

PRELIMINARY ASSESSMENT: Acid Sulfate

For Proposed Works at 87 Wimbledon Avenue, North Narrabeen

<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 type="checkbox"/>	2	Works below the natural ground surface. Works by which the water table is likely to be lowered.
<input checked="" 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 type="checkbox"/>	5	Works on land below 5m AHD and within 500m of adjacent Class 1, 2, 3 or 4 land which are likely to lower the watertable below 1m AHD on adjacent Class 1, 2, 3 or 4 land.

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.

1. Proposed Development

- 1.1** Install a new pool on the W side of the house by excavating to a maximum depth of ~2.1m.
- 1.2** Details of the proposed development are shown on 7 drawings provided by Site Design Studios, drawing number 1392, pages numbered L-01 to L-07, dated 19/11/21.

2. Site Description

The site was inspected on the 7th December, 2021.

The block is located on the near level terrain E of Narrabeen Lagoon. The surface varies between ~RL1.4 and ~RL2.5. The Sydney 1:100 000 Geological sheet indicates the site is underlain by Manmade Fill (mf) and Alluvial Stream and Estuarine Sediment (Qha). The Alluvial Stream and Estuarine Sediment are described as silty to peaty quartz sand, silt and clay with ferruginous and humic cementation in places and common shell layers.

The NSW Environment and Heritage mapping program (eSpade) maps the soil landscape of the property as 'Warriewood'.

The ground tests indicate the upper ~0.3m to ~0.6m of soil is manmade fill (mf) that overlies light brown/yellow bleached massive sand (wa2) with a thin ~0.2m layer of black sticky peat (wa4). The peat is underlain by grey pale mottled massive sand (wa3). Their documentation indicates these soils range in pH from 4.5 to 7.0 and the PH of the fill varies markedly.

Ground testing indicates that sand sediments extend to a depth of at least 5.1m. The sand sediments are Holocene in age (spanning in time from present to ~10 000 years ago).

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 ~2.1m is required for the proposed pool. It will cover an area of ~30m². The excavation is only a risk in regards to potential acid sulfate soils while it is open. On completion of the footings, they will be sealed with the foundation, preventing access of oxygen to the soil and therefore greatly reducing the potential for acid generation.

4. Watertable

The watertable was encountered at depths from between ~1.5m to ~1.6m (~RL0.5) below the current surface. It should be noted the watertable fluctuates with the tide and climatic changes.

5. Field Testing

Four hand auger holes were put down in the locations shown on the site plan attached. Field pH and pH_{FOX} 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. The soil reaction rating scale for the pH_{FOX} test is shown in Appendix 1.

AUGER HOLE 1 (~RL2.1) – AH1

Depth (m)	Material Encountered
0.0 to 0.3	FILL , silty sand, brown, dry, fine to medium grained.
0.3 to 1.4	SAND , with shell fragments, light brown/yellow, Very Loose to Loose, moist to wet, fine to medium grained.
1.4 to 1.6	SANDY PEAT , with shell fragments, black and dark grey, wet.
1.6 to 2.0	SAND , with shell fragments, grey, Loose to Medium Dense, wet, fine to medium grained.

End of Hole @ 2.0m in Loose to Medium Dense sand. Watertable encountered at ~1.6m.

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
0.3	6.9	L	6.9	0	-
0.7	6.5	L	6.5	0	~5% SS
1.3	8.0	L	7.9	0.1	~10% SS
1.6	7.4	L	7.3	0.1	~5% SS
2.0	6.8	L	6.8	0	~5% SS

AUGER HOLE 2 (~RL2.1) – AH2

Depth (m)	Material Encountered
0.0 to 0.3	FILL , silty sand, brown, dry, fine to medium grained.
0.3 to 1.4	SAND , with shell fragments, light brown/yellow, moist to wet, fine to medium grained.
1.4 to 1.6	SANDY PEAT , with shell fragments, black and dark grey, wet.
1.6 to 1.9	SAND , with shell fragments, grey, wet, fine to medium grained.

End of Hole @ 1.9m in sand. Watertable encountered at ~1.6m.

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
0.3	7.7	L	7.6	0.1	-
0.8	7.7	L	7.7	0	~5% SS
1.3	7.5	L	7.4	0.1	~5% SS
1.6	7.9	L	7.8	0.1	~5% SS
1.9	7.7	L	7.6	0.1	~5% SS

AUGER HOLE 3 (~RL2.0) – AH3

Depth (m)	Material Encountered
0.0 to 0.5	FILL , silty sand, brown, dry, fine to medium grained.
0.5 to 1.4	SAND , with shell fragments, light brown/yellow, moist to wet, fine to medium grained.
1.4 to 1.5	SANDY PEAT , with shell fragments, black and dark grey, wet.
1.5 to 2.1	SAND , with shell fragments, grey, wet, fine to medium grained.

End of Hole @ 2.1m in sand. Watertable encountered at ~1.5m.

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
0.4	7.5	L	7.5	0	-
0.9	7.7	L	7.6	0.1	~5% SS
1.5	7.4	L	7.3	0.1	~5% SS
2.1	7.0	L	7.0	0	~5% SS

AUGER HOLE 4 (~RL2.0) – AH4

Depth (m)	Material Encountered
0.0 to 0.6	FILL , silty sand, brown, dry, fine to medium grained.
0.6 to 1.3	SAND , with shell fragments, light brown/yellow, Loose to Medium Dense, moist to wet, fine to medium grained.
1.3 to 1.9	SAND , with shell fragments, grey, Loose to Medium Dense, wet, fine to medium grained.

End of Hole @ 1.9m in Loose to Medium Dense sand. Watertable encountered at ~1.5m.

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
0.4	7.7	L	7.7	0	-
0.9	7.7	L	7.7	0	~5% SS
1.4	7.8	L	7.7	0.1	~5% SS
1.9	7.7	L	7.6	0.1	~5% SS

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 6.5. This is above a PH of 4 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 0.1 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 6.5. 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. It is likely the low reactions to peroxide testing were due to inclusions in the soil other than sulphides.

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

White Geotechnical Group Pty Ltd.



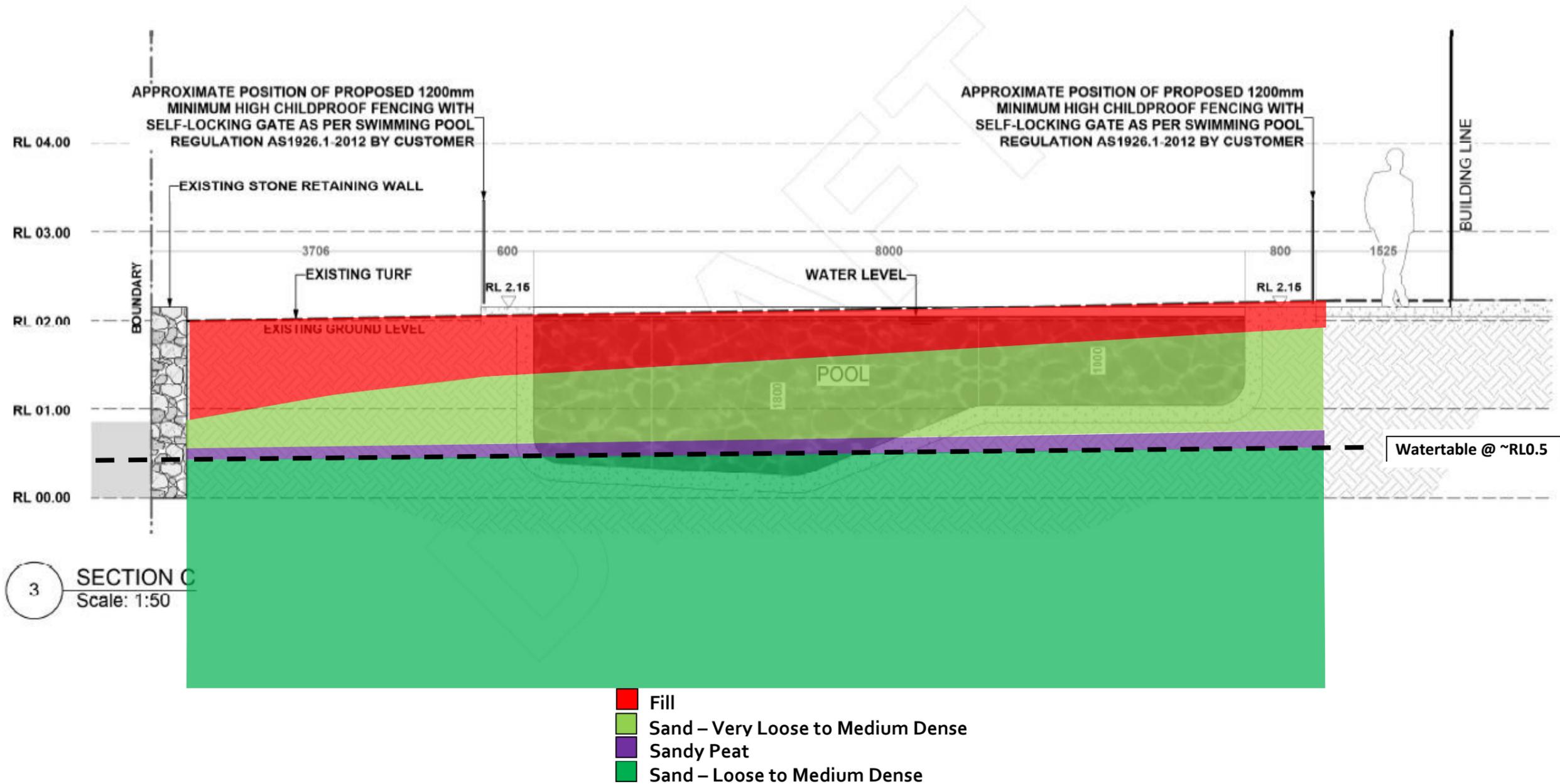
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Appendix 1: Soil Reaction Rating Scale

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

Source: DER (2015a)

TYPE SECTION – Diagrammatic Interpretation of expected Ground Materials



3 SECTION C
Scale: 1:50

ISSUE	DATE	COMMENT
A	19/11/21	FOR REVIEW

AMENDMENTS		
Date	19/11/2021	
Scale	1:50@A3	

GENERAL NOTES
All work to be carried out in accordance with the Building Code of Australia, all Local and State Government Ordinances, relevant Australian Standards, Local Authorities Regulations and all other relevant Authorities concerned.
All structural work and site drainage to be subject to Engineer's advice or notification where required by Council. This shall include r/r, slabs and footings, r/r and steel beams & columns, steel bracing to AS 1170 and AS4555, anchor rods or bolts, fixings, hangings etc., driveway slabs and drainage to Council's satisfaction. All timbers to be in accordance with SAA Timber Structure Code AS1720 and SAA Timber Framing Code AS 1684. All work to be carried out in a professional and workman-like manner, according to the plans and specifications.
Do not scale off the drawings unless otherwise stated and use spaced dimensions in preference.
All dimensions are to be checked and verified on site before the commencement of any work, all dimensions and levels are subject to final survey and survey. No responsibility will be accepted by SiteDesign + Studios for any variations in design, builder's method of construction or materials used, deviation from specification without permission or on-site work practices resulting in errors or construction. Locate and protect all services prior to construction.
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Project **PROPOSED SWIMMING POOL**
Address **LOT 10, NO.87 WIMBLEDON AVENUE, NORTH NARRABEEN**
Drawing Title **SECTION C**

Drawing No. **1392**