

PRELIMINARY ASSESSMENT: Acid Sulfate

Alterations and Additions and New Pool at **2131 Pittwater Road, Church Point**

<i>Class of land as shown on Acid Sulfate Soils Planning Maps</i>		<i>Type of Works</i>
<input type="checkbox"/>	1	Any works
<input checked="" type="checkbox"/>	2	Works below the natural ground surface. Works by which the water table is likely to be lowered.
<input type="checkbox"/>	3	Works beyond 1m below the natural ground surface. Works by which the water table is likely to be lowered beyond 1m below the natural ground surface.
<input type="checkbox"/>	4	Works beyond 2m below the natural ground surface. Works by which the water table is likely to be lowered beyond 2m below the natural ground surface.
<input checked="" type="checkbox"/>	5	Works on land below 5m AHD and within 500m of adjacent Class1, 2, 3 or 4 land which are likely to lower the watertable below 1m AHD on adjacent Class 1, 2, 3 or 4 land.
<i>The class of the site is highlighted in red; it should be noted that the classification does not mean acid sulfate soils are present on site but that there is a risk they could be present.</i>		

1. Proposed Development

- 1.1** Demolish most of the existing internal and external walls of the house.
- 1.2** Extend the lower ground floor of the house upslope and install a lift by excavating to a maximum depth of ~2.8m.
- 1.3** Extend the ground floor of the house to the NW by excavating to a maximum depth of ~1.7m.
- 1.4** Demolish the existing pool and install a new pool in the same location.
- 1.5** Minor internal and external alterations and additions.
- 1.6** Details of the proposed development are shown on 24 drawings prepared by Archisoul Architects, project 2251, drawings numbered DA01 to DA24, dated 28.10.2024.

2. Site Description

The site was inspected on the 18th November, 2024 and previously on the 1st August, 2024.

The block encompasses the lower reaches of a hillslope that rises near the waterfront at Pittwater. The Sydney 1:100 000 Geological Sheet indicates the contact of Hawkesbury Sandstone and the Narrabeen Group Rocks cuts through the middle of the property, although at a residential scale the map is not always accurate. Ground testing indicates that the property is underlain by geology which is consistent with the Narrabeen Group. This is described as interbedded laminite, shale, and quartz to lithic quartz sandstone.

The NSW Environment and Heritage mapping program (eSpade) maps the soil landscape of the property as 'Erina'. The ground tests indicate the upper ~1.0m is a yellowish-brown sandy clay (er3). This is underlain by dull yellow-orange mottled clays (er5) that merge into the underlying weathered shale of the Narrabeen Group. Their documentation indicates these soils range in pH from 4.0 to 7.0.

The Narrabeen Group of Rocks are Middle Triassic in age (~250 million years).

No visible signs of acid sulfate soils such as corrosion on man-made surfaces, or unusually clear, milky, or iron-stained surface water were observed on the property.

3. Earthworks

An excavation to a maximum depth of ~2.8m will be required to construct the alterations and additions. The excavations will cover an area of ~23m². The excavations are entirely through the rising slope near the waterfront that consists of the Narrabeen Group Rocks that do not generate acid sulfate conditions.

4. Water Table

The water table was not encountered during testing. The base of the excavation for the alterations and additions is at RL3.9m and will be above the water table.

5. Field Testing

Four hand Auger Holes (AH) were put down in the location shown on the site plan attached. Field pH and peroxide testing was carried out on samples taken from the Auger Holes at regular intervals. The logs of the Auger Holes and the test results are as follows.

AUGER HOLE 1 (~RL8.4) – AH1 (Photo 1)

Depth (m)	Material Encountered
0.0 to 0.1	FILL , brown, Dense, dry, fine to medium grained.
0.1 to 0.3	FILL , mottled grey clay, dry, fine to medium grained.
0.3 to 0.7	SANDY CLAY , derived from weathered shale, mottled maroon, orange, and grey, Hard, dry, fine to medium grained.

End of test @ 0.7m in clay derived from weathered shale. No water table encountered.

TEST: AH1	FIELD pH & PEROXIDE RESULTS				
Sample depth (m)	pH _F	30% Peroxide reaction	pH _{FOX}	pH _F - pH _{FOX}	SS=Shell J=Jarosite R=Roots
0.2	5.6	L	5.2	-0.4	-
0.5	6.0	M	6.0	0.0	-

AUGER HOLE 2 (~RL8.4) – AH2 (Photo 2)

Depth (m)	Material Encountered
0.0 to 0.1	FILL , brown, Dense, dry, fine to medium grained.
0.1 to 0.3	FILL , mottled grey clay, dry, fine to medium grained.
0.3 to 0.7	SANDY CLAY , derived from weathered shale, mottled maroon, orange, and grey, Hard, dry, fine to medium grained.

End of test @ 0.7m in clay derived from weathered shale. No water table encountered.

TEST: AH2	FIELD pH & PEROXIDE RESULTS				
Sample depth (m)	pH _F	30% Peroxide reaction	pH _{FOX}	pH _F - pH _{FOX}	SS=Shell J=Jarosite R=Roots
0.2	5.7	M	5.6	0.1	-
0.5	4.6	M	4.7	-0.1	-

AUGER HOLE 3 (~RL3.7) – AH3 (Photo 3)

Depth (m)	Material Encountered
0.0 to 0.2	FILL , dark brown, Medium Dense, damp, medium grained
0.2 to 0.8	CLAYEY FILL , brown, Soft, damp, fine to medium grained, clay fragments included.
0.8 to 0.9	CLAYEY SANDY SOIL , dark brown, Soft, damp, fine to medium grained.
0.9 to 1.6	CLAYEY SAND , brown to light brown, Medium Dense to Dense, damp, fine to medium grained.
1.6 to 1.8	CLAY , mottled maroon, orange, yellow, grey, Very Stiff, damp, charcoal inclusions.

End of test @ 1.8m in clay derived from weathered shale. No water table encountered.

TEST: AH3	FIELD pH & PEROXIDE RESULTS				
Sample depth (m)	pH _F	30% Peroxide reaction	pH _{FOX}	pH _F - pH _{FOX}	SS=Shell J=Jarosite R=Roots
0.3	5.7	M	5.7	0.0	-
0.7	6.1	M	5.8	0.3	-
1.3	7.1	M	6.7	0.4	-

AUGER HOLE 4 (~RL3.7) – AH4 (Photo 4)

Depth (m)	Material Encountered
0.0 to 0.1	FILL , dark brown soil, Medium Dense, damp, medium grained
0.1 to 0.7	FILL , clay, and gravel, dry, fine to medium grained.
0.7 to 0.9	CLAYEY SANDY SOIL , dark brown, Soft, damp, fine to medium grained.

0.9 to 1.1 **SAND**, brown to light brown, Medium Dense to Dense, damp, fine to medium grained.

1.1 to 1.3 **CLAY**, derived from weathered shale, mottled orange, Stiff, damp.

End of test @ 1.3m in clay. No water table encountered.

TEST: AH4	FIELD pH & PEROXIDE RESULTS				
Sample depth (m)	pH _F	30% Peroxide reaction	pH _{FOX}	pH _F - pH _{FOX}	SS=Shell J=Jarosite R=Roots
0.3	6.7	M	6.1	0.6	-
0.7	6.3	M	5.8	0.5	-
1.1	6.9	M	6.9	0.0	-

6. Conclusions

This report was carried out in accordance with the Field pH and Peroxide Test guidelines (ASSMAC, 1998).

No Acid Sulfate Soils were identified in the test holes. The pH_F levels tested in all Auger Holes did not fall lower than 4.6. This is above a PH of 4.0 that is an indicator of acid sulfate soils. No Potential Acid Sulfate Soils were identified in the test holes. The measured pH_F levels varied up to 0.4 from the measured pH_{FOX} levels. A movement of 1 unit or more is an indicator of potential acid sulfate soils. In addition, the measured pH_{FOX} for all tests did not fall lower than 4.7. A pH_{FOX} <3 is a strong indicator of potential acid sulfate soils. No observable colour change or sulphurous odours were identified during the peroxide testing. No reactions to peroxide testing were observed. It is likely the varying weak reactions to peroxide testing were due to inclusions in the soil other than sulphides as, where the reaction was strongest, pH_{FOX} changed little from pH_F as it did in most tests.

This preliminary assessment indicates that an Acid Sulfate Soils management plan is not required for the proposed works.

White Geotechnical Group Pty Ltd.



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Appendix 1: Soil Reaction Rating Scale

Rate of Reaction	Reaction Scale
Low	L
Medium	M
High	H
Extreme	X
Volcanic	V

Source: DER (2015a)



Photo 1: AH1 – Downhole is from top to bottom.



Photo 1: AH2 – Downhole is from top to bottom.



Photo 3: AH3 – Downhole is from bottom to top.



Photo 4: AH4 – Downhole is from top to bottom.

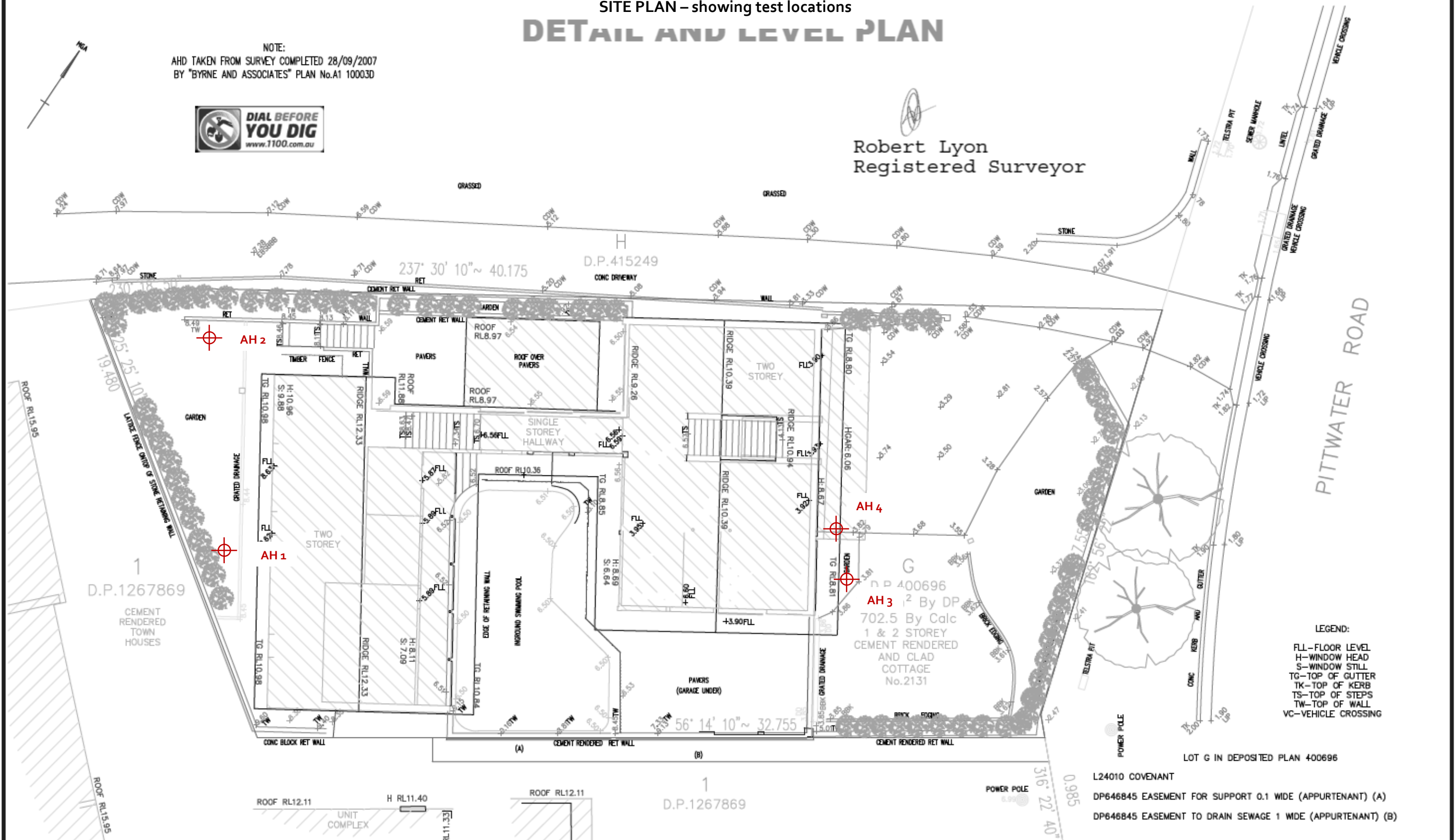
SITE PLAN – showing test locations

DETAIL AND LEVEL PLAN

NOTE:
AHD TAKEN FROM SURVEY COMPLETED 28/09/2007
BY "BYRNE AND ASSOCIATES" PLAN No.A1 10003D



Robert Lyon
Registered Surveyor



LEGEND:
FLL – FLOOR LEVEL
H – WINDOW HEAD
S – WINDOW STILL
TG – TOP OF GUTTER
TK – TOP OF KERB
TS – TOP OF STEPS
TW – TOP OF WALL
VC – VEHICLE CROSSING

LOT G IN DEPOSITED PLAN 400696

L24010 COVENANT
DP646845 EASEMENT FOR SUPPORT 0.1 WIDE (APPURTENANT) (A)
DP646845 EASEMENT TO DRAIN SEWAGE 1 WIDE (APPURTENANT) (B)

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THE BOUNDARIES OF THE SITE HAVE BEEN IDENTIFIED BY FIELD SURVEY DO NOT SCALE OFF THIS DRAWING, WHERE OFFSETS ARE CRITICAL THEY SHOULD BE DETERMINED BY A FURTHER SURVEY.

SERVICES SHOWN HEREON HAVE BEEN DETERMINED BY VISUAL EVIDENCE ONLY. PRIOR TO ANY DEMOLITION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ESTABLISH DETAILED LOCATION AND DEPTH.

SCALE 1:150
DATUM : AHD71
ORIGIN :SSM 27881
SURVEYED : RL
DRAWN : RL
DATE: 05/2023

REVISION No. DATE



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TITLE DESCRIPTION
LOT G DP 400696
L.G.A.
NORTHERN BEACHES

2131 PITTWATER ROAD
CHURCH POINT

REFERENCE No. 1379

SHEET
1 of 1