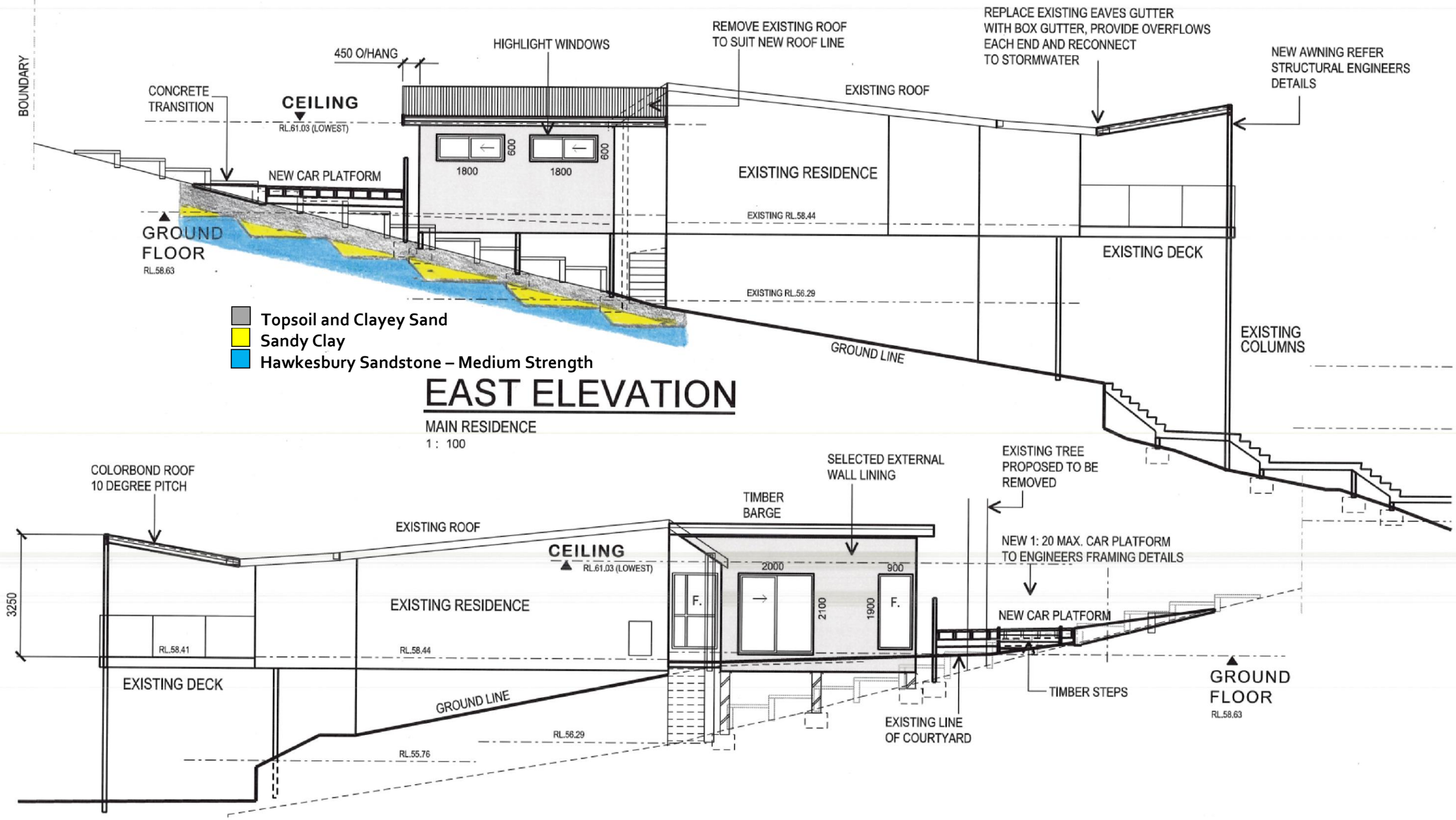
SCALE 1:100 — 0 1 2 3 4 5 10 Metres — AT A1

NORTH

PROJECT	PROPOSED SECONDARY DWELLING AND ALTERATIONS 41 WALLUMATTA RD, NEWPORT MR & MRS G K & W K LAWRENCE
TITLE	SITE ANALYSIS PLAN
BUILDING DESIGNER	BELLI DESIGN BUILDING PLANS 57 PATRICK ST AVALON 2107 Mob - 0414 228 368

DRAWN	N. B.	DRAWING NUMBER	REV
DATE	MAY 2020	2001-00	P1
SCALE	1 : 100		
CHECKED			

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



EAST ELEVATION

MAIN RESIDENCE

1 : 100

WEST ELEVATION

MAIN RESIDENCE

1 : 100

0 1 2 3 4 5 10 AT A3

SCALE 1:100 Metres

PROJECT	**PROPOSED SECONDARY DWELLING AND ALTERATIONS 41 WALLUMATTA RD, NEWPORT FOR MR & MRS G K & W K LAWRENCE**
TITLE	**MAIN RESIDENCE MEDIA ROOM ADDITION, EAST, WEST ELEVATIONS**

BUILDING DESIGNER

BELLI DESIGN BUILDING PLANS

57 PATRICK ST

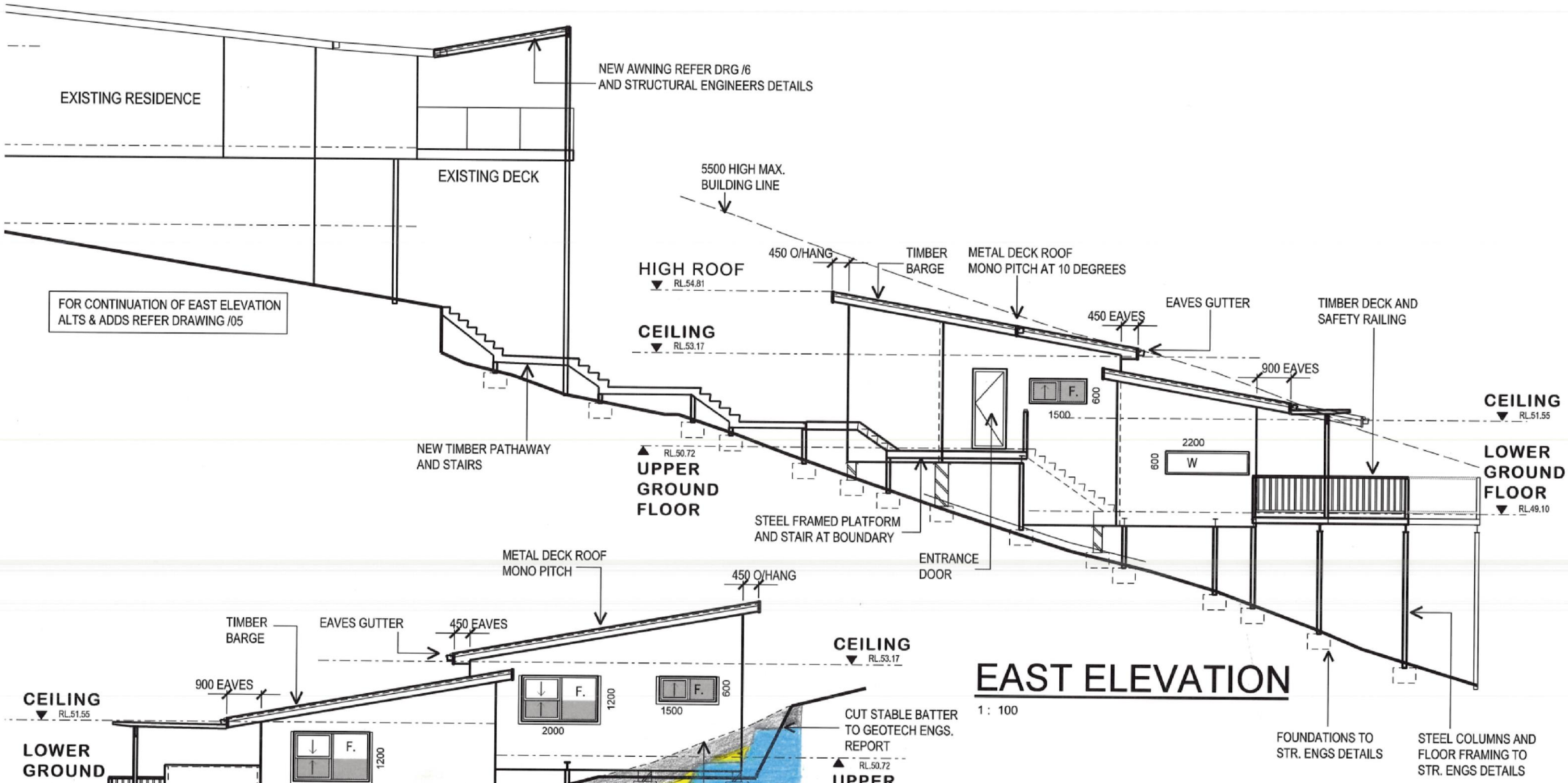
AVALON 2107

Mob - 0414 228 368

DRAWN	N. B.
DATE	MAY 2020
SCALE	1 : 100
CHECKED	

DRAWING NUMBER	REV
2001-07	P3

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



Topsoil and Clayey Sand
Sandy Clay
Hawkesbury Sandstone – Medium Strength

PROJECT
PROPOSED SECONDARY DWELLING AND ALTERATIONS
41 WALLUMATTA RD, NEWPORT FOR MR & MRS G K & W K LAWRENCE

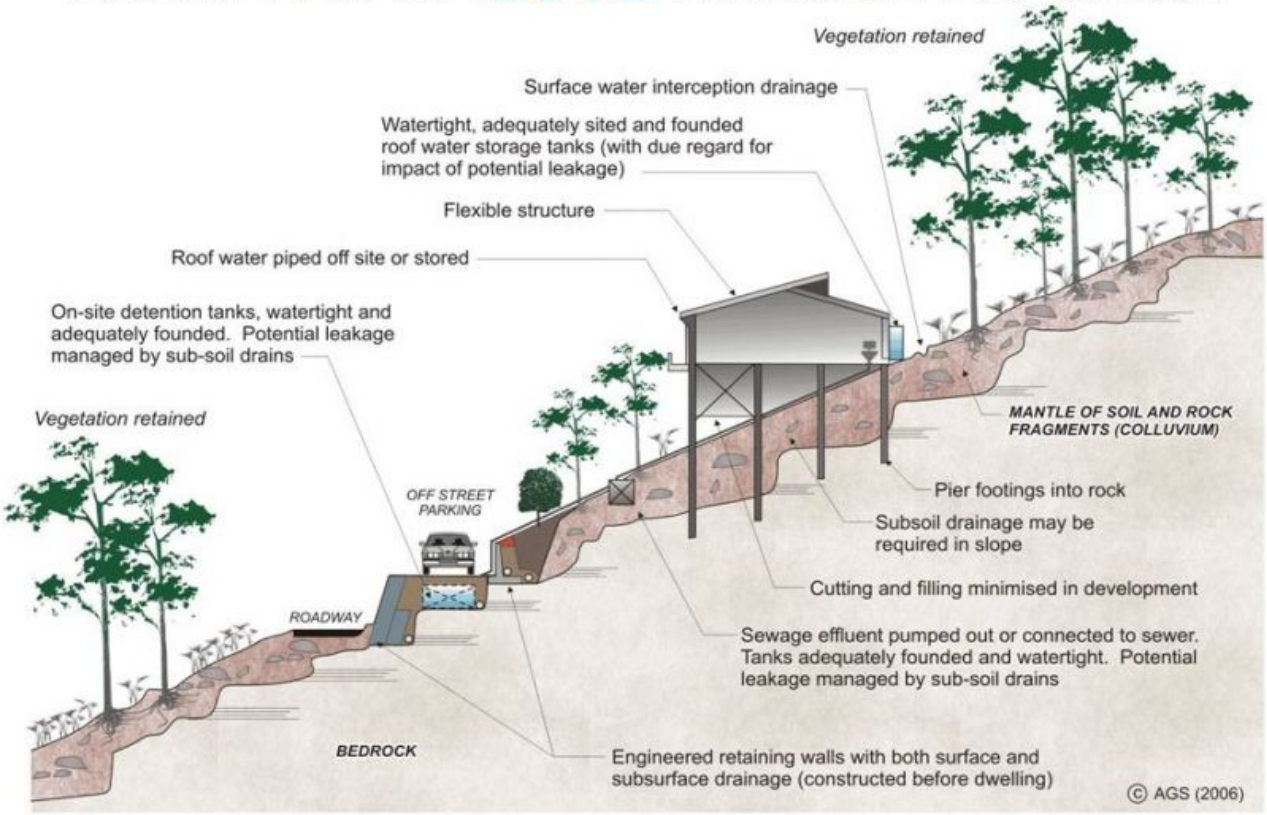
TITLE
SECONDARY DWELLING EAST WEST ELEVATIONS

BUILDING DESIGNER
BELLI DESIGN BUILDING PLANS
57 PATRICK ST
AVALON 2107
Mob - 0414 228 368

DRAWN	N. B.
DATE	MAY 2020
SCALE	1 : 100
CHECKED	

DRAWING NUMBER	REV
2001-03	P4

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE