GROUND TESTING:

Proposed Pool at **80 Peacock Street, Seaforth**

1. Scope

The aim of this assessment is to determine the nature of the ground materials in the location of the proposed pool and to provide recommended vibration, excavation support, and foundation advice. The site was inspected on the 11th March, 2021.

2. Proposed Development

2.1 Demolish the existing house and garage and construct a new part three-storey house.

2.2 Install a new pool in the NW corner of the property by excavating to a maximum depth of ~2.0m.

2.3 Various other minor external alterations.

2.4 No fills are shown on the plans.

2.5 Details of the proposed development are shown on 5 SKETCH drawings prepared by Du Plessis Architects, drawings numbered SD.01 to SD.04 and DA.100, Issue A, dated 8/12/20.

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 (AH) was put down to identify the soil materials. Two Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying

soil and the depth to rock. The locations of the tests are shown on the site plan attached. It should be noted that a level of caution should be applied when interpreting DCP test results. The test will not pass through hard buried objects so in some instances it can be difficult to determine whether refusal has occurred on an obstruction in the profile or on the natural rock surface. This is not expected to be an issue for the testing on this site. However, excavation and foundation budgets should always allow for the possibility that the interpreted ground conditions in this report vary from those encountered during excavations. See the appended "Important information about your report" for a more comprehensive explanation. The results are as follows:

AUGER HOLE 1 (~RL99.4) **–** AH1 (Photo 1)

Depth (m)	**Material Encountered**
0.0 to 0.2	**FILL**, disturbed sandy soil, dark brown, medium dense to dense, dry, fine to medium grained with fine trace organic matter and trace silt.
0.2 to 0.4	**FILL**, disturbed crushed sandstone, white and orange, medium dense to dense, dry, fine to medium grained.
0.4 to 0.8	**FILL**, disturbed gravelly soil, dark brown, medium dense to dense, dry, medium to coarse grained with fine trace organic matter.
0.8 to 1.0	**VERY LOW STRENGTH SANDSTONE**, grey and light brown, dry, fine to medium grained.

Refusal @ 1.0m on rock. No water table encountered.

DCP RESULTS ON THE 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** (~RL99.4)	**DCP 2** (~RL98.9)
0.0 to 0.3	9	3
0.3 to 0.6	18	7
0.6 to 0.9	12	25
0.9 to 1.2	11	#
1.2 to 1.5	#	
	Refusal on Rock @ 1.0m	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 @ 1.0m, DCP bouncing off rock surface, white impact dust on dry tip.
DCP2 – Refusal on rock @ 0.9m, DCP bouncing off rock surface, white impact dust on dry tip.

5. Geological Observations and Interpretations

The surface features of the block 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. Filling has been placed across the N side of the property for landscaping to a maximum depth of ~0.8m. Where the rock is not exposed, it is overlain by sandy soils over firm to stiff sandy clays that fill the bench step formation. In the test locations, rock was encountered at an average depth of ~1.0m below the current surface. The outcropping sandstone on the property is estimated to be medium strength sandstone or better and similar strength rock is expected to underlie the entire site. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Implications of Proposed Pool on Adjoining N & W Neighbouring Properties

It is proposed to install a pool in the NW corner of the subject property. The pool will be set back sufficiently from the N and W common boundaries so as to not impact upon the neighbouring properties. In the location of the proposed pool, the rock was encountered at an average depth of ~1.0m below the current surface.

The rock that was encountered in this location is of Medium Strength (Class III) and is relatively expensive to excavate through compared with the fill, sandy soil, and sandy clay overburden. Excavations through fill, sandy soil, and sandy clays can be carried out with a bucket only, whereas excavations through rock require grinding or rock sawing and breaking.

Additionally, care must be taken when excavating through rock of this strength to limit vibration damage caused to existing structures on the neighbouring properties. Methods to limit vibration damage include using a milling head to grind the rock and/or using a 300kg rock hammer in conjunction with rock sawing carried out around the perimeters of the excavation.

7. Footings

The proposed pool is expected to be seated on the Medium Strength Sandstone. This is a suitable foundation material.

As the area around the pool will periodically become saturated with pool use, to prevent excessive settlement it is recommended the proposed pavilion be supported on piers and that any paving be laid on a concrete slab, all supported on Medium Strength Sandstone.

Assume a maximum allowable bearing pressure of 1000kPa for footings supported off 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.

8. Inspection

The following inspection is recommended and if geotechnical certification is desired it is a requirement.

- All footings are to be inspected and approved by the geotechnical professional before concrete is placed while the excavation equipment is still onsite and before steel reinforcement is installed.

White Geotechnical Group Pty Ltd.

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

Photo 1: AH1 – Downhole is from left to right.

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.

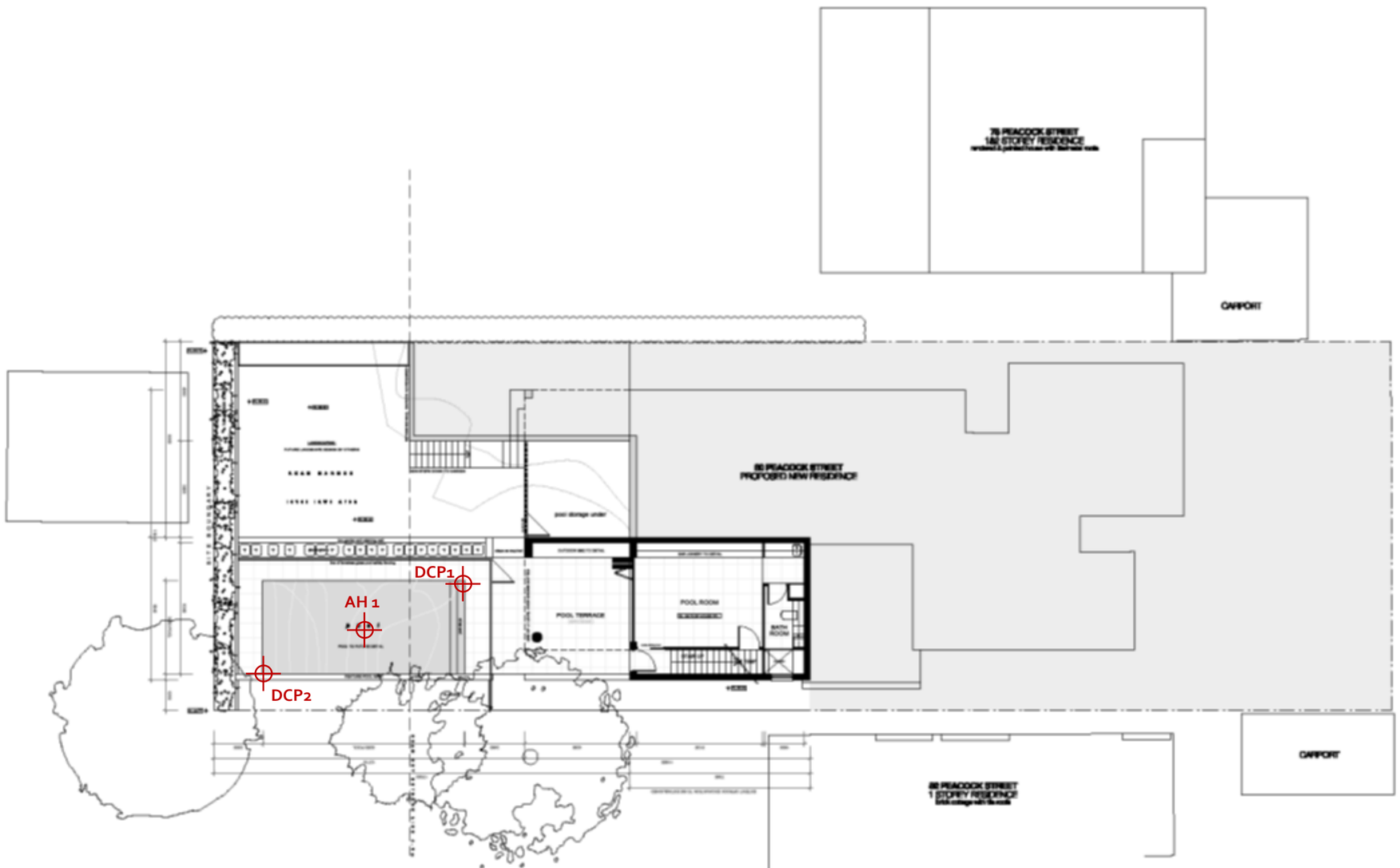
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- 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



Lower Ground Floor Plan

SCALE 1:100/A1

LEGEND

NOTES

ISSUE

DU PLESSIS
DU PLESSIS ARCHITECTS

PROJECT TITLE
HOUSE
80 Peacock Street, Seaforth

CLIENT
JOHN & ROSALIN
QUATTROVILLE

ADDRESS
80 Peacock Street,
Seaforth NSW 2092

DRAWING TITLE
LOWER GROUND FLOOR
PLAN

DRAWN: E DU PLESSIS
CHECKED: H DU PLESSIS

SCALE
1:100 [A1]

DRAWING NO.
SD.01

ISSUE: A
DATE: 08.12.2020

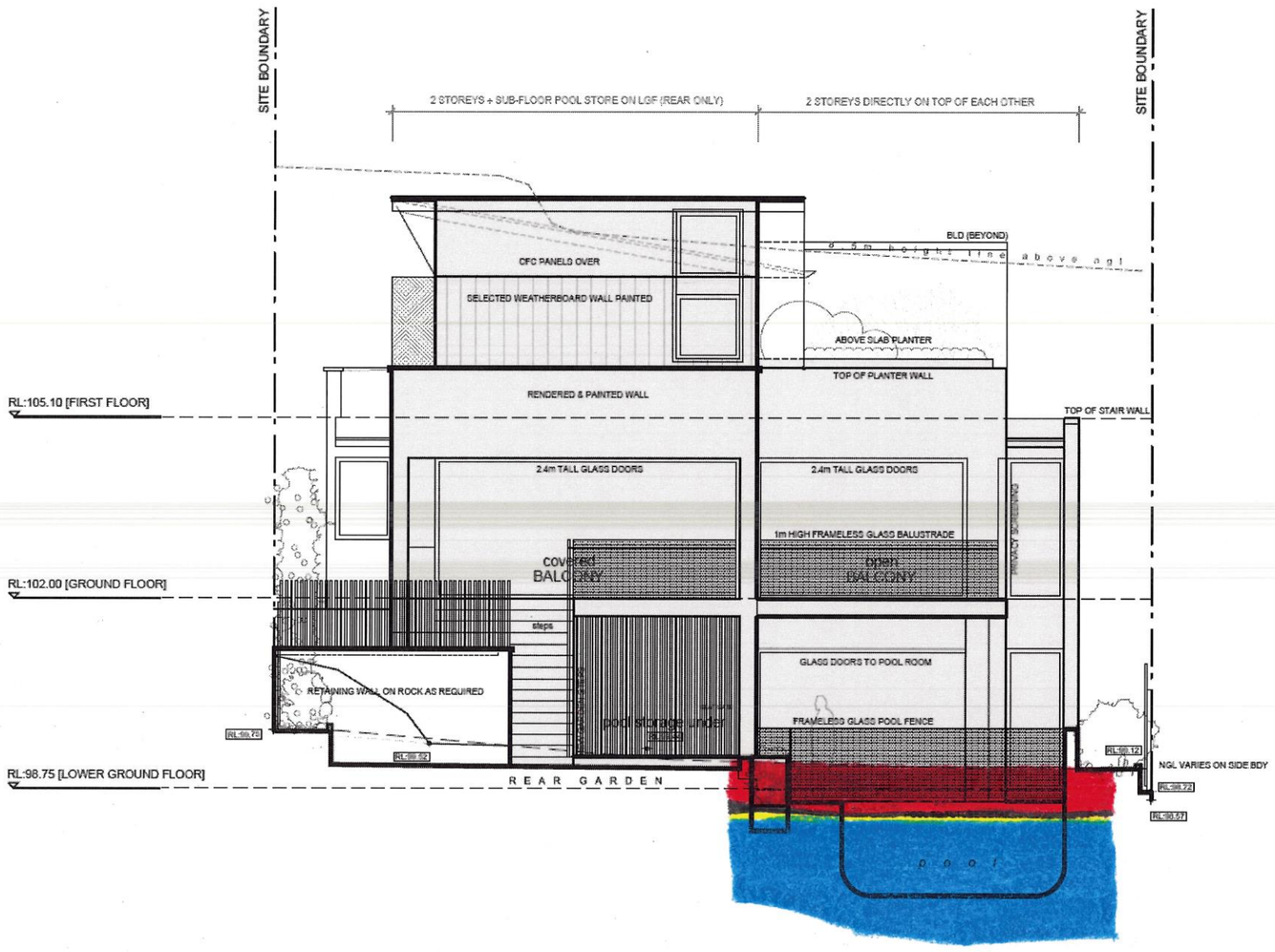
DRAWING STATUS
SKETCH DESIGN

scales

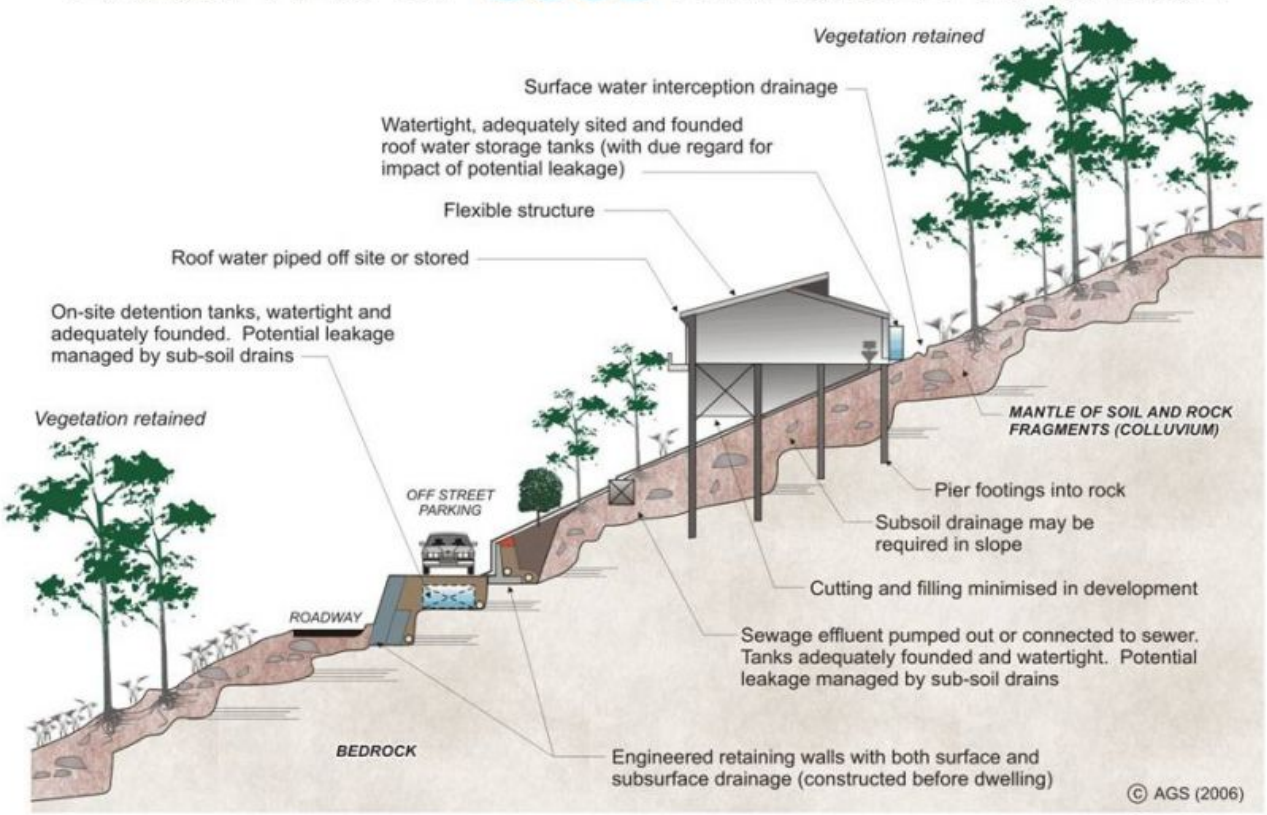
A1 SHEET

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

- Fill
- Topsoil
- Sandy Clay – Firm to Stiff
- Hawkesbury Sandstone – Medium Strength



EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE