

PRELIMINARY GEOTECHNICAL ASSESSMENT:

12 Collaroy Street, Collaroy

1.0	LANDSLIP RISK CLASS (<i>Highlight indicates Landslip Risk Class of property</i>)
☐	A - Geotechnical Report not normally required
☐	B - Geotechnical Engineer (Under Council Guidelines) to decide if Geotechnical Report is required
☐	C - Geotechnical Report is required
☒	D - Geotechnical Engineer (Under Council Guidelines) to decide if Geotechnical Report is required
☐	E - Geotechnical Report required

2.0 Proposed Development

- 2.1** Install a new pool in the SE corner of the property by excavating to a maximum depth of ~1.8m.
- 2.2** Extend existing garage to the S.
- 2.3** Construct a new deck over the existing garage.
- 2.4** Various other minor external alterations.
- 2.5** No fills are shown on the plans.
- 2.6** Details of the proposed development are shown on 9 drawings prepared by Blackwood Architects, drawings numbered 00 to 08 are Issue 02, dated 2/6/22.

3.0 Site Location

- 3.1** The site was inspected on the 20th April, 2022, and previously on the 25th October, 2018 and 28th November, 2017.

3.2 This residential property is level with the road and has an E aspect. The block runs longways to the S so the slope is a cross-fall. It is located on the moderate to steeply graded lower reaches of a hillslope. No rock outcrops on the property. The Sydney 1:100 000 Geological sheet indicates the site is underlain by the Newport Formation of the Narrabeen Group. This is described as interbedded laminite, shale and quartz to lithic quartz sandstone. The natural surface of the block has been altered during its development to date with filling placed on the S side of the property for a level area. An excavation to a maximum depth of ~1.8m will be required for the proposed pool.

3.3 The site shows no indications of historical movement in the natural surface that could have occurred since the property was developed. We are aware of no history of instability on the property.

4.0 Site Description

The natural slope falls across the property at an average angle of ~19°. At the lower side of the road frontage, a concrete driveway runs to a weatherboard clad garage on the downhill side of the house. The part two-storey brick and weatherboard clad house is supported on brick walls and brick piers. No significant signs of movement were observed in the external supporting walls and the supporting brick piers stand vertical. Filling has been placed on the neighbouring property above. The fill is supported by a stable brick retaining wall reaching a maximum height of ~2.3m that lines the upper common boundary (Photo 1). The retaining wall has been constructed with a ~4° tilt back into the slope and a large vertical crack was observed on the S return of the wall. See **Section 7.0** for recommendations. A fill for a level patio and grass area on the downhill side of the subject house is supported by two stable retaining walls. The upper wall is a low treated timber retaining wall and the lower wall is a ~1.0m high concrete block retaining wall near the lower common boundary. The land surface surrounding the house and pool is lawn-covered with some paved areas. No signs of movement related to slope instability were observed on the grounds. No cliffs or large rock

faces were observed on the property or in the near vicinity. No geotechnical hazards that could impact on the subject property were observed on the surrounding neighbouring properties as viewed from the subject property and the street.

5.0 Ground Testing

Three small pits had been dug by the owner along the large brick retaining wall (Photo 1) to expose the existing foundation depth and subsurface materials. The ground materials of the pits were recorded. Four 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 and the results are as follows:

PIT 1 (~RL11.0) - (Photo 2)

Depth (m)	Material Encountered
0.0 to 0.2	TOPSOIL , sandy soil, dark brown, fine to coarse grained with fine trace organic matter.
0.2 to 0.4	CLAY , grey and brown, soft, very wet, fine to coarse grained with fine trace organic matter.

Base of pit @ 0.4m in wet clay. Existing foundations of the brick retaining wall taken to a depth of 0.25m onto the underlying clay.

PIT 2 (~RL11.3) - (Photo 3)

Depth (m)	Material Encountered
0.0 to 0.25	TOPSOIL , sandy soil, dark brown, fine to coarse grained with fine trace organic matter.
0.25 to 0.5	CLAY , grey and brown, soft, very wet, fine to coarse grained with fine trace organic matter.

Base of pit @ 0.5m in wet clay. Existing foundations of the brick retaining wall not visible.

PIT 3 (~RL11.3) - (Photo 4)

Depth (m)	Material Encountered
0.0 to 0.3	TOPSOIL , sandy soil, dark brown, fine to coarse grained with fine trace organic matter.
0.3 to 0.5	CLAY , grey and brown, soft, very wet, fine to coarse grained with fine trace organic matter.

Base of pit @ 0.5m in wet clay. Existing foundations of the brick retaining wall not visible.
Water pooling from 0.4m.

DCP TEST 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 (~RL11.0)	DCP 2 (~RL11.3)	DCP 3 (~RL9.8)	DCP 4 (~RL10.7)
0.0 to 0.3	F	4	1F	3
0.3 to 0.6	3F	5	3	5
0.6 to 0.9	2	6	5	5
0.9 to 1.2	16	25	5	9
1.2 to 1.5	33	30	9	28
1.5 to 1.8	42	#	#	35
1.8 to 2.1	#			#
	End of Test @ 1.8m	End of Test @ 1.4m	Refusal on Rock @ 1.4m	End of Test @ 1.8m

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

DCP Notes:

DCP1 – End of test @ 1.8m, DCP still very slowly going down, clean dry tip, orange and brown clay in collar above tip.

DCP2 – End of test @ 1.4m, DCP still very slowly going down, clean dry tip, orange and brown clay in collar above tip.

DCP3 – Refusal on rock @ 1.4m, DCP bouncing, orange impact dust on dry tip, brown clay in collar above tip. Test taken at base of ~1.0m high retaining wall.

DCP4 – End of test @ 1.8m, DCP still very slowly going down, wet muddy tip, orange and maroon clay in collar above tip.

6.0 Geological Observations and Interpretations

The slope materials are colluvial at the near surface and residual at depth. They consist of a manmade fill over sandy topsoil and silty clays and clays. In the test locations, the silty clays and clays merge into the weathered zone of the under lying shale at an average depth of ~1.2m below the current surface. The weathered zone is interpreted as Extremely Low Strength Shale. It is to be noted that this material can appear as a mottled stiff clay when it is

cut up by excavation equipment. The water that was observed to be pooling in the pits likely originates from standard groundwater that flows over the buried surface of the clays. See Type Section attached for a diagrammatical representation of the expected ground materials.

7.0 Recommendations

The proposed development and site conditions were considered and applied to the Council Flow Chart.

The large brick retaining wall supporting the fill on the neighbouring property above displays significant cracking (Photo 1). To be prudent, we recommend the retaining wall be inspected by the owners on a biannual basis or after heavy prolonged rainfall, whichever occurs first, keeping a photographic record of the inspections. We can carry out these inspections upon request. Should any new movement be observed, a plan is to be formulated with the owners of the above neighbouring property to remediate or rebuild the wall so it meets current engineering standards.

Provided good engineering and building practice are followed, no further Geotechnical assessment is recommended for the proposed development.

White Geotechnical Group Pty Ltd.



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

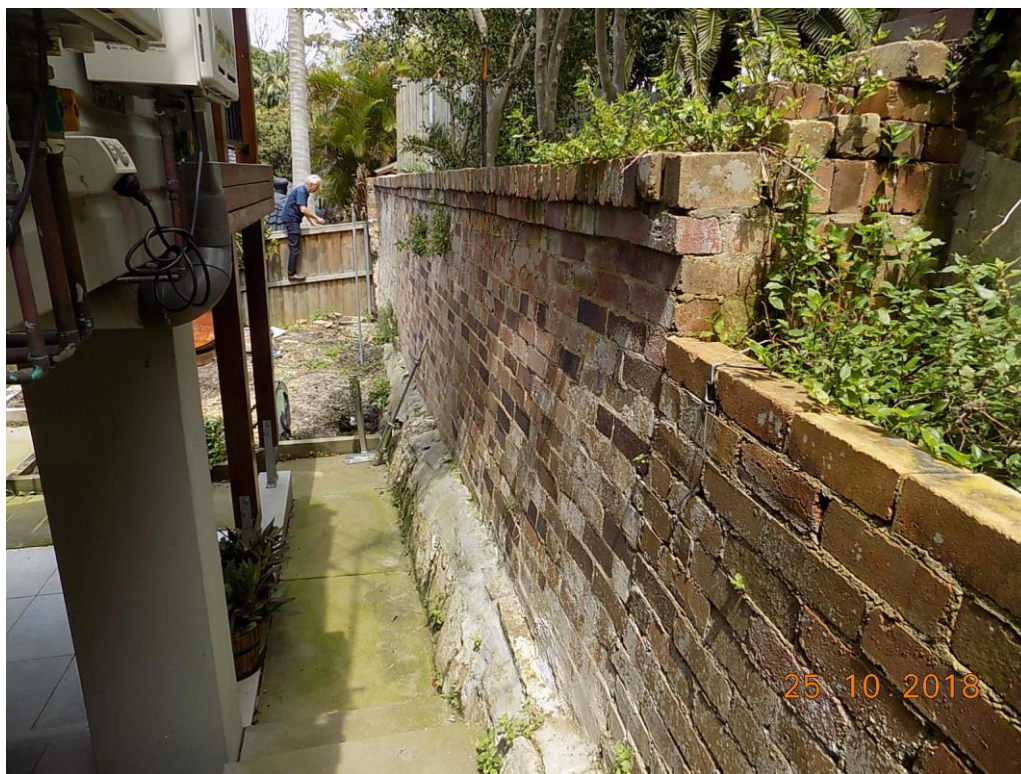


Photo 1



Photo 2: PIT 1

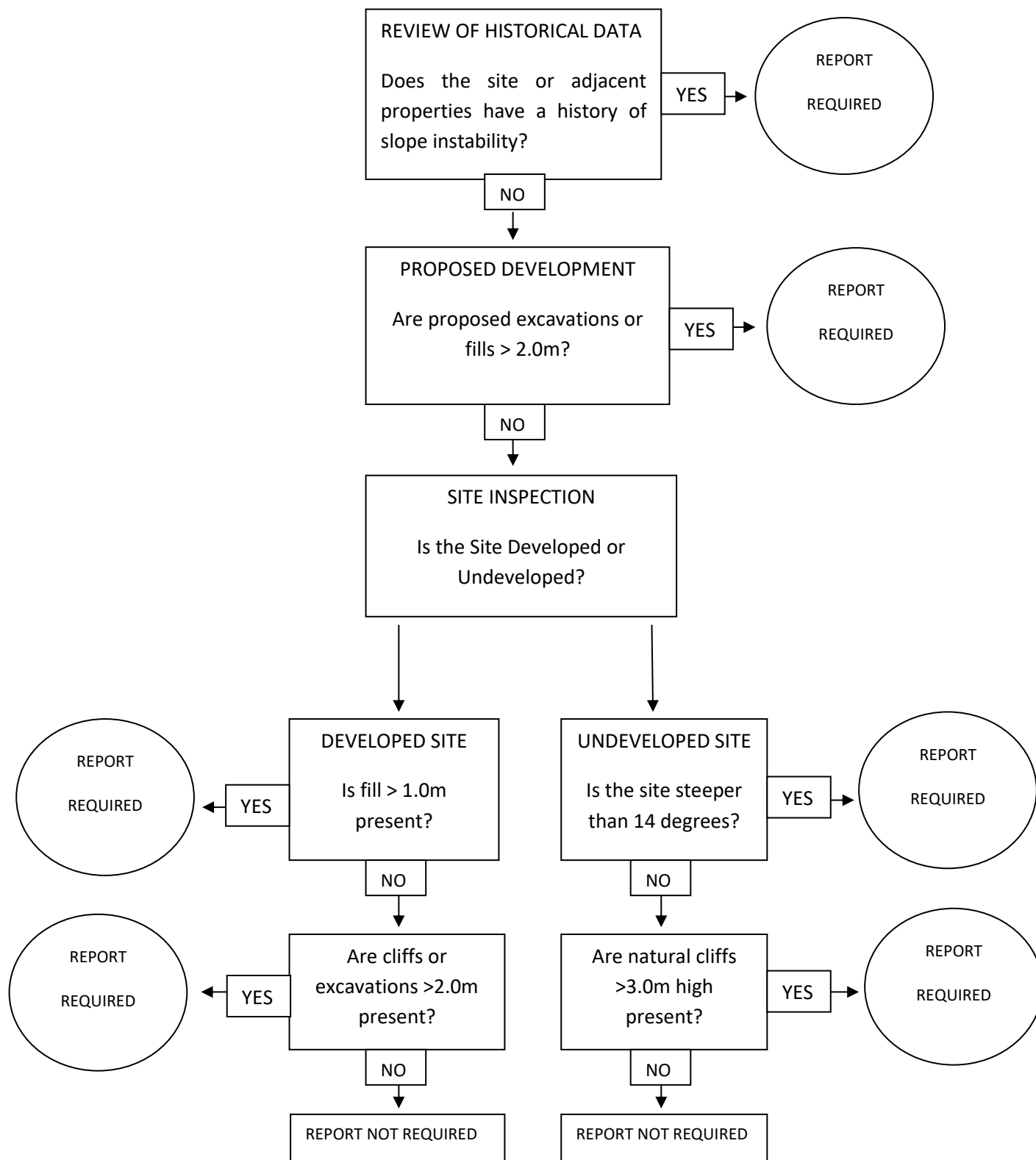


Photo 3: PIT 2



Photo 4: PIT 3

Preliminary Assessment Flow Chart – Northern Beaches Council (Warringah)



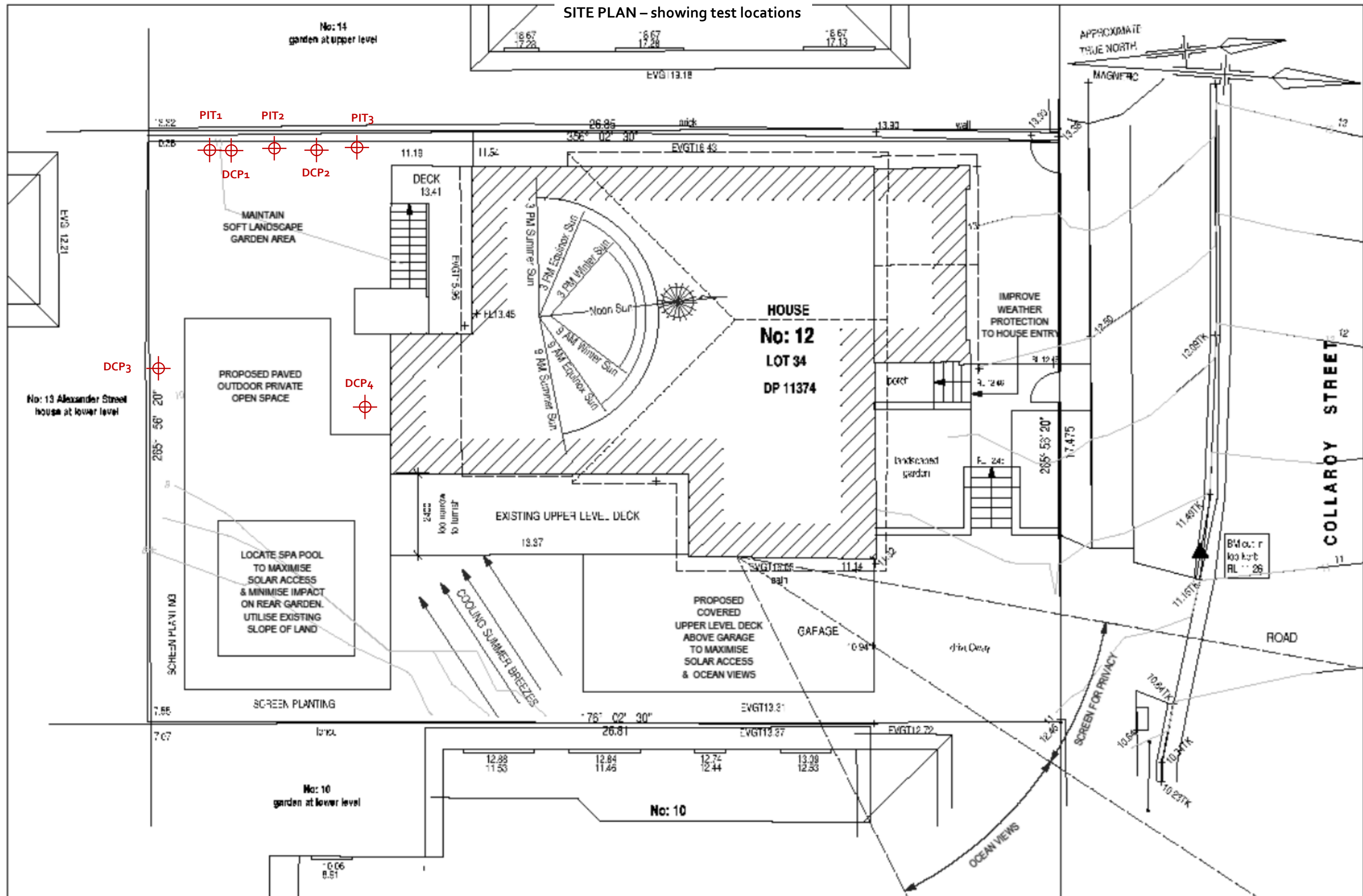
Information about your Preliminary Assessment

This Preliminary Assessment relies on visual observations of the surface features observed during the site inspection. Where reference is made to subsurface features (e.g. the depth to rock) these are interpretations based on the surface features present and previous experience in the area. No ground testing was conducted as part of this assessment and it is possible subsurface conditions will vary from those interpreted in the assessment.

In some cases, we will recommend no further geotechnical assessment is necessary despite the presence of existing fill or a rock face on the property that exceed the heights that would normally trigger a full geotechnical report, according to the Preliminary Assessment Flow Chart. Where this is the case, if it is an existing fill, it is either supported by a retaining wall that we consider stable, or is battered at a stable angle and situated in a suitable position on the slope. If it is a rock face that exceeds the flow chart limit height, the face has been deemed to be competent rock that is considered stable. These judgements are backed by the inspection of over 5000 properties on Geotechnical related matters.

The proposed excavation heights referred to in section 2.0 of this assessment are estimated by review of the plans we have been given for the job. Although we make every reasonable effort to provide accurate information excavation heights should be checked by the owner or person lodging the DA. If the excavation heights referred to in in section 2.0 of this assessment are incorrect, we are to be informed immediately and before this assessment is lodged with the DA.

SITE PLAN – showing test locations



TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials

RL 18.755

RL 16.355
RL 16.075

RL 13.43

RL 11.10



north elevation

- Fill
- Topsoil
- Sandy Clay – Firm to Stiff
- Narrabeen Group Rocks – Extremely Low Strength Shale - after being cut up by excavation equipment can resemble a stiff to hard clay.

RL 18.68

RL 16.355
RL 16.075

RL 13.43

RL 10.80



south elevation

LEGEND

- Existing ☐
- Demolition ☐
- New work ☐



Blackwood Architects
14 Woodland Street Clontarf NSW 2093
Tel: 02 9907 7111 Fax: 02 9907 7222

ISSUE	DATE	PURPOSE	REV	DATE	AMENDMENT	REV	DATE	AMENDMENT
01	03.09.18	Sketch Design						
02	19.10.18	Development Application						

DEVELOPMENT APPLICATION
Alterations and Additions
12 COLLAROY STREET
COLLARROY NSW

Scale 1:100 @ A3 Date 19.10.18
NORTH & SOUTH
ELEVATIONS
Development Application only. NOT for Construction

Issue:
02
Revision:

04