83 Parkes Road, Collaroy Plateau
Geotechnical Comments for Section 4.55.

We have reviewed the existing geotechnical report, the original plans, and the 28 amended plans by Arc Inovationz, drawings numbered DW.01 to DW.04, DW.04.0 to DW.04.3, DW.05, DW.05.1 to DW.05.4, DW.06, DW.06.1 to DW.06.4, DW.07, DW.08, DW.08.1, DW.08.2, DW.09, DW.10, DW.11.1, DW.11.2 and DW.12, dated 1/11/22.

The changes include:

- Lower the level of the proposed garage on Lot 101 by 1.0m, increasing the maximum excavation depth from ~2.0m to ~3.0m. Add a media room above the lowered garage.

The increased excavation depth slightly increases the overall risk of the project. However, this does not alter the recommendations in the report carried out by this firm numbered J4462 and dated the 22nd August, 2022.

White Geotechnical Group Pty Ltd.

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

GEOTECHNICAL INVESTIGATION:

New Houses at **83 Parkes Road, Collaroy Plateau**

1. Proposed Development

1.1 Construct a new two storey house with garage on Lot 101 by excavating to a maximum depth of ~2.0m.

1.2 Construct a new two storey house with garage on Lot 102 by excavating to a maximum depth of ~1.5m.

1.3 Details of the proposed development are shown on 20 drawings prepared by Arc Inovationz, project number 201900278, drawings numbered DW.03, DA.04, DW.04.0 to DW.04.2, DW.05, DW.05.1, DW.05.4, DW.06, DW.06.1 to DW.06.4, DW.07, DW.08, DW.08.1, DW.08.2 and DW.09, Revision B, dated 11/5/20.

2. Site Description

2.1 The site was inspected on the 17th August, 2022.

2.2 This residential property is on the high side of the road and has a S aspect. It is located on the gentle to moderately graded upper middle reaches of a hillslope. The slope rises across the property at an average angle of ~10°. The slope above the property decreases in grade. The slope below the property increases in grade.

2.3 Medium Strength Hawkesbury Sandstone bedrock outcrops at the downhill property boundary (Photo 1). A ~1.4m high cut and fill provides a level platform for the road and reduces the grade of the downhill portion of the property (Photo 2). A formed plastic retaining wall mould has been placed against the lower portion of the cut as a temporary support measure. It is recommended an engineered retaining wall be built to support the cut as part of the proposed works. At the road frontage, a concrete driveway runs up the slope to each vacant lot (Photos 2 to 4). Apart from the

unsupported cut and fill at the road frontage, no signs of slope instability were observed on the property that could have occurred since the property was developed. 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

Seven Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to bedrock. 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 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:

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** (~RL71.1)	**DCP 2** (~RL72.9)	**DCP 3** (~RL72.5)	**DCP 4** (~RL74.0)	**DCP 5** (~RL75.3)	**DCP 6** (~RL76.2)	**DCP 7** (~RL76.7)
0.0 to 0.3	6	25	11	12	14	2	3
0.3 to 0.6	25	23	24	#	30	5	4
0.6 to 0.9	#	#	6		#	4	8
0.9 to 1.2			#			#	#
	Refusal on rock @ 0.4m	Refusal on rock @ 0.4m	Refusal on rock @ 0.7m	Refusal on rock @ 0.2m	Refusal on rock @ 0.6m	Refusal on rock @ 0.7m	Refusal on rock @ 0.9m

#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 @ 0.4m, DCP bouncing off rock surface, white impact dust and dark brown soil on moist tip.

DCP2 – Refusal on rock @ 0.4m, DCP bouncing off rock surface, grey sand and dark brown soil on moist tip.

DCP3 – Refusal on rock @ 0.7m, DCP bouncing off rock surface, grey sand and dark brown soil on wet tip.

DCP4 – Refusal on rock @ 0.2m, DCP bouncing off rock surface, white sandstone fragments and dark brown soil on damp tip.

DCP5 – Refusal on rock @ 0.6m, DCP bouncing off rock surface, white sandstone fragments and dark brown soil on moist tip.

DCP6 – Refusal on rock @ 0.7m, DCP bouncing off rock surface, white sandstone fragments and dark brown soil on damp tip.

DCP7 – Refusal on rock @ 0.9m, DCP bouncing off rock surface, white sandstone fragments dark brown soil and grey sand on wet 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, a thin sandy topsoil and sand that fills the bench

step formation. Low filling reduces the grade of the slope across the downhill portion of the property. In the test locations, the depth to rock ranged from ~0.2m to ~0.9m below the current surface. The sandstone underlying the property is estimated to be Medium Strength or better as the DCP bounced off the rock surface in all of the tests. 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.

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. If the owners know, or become aware in the future, that overland flows enter the property during heavy prolonged rainfall events our office is to be informed so appropriate drainage measures can be recommended and installed. It is a condition of the slope stability assessment in Section 8 (**Hazard One**) that this be done.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The gentle to moderate slope that falls across the property and continues above and below is a potential hazard (**Hazard One**). The vibrations from the proposed excavations are a potential hazard (**Hazard Two**). 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 Three
TYPE	The gentle to moderate slope that falls across the property and continues above and below failing and impacting on the property.	The vibrations produced during the proposed excavations for the houses and garages impacting on the surrounding structures.	The proposed excavations for the houses and garages collapsing onto the worksite and impacting the neighbouring properties before retaining structures are in place.
LIKELIHOOD	'Unlikely' (10^{-4})	'Possible' (10^{-3})	'Possible' (10^{-3})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (15%)	'Medium' (20%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'Moderate' (2×10^{-4})	'Moderate' (2×10^{-4})
RISK TO LIFE	8.3×10^{-7}/annum	5.3×10^{-7}/annum	3.7×10^{-6}/annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in **Section 7** are carried out.	This level of risk to property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels the recommendations in **Sections 11 & 12** are to be followed.	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 fall is to Parkes 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

Excavations to maximum depths of ~2.0m and ~1.5m respectively are required to construct the proposed new houses and garages for Lot 101 and Lot 102. The excavations are expected to be through topsoil and sand, with Medium Strength Sandstone expected at depths from between ~0.2m to ~0.9m below the current surface.

It is envisaged that excavations through soil and sand can be carried out with an excavator and toothed bucket and excavations through rock will require grinding or rock sawing and breaking.

12. Vibrations

Possible vibrations generated during excavations through soil and sand will be below the threshold limit for building damage utilising a domestic sized excavator up to 20 tonne.

Excavations through Medium Strength Rock or better should be carried out to minimise the potential to cause vibration damage to the W neighbouring house. Allowing for backwall drainage, the Lot 101 and 102 excavations are set back ~7.5m and ~5.0m respectively from the W neighbouring house.

Dilapidation reporting carried out on the W neighbouring property is recommended prior to the excavation works commencing to minimise the potential for spurious building damage claims.

Excavation methods are to be used that limit peak particle velocity to 8mm/sec at the property boundaries. Vibration monitoring will be required to verify this is achieved. Vibration

monitoring must include a light/alarm so the operator knows if vibration limits have been exceeded. The equipment is to log and record vibrations throughout the excavation works.

In Medium Strength rock or better techniques to minimise vibration transmission will be required. These include:

- Rock sawing the excavation perimeter to at least 1.0m deep prior to any rock breaking with hammers, keeping the saw cuts below the rock to be broken throughout the excavation process.
- Limiting rock hammer size.
- Rock hammering in short bursts so vibrations do not amplify.
- Rock breaking with the hammer angled away from the nearby sensitive structures.
- Creating additional saw breaks in the rock where vibration limits are exceeded.
- Use of rock grinders (milling head).

13. Excavation Support Requirements

Allowing for backwall drainage, the setbacks are as follows:

- The Lot 101 excavation comes flush with the E common boundary and the existing driveway on Lot 102.
- The Lot 102 excavation comes flush with the E common boundary.

The sides of the cuts through soil/sand that comes flush with the E common boundary and existing driveway will need to be temporarily or permanently supported prior to the commencement of the excavation through rock, or during the excavation process in a staged manner, so cut batters through soil/sand are not left unsupported. The support will need to be designed/approved by the structural engineer. See the site plan attached for the minimum extent of the required shoring shown in blue. No vehicles are to drive over the portion of the existing driveway that comes flush with the excavation until the retaining wall is in place. The driveway is to be barricaded until the retaining wall is in place.

Where shoring is not required, the shallow soil/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. Medium Strength Sandstone or better is expected to stand at vertical angles unsupported subject to approval by the geotechnical consultant.

During the excavation process, the geotechnical consultant is to inspect the excavation in 1.5m intervals as it is lowered to ensure ground materials are as expected and no wedges or other geological defects are present that could require additional support. If additional ground support is required this will likely involve the use of mesh, rock bolts and sprayed concrete.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other diversion works. 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 cut batters through soil and sand remain unsupported for more than a few days before the construction of the retaining walls they are to be temporarily supported until the retaining walls are in place.

Upon completion of the excavation it is recommended the cut faces be supported with retaining walls to prevent any potential future movement of joint blocks in the cut face that can occur over time, when unfavourable jointing is obscured behind the excavation face. Additionally, retaining walls will help control seepage and to prevent minor erosion and sediment movement.

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

14. Retaining Structures

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

Table 1 – Likely Earth Pressures for Retaining Structures

Unit	Earth Pressure Coefficients		
	Unit weight (kN/m^3)	'Active' K_a	'At Rest' K_0
Fill, Topsoil, Sand	20	0.40	0.55
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 houses and garages are expected to be seated in Medium Strength Sandstone on the uphill side. This is a suitable foundation material. On the downhill side where the rock drops away with the slope piers will be required to maintain a uniform foundation material across the structure. This ground material is expected at depths from between ~0.2m to ~0.9m below the current surface. A maximum allowable bearing pressure of 1000kPa can be assumed for footings supported on 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 consultant 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 owners or the regulating authorities if the following inspections have not been carried out during the construction process.

- During the excavation process, the geotechnical consultant is to inspect the excavation in 1.5m intervals as it is lowered to ensure ground materials are as expected and no wedges or other geological defects are present that could require additional support.

- 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.

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

Photo 1

Photo 2

Photo 3

Photo 4

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.

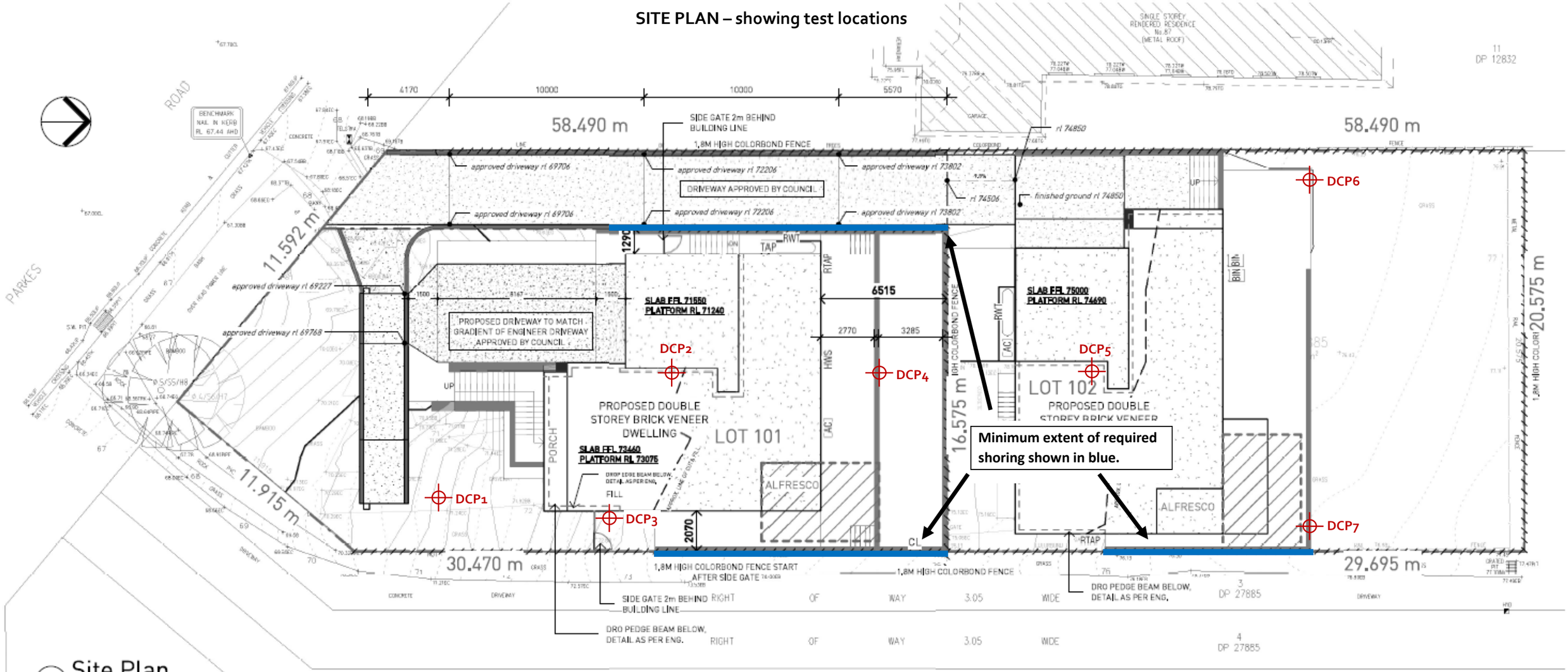
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



① Site Plan
1 : 200

BUILDING SPECIFICATION NOTES:

0.2MM HIGH IMPACT VAPOUR MEMBRANE IS REQUIRED FOR ROOMS OR HABITABLE NATURE.

DWELLING TIMBER FRAMING CONSTRUCTION AS PER AS 1684

INTERNAL STAIRS/ANTI-SKID NOSINGS THROUGHOUT THE DWELLING ARE IN ACCORDANCE WITH THE REQUIREMENTS OF PART 3.9 VOLUME 2 OF THE NCCS (BCA)

INTERNAL STAIR HANDRAIL TO MEET REQUIREMENTS OF CLAUSE 3.9.2.4 OF VOLUME 2 OF THE NCCS (BCA)

BALUSTRADES SERVICING THE DWELLING ARE IN ACCORDANCE WITH REQUIREMENTS OF PART 3.9 OF VOLUME 2 OF THE NCCS (BCA).

ALL GLASS BALUSTRADES REQUIRE A LOAD BEARING HANDRAIL ARE TO BE COMPLIED WITH THE REQUIREMENTS OF AS 1288.

SMOKE ALARMS ARE TO BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF PART 3.7.2 OF VOLUME 2 OF NCCS (BCA)

EXTERIOR DOORS STEP DOWN AS PER THE REQUIREMENTS OF PART 3.9 OF VOLUME 2 OF THE NCCS (BCA).

DOOR SWING OR LIFT OFF HINGES ARE TO BE PROVIDED TO ENCLOSED WC AREA IN ACCORDANCE WITH REQUIEMENTS OF CLAUSE 3.8.3.3 OFVOLUME 2 OF THE NCCS (BCA)

THE SLAB ON GROUND IS BE PROVIDED WITH A 0.2 MICRON HIGH IMPACT VAPOUR MEMBRANE.

INTERNAL FLOOR TO CEILING HEIGHT IN ACCORDANCE WITH THE REQUIREMENTS OF PART 3.8.2 OF VOLUME 2 OF THE NCCS - BCA.

CONSTRUCTION PLANS/DETAILS/SPECIFICATIONS FOR THE PROPOSAL WILL BE PROVIDED PRIOR TO THE COMMENCEMENT OF ANY WORKS.

AS & BCA NOTES:
- Glazing, AS 1288 and AS 2047
- Timber Framing in accordance with AS 1684
- Footings in accordance with AS 2870
- Stormwater in Accordance with AS 3500
- Termite Management in accordance with AS 3660.1
- Masonry Construction in accordance with AS 3700 & AS 4773.2
- Waterproofing in accordance with AS 3740
- Smoke Alarms in accordance with AS 3786
- Concrete Construction in accordance with AS 3600
- Metal roof sheeting in accordance with AS1562.1&Clause3.5.1 of the BCA.
- Roof Tiling in accordance with Part 3.5.1 of the BCA Vol.2 and AS 2049
- Sound Insulation in accordance with AS/NZS 1276
- Balustrade to comply with Part 3.9.2 of the BA Vol. 2
- Stair Construction in accordance with Part 3.9.1 of the BCA Vol. 2
- Stair floor finishes are required to comply with Part 3.9.1.3 of the BCA – slip resistance (when tested in accordance with AS 4586)
- Steel Structures including Steel Lintels compliance with AS 4100

SITE NOTES:

ONE OUTDOOR CLOTHES LINE ROTARY OR FIXED ON WALLMUST BE INSTALLED AS SELECTED BY CLIENT

RETAINING WALL AS PER ENG'S DETAILS (IF REQUIRED)

THE CUT & FILL CALCULATIONS ARE BASED ON WAFFLE POD SLAB CONSTRUCTION

SITE BOUNDARY
FENCE LINE
CL CLOTHES LINE
PRINCIPLE POS
POS AREA
SITE CUTTING

BM BENCH MARK
GM GAS METER
GP GULLY PIT
GSIP GRATED SURFACE INLET PIT
H HYDRANT
JP JUNCTION PIT
KIP KERB INLET PIT
NS NATURAL SURFACE
PC PRAM CROSSING
S SEWER
SV STOP VALVE
T TREE
TEL TELSTRA PIT
VC VEHICLE CROSSING
WM WATER METER

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www.arcinovationz.com.au
info@arcinovationz.com.au

GENERAL NOTES:
1. Figured Dimensions shall be taken in preferance to scaling.
2. Check all Dimensions and Levels on site before commencing work or ordering materials.
3. All Existing Ground Lines and tree locations are approximate, therefore to be verified on-site by the builder.
4. Any discrepancies to be reported to arcINOVATIONZ before proceeding.
5. All Workmanship and materials shall comply with all the relevant codes and Australian Standards.
6. All Plans are copyright work of arcINOVATIONZ.

CLIENT:

PROJECT :
LOT 83 PARKES ROAD, COLLAROY PLATEAU

SITE PLAN

Project number	201900278
Date	08.11.2019
Drawn by	DM
Checked by	JS

DESCRIPTION	DATE	ISSUE
Revised as per Council letter	11.05.20	B
Issue for DA Approval	02.12.19	A

DW.04
Scale: As indicated

B

ISSUE FOR COUNCIL APPROVAL, NOT FOR CONSTRUCTION

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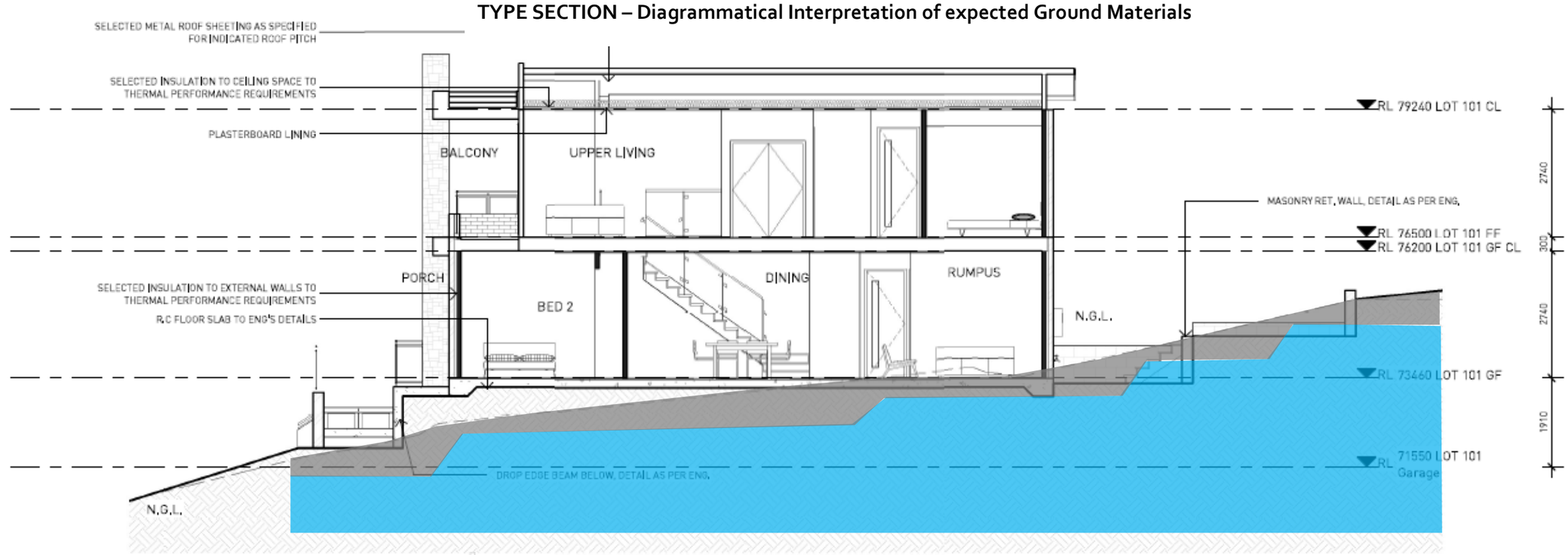
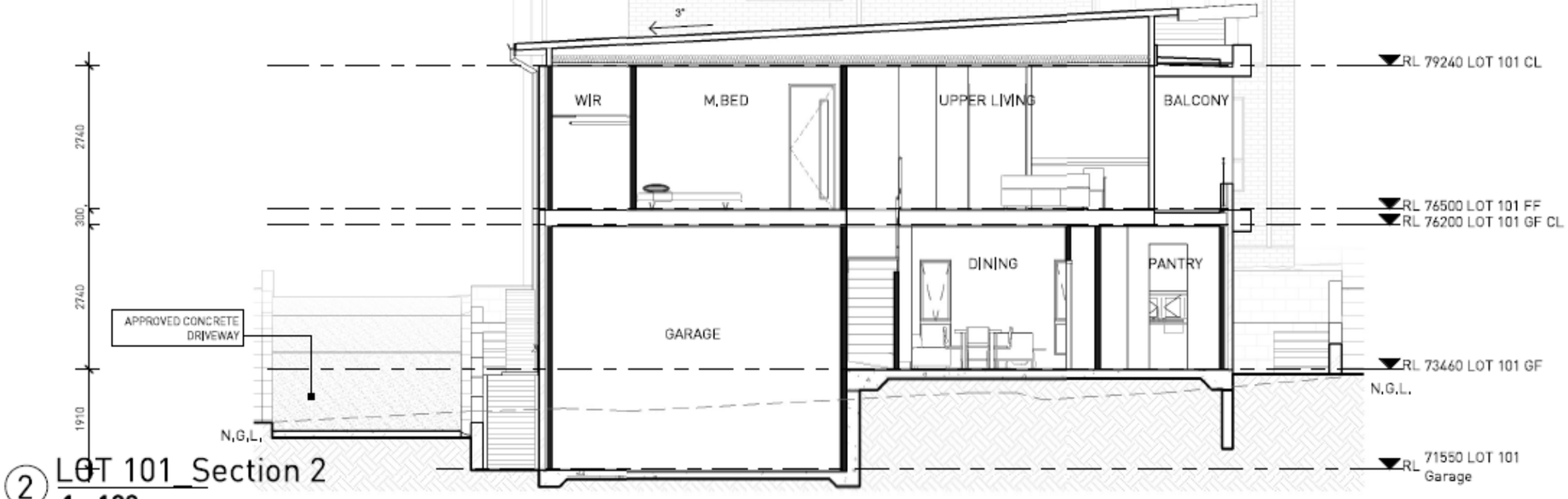
TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



Topsoil and Sand

Hawkesbury Sandstone – Medium Strength

① LOT 101_Section 1
1 : 100



② LOT 101_Section 2
1 : 100

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5. All Workmanship and materials shall comply with all the relevant codes and Australian Standards.
6. All Plans are copyright work of arc|NOVATIONZ.

CLIENT:

PROJECT :
LOT 83 PARKES ROAD, COLLAROY PLATEAU

LOT 101 SECTIONS

Project number	201900278
Date	08.11.2019
Drawn by	DM
Checked by	JS

DESCRIPTION	DATE	ISSUE
Revised as per Council letter	11.05.20	B
Issue for DA Approval	02.12.19	A

DW.05.4
Scale 1 : 100
B

ISSUE FOR COUNCIL APPROVAL, NOT FOR CONSTRUCTION

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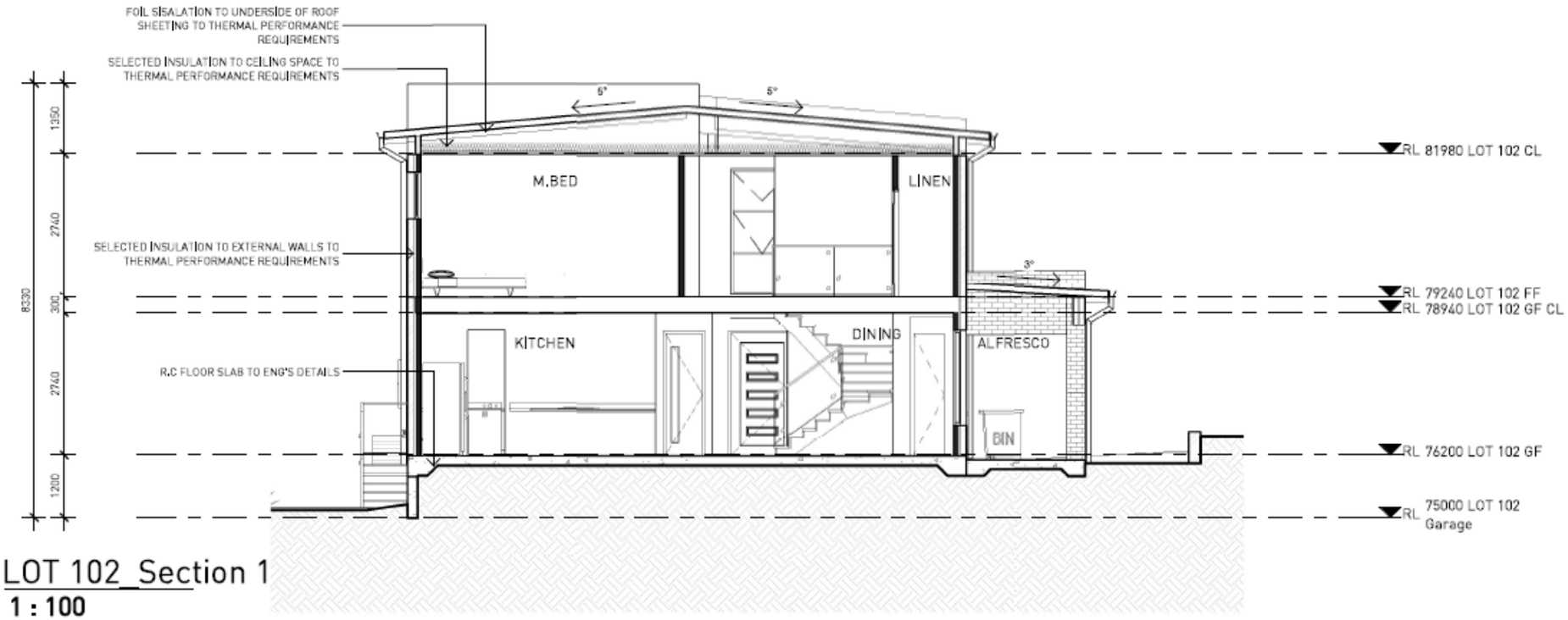
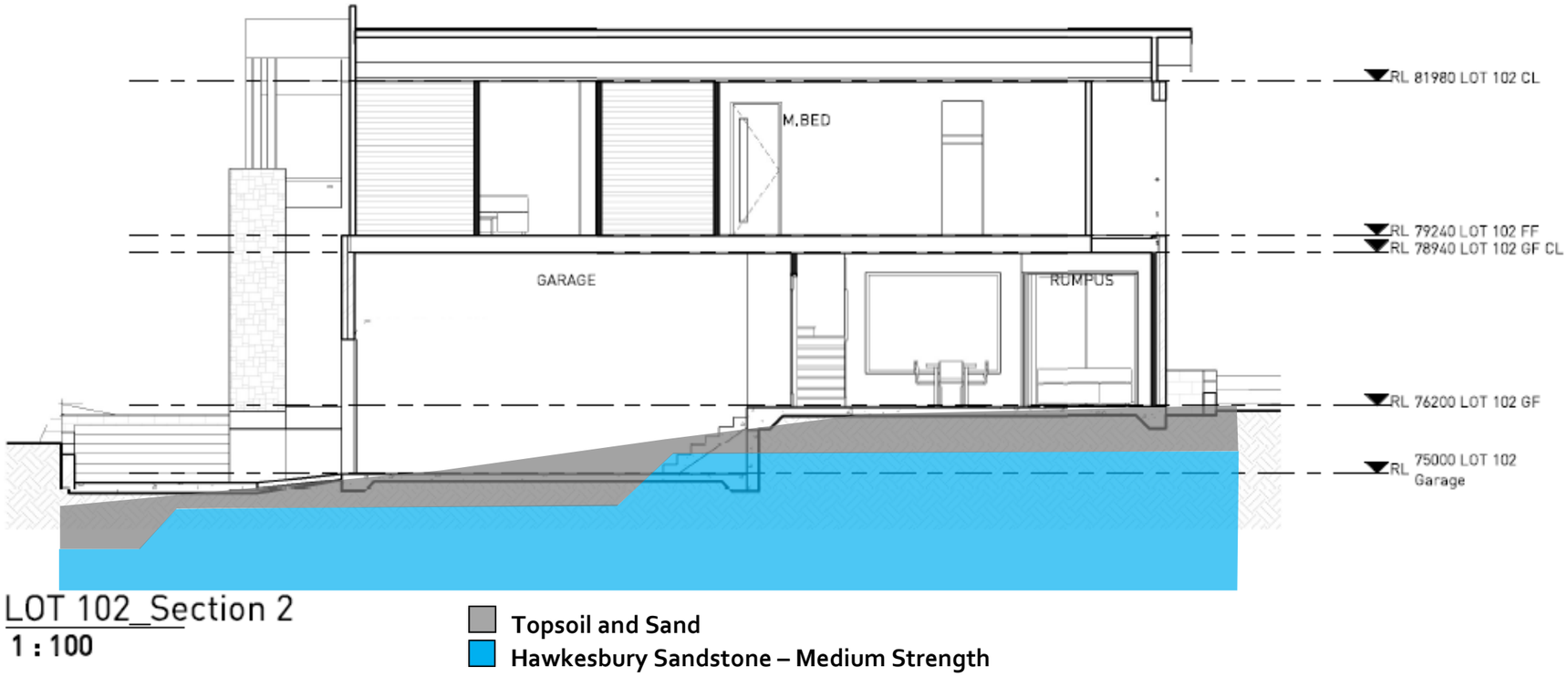
TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



① LOT 102_Section 1
1 : 100



② LOT 102_Section 2
1 : 100

Topsoil and Sand
Hawkesbury Sandstone – Medium Strength

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GENERAL NOTES:
1. Figured Dimensions shall be taken in preference to scaling.
2. Check all Dimensions and Levels on site before commencing work or ordering materials.
3. All Existing Ground Lines and tree locations are approximate, therefore to be verified on-site by the builder.
4. Any discrepancies to be reported to arcINOVATIONZ before proceeding.
5. All Workmanship and materials shall comply with all the relevant codes and Australian Standards.
6. All Plans are copyright work of arcINOVATIONZ.

CLIENT:

PROJECT :
LOT 83 PARKES ROAD, COLLAROY PLATEAU

LOT 102 SECTIONS

Project number	201900278
Date	08.11.2019
Drawn by	DM
Checked by	JS

DESCRIPTION	DATE	ISSUE
Revised as per Council letter	11.05.20	B
Issue for DA Approval	02.12.19	A

DW.06.4
Scale 1 : 100

B

ISSUE FOR COUNCIL APPROVAL, NOT FOR CONSTRUCTION

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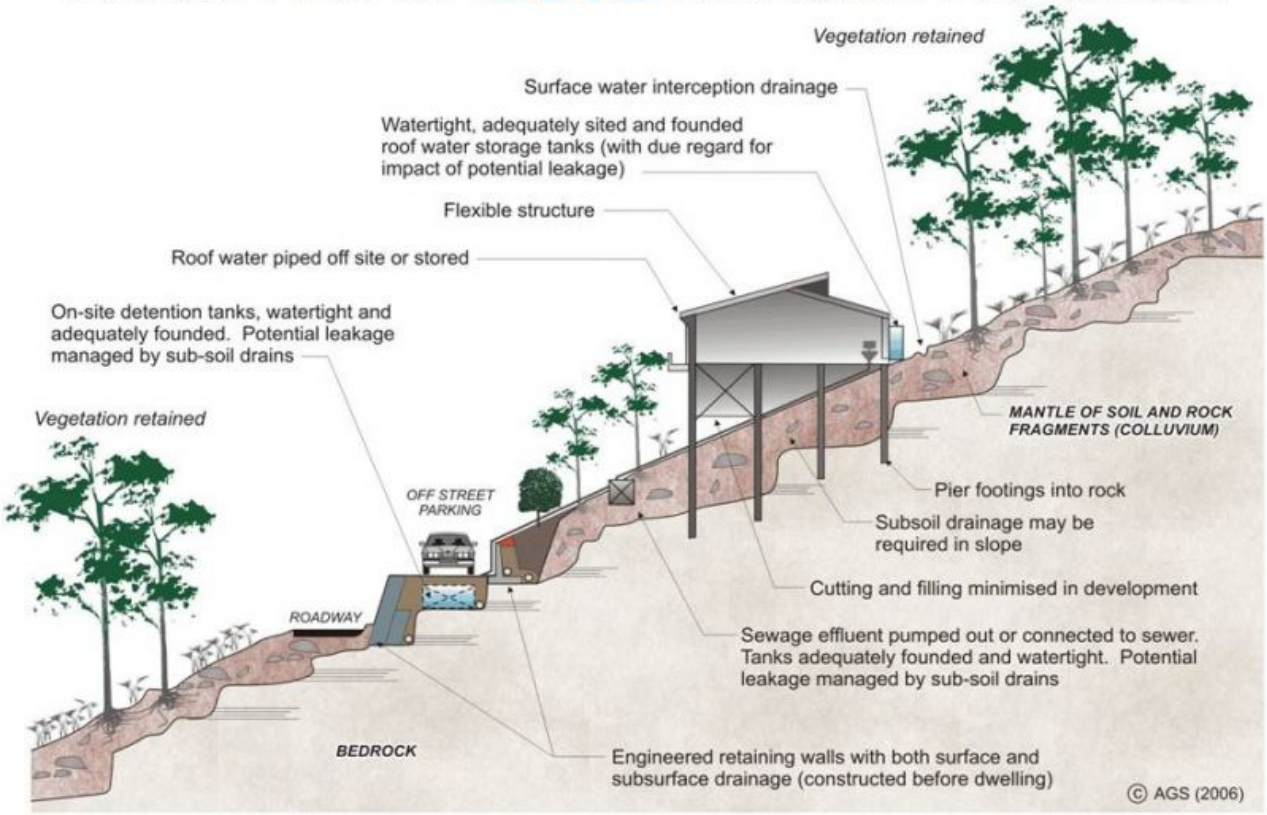
EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE