INFILTRATION TESTING:

For Proposed Infiltration Trench at **17 Carew Street, Dee Why**

1. Site Description

The site was inspected on the 5th December, 2019.

This residential property is on the low side of the road and has a NE aspect. The land surface surrounding the house and parking area is mostly lawn-covered. The proposed infiltration trench will be on the lawn in the NE corner of the property. The weather had been dry in the weeks prior to and the soil was dry at the time of the inspection.

2. 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.

3. Subsurface Investigation

One Hand Auger Hole (AH) was put down for the stand pipe used in the infiltration testing. Three Dynamic Cone Penetrometer (DCP) tests were put down to determine the density of the soil and the depth of rock. The locations of the tests are shown on the site plan and the logs and results are as follows:

AUGER HOLE 1 – STANDPIPE 1 (~RL54.2) – (Photo 1)

Depth (m)	Material Encountered
0.0 to 0.3	**TOPSOIL**, sandy soil, dark brown, loose, dry, fine to medium grained with fine trace organic matter.
0.3 to 0.5	**SAND**, brown, medium dense, coarse grained.
0.5 to 0.7	**CLAY**, orange and mottled grey, soft to very stiff, dry, fine grained.

End of Test @ 0.7m in very stiff clay. 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** (~RL54.6)	**DCP 2** (~RL54.6)	**DCP 3** (~RL54.1)
0.0 to 0.3	8	7	3
0.3 to 0.6	9	14	9
0.6 to 0.9	5	10	19
0.9 to 1.2	13	14	17
1.2 to 1.5	29	20	29
1.5 to 1.8	30	20	30
1.8 to 2.1	#	#	#
	Refusal on Rock @ 1.7m	Refusal on Rock @ 1.6m	Refusal on Rock @ 1.7m

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

DCP Notes:

DCP 1 – Refusal on rock @ 1.7m, DCP thudding, maroon sandstone fragments on dry tip.
DCP 2 – Refusal on rock @ 1.6m, DCP thudding, white and maroon sandstone fragments on dry tip.
DCP 3 – Refusal on rock @ 1.7m, DCP thudding, orange sandstone on dry tip.

4. Geological Interpretation

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 a thin sandy soil over sands and sandy clays that fill the bench step formation. In the test locations, rock was encountered at an average depth of ~1.7m below the current surface. The outcropping sandstone on the property is estimated to be medium strength or better and similar strength rock is expected to underly the entire site.

5. Water Table

No water table was encountered in the testing that extended to a depth of 1.7m below the surface. Given the site's elevation and slope, the water table is expected to be metres below the extent of the testing.

6. Infiltration Rate

A constant head infiltration test was carried out within a slotted PVC standpipe. The standpipe was filled with water and a constant head maintained until the flow rate of water into the borehole equalled the flow rate out of the borehole into the ground.

To create a saturated bulb in the testing zone, the hole was repeatedly filled with water and the drop in water level measured relative to time. This process was repeated until successive tests gave different readings by <5%. It was this run that was used to determine the infiltration rate.

The results of the testing are as follows:

Auger Location	Depth of Test (m)	Measured Infiltration Rate L/m²/s	Design Infiltration Rate (long term) L/m²/s
Stand Pipe 1	0.7	0.043	0.037
Note: The Design Infiltration Rate is based on bore hole geometry.			

7. Recommendations

Minimum Distance from Boundaries

Trenches should follow the natural slope contours (i.e. run perpendicular to the slope) and be at least 3.0m from the surrounding structures and common boundaries.

Impact on Surrounding Structures

In our opinion the site is suitable for infiltration, provided the rate of infiltration determined in this report is used in the design and the depth of the soil in the location of the proposed trench is adequate across its extent. We recommend the trench be installed with an overflow spreader pipe due to the slow to moderate rate of infiltration measured. The trench is unlikely to detrimentally impact the neighbouring properties/structures provided good engineering and building practises are carried out in its design and construction.

Subsurface Waterproofing

No subsurface water proofing will be required.

Design Requirements for Walls or Footings

As the trench is downslope of the other proposed works on the property, there are no special design requirements for footings.

White Geotechnical Group Pty Ltd.

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Photo 1: STANDPIPE1 – Downhole is from top to bottom.

SITE PLAN – showing test locations

LEGEND

BB	BOTTOM OF BANK	PLM	TREE PALM-DIA,SPREAD,HEIGHT
BL	BALCONY	PP	POWER POLE NETWORK
CL	CENTERLINE	RF	ROOF
CON	CONCRETE	RR	ROOF RIDGE
DK	DECK	SIP	SEWER INSPECTION PIT
DS	DOOR SILL LEVEL	SL	SILL LEVEL
EB	EDGE OF BITUMEN	SMH	SEWER MAN HOLE
ELO	ELECTRICITY OVERHEAD	SV	STOP VALVE
FL	FLOOR LEVEL	TB	TOP OF BANK
GM	GAS METER	TEL	TELSTRA
GR	GRAVEL	TFCE	TOP OF FENCE
GRT	GRATE	TG	TOP OF GUTTER
HL	HOOD LEVEL	TKB	TOP OF KERB
HYD	HYDRANT	TR	TREE-DIA,SPREAD,HEIGHT
LAN	LANDING	VC	VEHICLE CROSSING
NS	NATURAL SURFACE	WM	WATER METER

TRUE NORTH

METAL & CONC. BLOCK CARPORT

B D.P.391227

No.15 CLAD RESIDENCE METAL ROOF

37.80m SETBACK

DELAPIDATED PALING FENCE

CAREW STREET

CONCRETE KERB & GUTTER

CONCRETE DRIVEWAY

GRAVEL DRIVEWAY

BENCHMARK NAIL IN KERB RL 59.05

No.17 ELEVATED POLE CLAD RESIDENCE METAL ROOF

CONCRETE PARKING UNDER

BRICK STRUCTURE BELOW

TIMBER STAIRS

TIMBER BALCONY

Proposed 2kl RW tank

8 SEC. C D.P.8270 (952.9m²)

38.11m SETBACK

ROCK EMBANKMENT

METAL FENCE

NAIL IN BITUMEN

BUSHEY PLACE

DCP1

DCP2

DCP3

STANDPIPE1

No.19 CLAD RESIDENCE TILE ROOF

9.01m SETBACK

103 D.P.666722

72 D.P.7579

0 10 20m

SCALE - 1 : 200

North

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REVISIONS			
No.	Description	By	Date

NORTHERN BEACHES COUNCIL
Private Dwelling at
Lot 8, Sec C, DP 8270
No 17 Carew St
Dee Why
For Mr & Mrs B & A Andrews

Drawn: Roger Andrews (Retired)
(ex-member TMIE Aust. CEngT)
Ph: 0414385567
Date: 26/05/2019
Scale: 1:200 @ A3 approx.

Project: No17 Carew St. Dee Why
Proposed House Extension
DEVELOPMENT APPLICATION

Drawing Title: SITE SURVEY PLAN

Drawing No:	SHEET	OF	REV.
2019 - DA	10	17	0