

GROUND TESTING:

New House and Pool at 13 Morgan Road, Belrose

1. Scope

The aim of this assessment is to determine the ground conditions across the N and S corners of the property and provide foundation recommendations.

The site was inspected on the 6th May, 2021.

2. Proposed Development

- 2.1** Demolish the existing house in the N corner of the property and construct a new two-storey house and pool in the same location.
- 2.2** Install two large stormwater tanks on the SE side of the existing equestrian arena in the S corner of the property.
- 2.3** Details of the proposed development are shown on 5 drawings prepared by Prestonpeterson, Project number AUST01, drawing numbered A01 is Revision C, dated 18/9/20, drawing numbered A05 is Revision C, dated 15/12/20, drawing numbered A06 is Revision D, dated 8/12/20, and drawings numbered A03 and A04 are Revision H, dated 2/2/21.

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

Six DCP (Dynamic Cone Penetrometer) 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 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:

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 (~RL134.0)	DCP 2 (~RL138.2)	DCP 3 (~RL137.4)	DCP 4 (~RL135.8)	DCP 5 (~RL133.5)	DCP 6 (~RL133.9)
0.0 to 0.3	4	9	2	Rock Exposed at Surface	21	16
0.3 to 0.6	8	#	13		17	40
0.6 to 0.9	#		35		19	24
0.9 to 1.2			#		#	#
	Refusal on Rock @ 0.5m	Refusal on Rock @ 0.2m	Refusal on Rock @ 0.9m		Refusal on Rock @ 0.9m	Refusal on Rock @ 0.8m

#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 @ 0.5m, DCP bouncing off rock surface, wet muddy tip.

DCP2 – Refusal on rock @ 0.2m, DCP bouncing off rock surface, orange sandstone fragments on wet tip.

DCP3 – Refusal on rock @ 0.9m, DCP bouncing off rock surface, brown sand on wet tip.

DCP4 – Rock exposed at surface.

DCP5 – Refusal on rock @ 0.9m, DCP bouncing off rock surface, wet muddy tip.

DCP6 – Refusal on rock @ 0.8m, DCP bouncing off rock surface, wet muddy tip.

5. Geological Observations and Interpretations

The surface features of the block are controlled by the outcropping and 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 soils over sandy clays that fill the bench step formation. In the location of the testing where rock was not exposed, the depth to rock ranged between 0.2 to 0.9m below the current surface, being slightly deeper due to the stepped nature of the underlying bedrock. The sandstone outcropping on the property is estimated to be medium strength and similar strength rock is expected to underlie the entire site. See the Type Section attached for a diagrammatical representation of the expected ground materials.

6. Foundations

The house and pool are to be supported on piers taken to the underlying Medium Strength Sandstone. This material is expected at variable depths of between 0.2 to 0.9m below the current surface where it is not already exposed at the surface. Where footings are over an exposed sloping rock surface, they may be supported off level pads cut into the rock.

The proposed stormwater tanks may be supported off concrete slabs supported off piers taken to the underlying Medium Strength Sandstone. This material is expected at an average depth of ~0.9m below the current surface.

A maximum allowable bearing pressure of 1000kPa can be assumed for footings 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.

7. Inspections

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

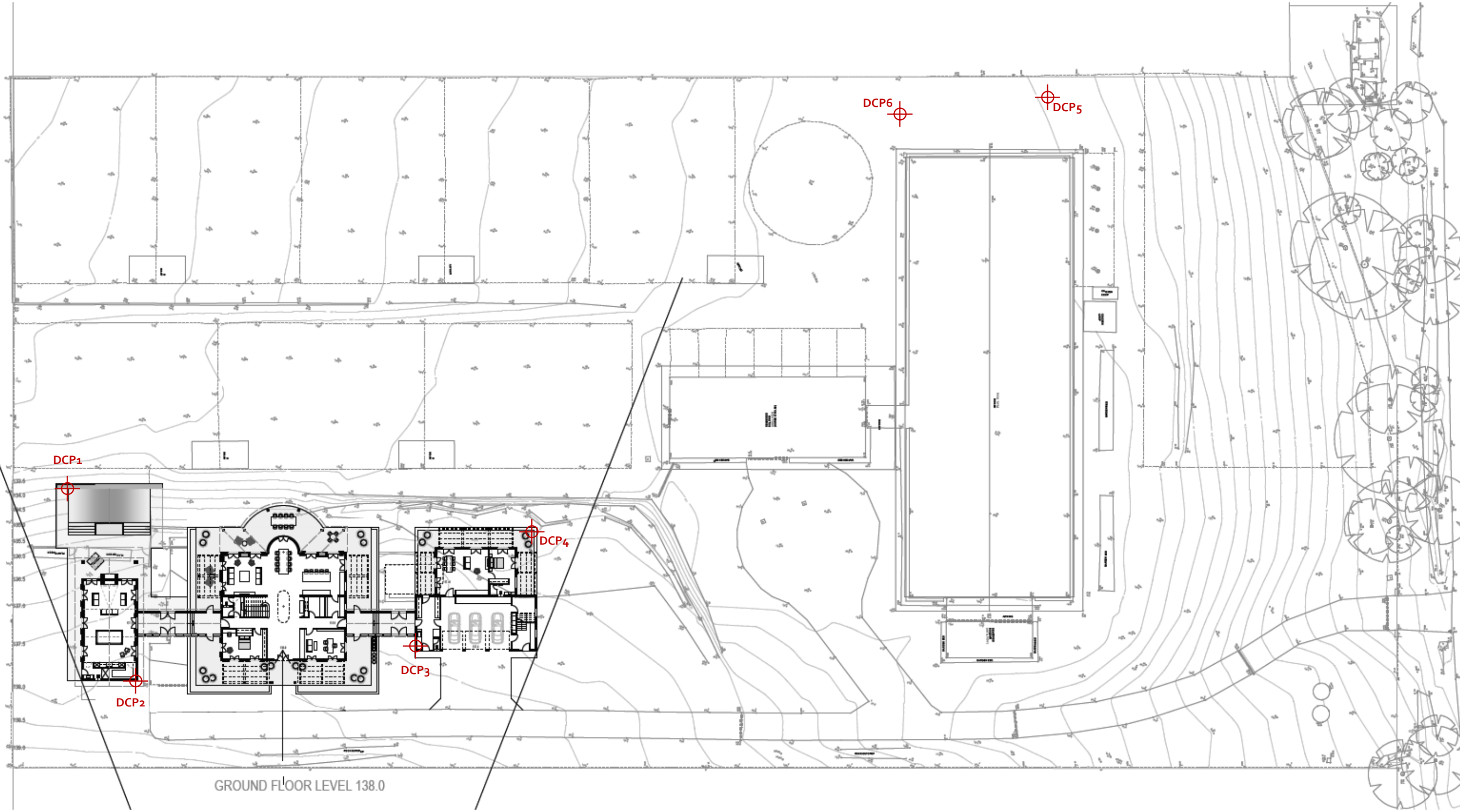
Important Information about Your Report

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



TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

