

PRELIMINARY ASSESSMENT: Acid Sulfate

For Additions and Alterations at **13 Garden Street, 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 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** Partially demolish the existing house and extend, adding a new floor above.
- 1.2** Construct a new driveway and crossover at the road frontage.
- 1.3** Various other minor internal and external additions and alterations.
- 1.4** Details of the proposed development are shown on 12 drawings prepared by Blue Sky Building Designs, project number 2023-015, drawings numbered A101 to 109, A110.1 to 110.2, and A111.2. All Issue 3. All dated 27.08.24

2. Site Description

The site was inspected on the 18th September, 2024.

This residential property is on the E side of the road and is located on near-level terrain. The property is on the SW side of Mullet Creek and to the W of Narrabeen Lagoon. The surface varies between RL1.8 and RL2.3. The Sydney 1:100 000 Geological Sheet indicates the site is underlain by the Newport Formation of the Narrabeen Group. However, alluvial sediments were encountered to the extent of the testing at 2.1m.

The NSW Environment and Heritage mapping program (eSpade) maps the soil landscape of the property as 'Warriewood'. The ground tests indicate that the upper ~0.3 to ~0.5m of soil is a loose, speckled dark grey loamy sand (wa1). These are underlain by bleached massive sand (wa2) and dark brown soft organic pan (wa6). Their documentation indicates these soils range in pH from 4.5 to 7.0.

Ground testing indicates that sand sediments extend to a depth of at least ~2.1m. 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 bare low-lying areas, corrosion on man-made surfaces, or unusually clear, milky, or iron-stained surface water were observed on the property.

3. Earthworks

Apart from those for footings and minor leveling, no excavations are required for the proposed works. The footing excavations are only a risk in regards to potential acid sulfate soils while they are open. On completion of the excavations, they will be sealed with concrete, preventing access of oxygen to the soil and therefore greatly reducing the potential for acid generation.

4. Water table

The water table was encountered at a depth of approximately ~1.7m below the current surface (~RL0.4). However, it should be noted that the water table fluctuates with the tide and climatic changes.

5. Field Testing

Four hand Auger Holes (AH) were put down in the locations 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. The soil reaction rating scale for the pH_{FOX} test is shown in Appendix 1.

AUGER HOLE 1 (~RL2.1) – AH1 (Photo 1)

Depth (m)	Material Encountered
0.0 to 0.3	TOPSOIL , sandy soil, dark brown to brown, dry, fine to medium, shells and shell fragments, and fine organic matter (roots) present.
0.3 to 1.4	ALLUVIAL SEDIMENT , sand, light brown to yellow, dry to damp, shells and shell fragments present.
1.4 to 2.1	ALLUVIAL SEDIMENT , clayey sand, grey, damp to wet, fine to coarse grained.

End of hole @ 2.1m in alluvial sediment. Hole collapsing due to presence of water. Water table encountered at ~1.7m.

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	7.5	L	7.4	0.1	<5% R & SS
0.7	7.7	M	7.6	0.1	<5% SS
1.2	8.0	M	7.8	0.2	<5% SS
1.7	8.0	M	7.8	0.2	<5% SS
2.1	7.6	M	7.0	0.6	<5% SS

AUGER HOLE 2 (~RL2.2) – AH2 (Photo 2)

Depth (m)	Material Encountered
0.0 to 0.5	TOPSOIL , sandy soil, dark brown to brown, dry, fine to medium, shells and shell fragments, and fine organic matter (roots) present.
0.5 to 1.0	ALLUVIAL SEDIMENT , sand, light brown to yellow, dry to damp, shells and shell fragments present.

End of Hole @ 1.0m in alluvial sediment (sand). 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
0.4	7.6	M	7.5	0.1	<5% R & SS
0.9	7.7	L	7.7	0	<5% SS

AUGER HOLE 3 (~RL2.2) – AH3 (Photo 3)

Depth (m)	Material Encountered
0.0 to 0.4	TOPSOIL , sandy soil, dark brown to brown, dry, fine to medium, shells and shell fragments, and fine organic matter (roots) present.
0.4 to 1.0	ALLUVIAL SEDIMENT , sand, light brown to yellow, dry to damp, shells and shell fragments present.

End of Hole @ 1.0m in alluvial sediment (sand). 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
0.4	7.6	M	7.5	0.1	<5% R & SS
0.9	8.0	L	7.8	0.2	<5% SS

AUGER HOLE 4 (~RL2.2) – AH4 (Photo 4)

Depth (m)	Material Encountered
0.0 to 0.5	TOPSOIL , sandy soil, dark brown to brown, dry, fine to medium, shells and shell fragments, and fine organic matter (roots) present.
0.5 to 1.0	ALLUVIAL SEDIMENT , sand, light brown to yellow, dry to damp, shells and shell fragments present.

End of Hole @ 1.0m in alluvial sediment (sand). 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
0.5	7.9	M	7.8	0.1	<5% R & SS
1.0	8.1	H	8.0	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 7.5. 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 0.6 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} did not fall lower than 7.0. 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 varying 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 2: AH2 – Downhole is from top to bottom



Photo 3: AH3 – Downhole is from top to bottom



Photo 4: AH4 – Downhole is from top to bottom

SITE PLAN – showing test locations

1 SITE PLAN

A101 1 : 200

KEEP THE HEDGE FOR PRIVACY AND NOISE CONTROL

- LANDSCAPED AREA
- HARD SURFACE
- SITE COVERAGE
- POOL

CALCULATION TABLE

TITLE:	LOT 1 DP 24227		
ZONE	R2 - LOW DENSITY RESIDENTIAL		
HAZARDS	-		
SITE AREA	717.2m ²		
MAX. BUILDING HEIGHT	Hmax = 8.5 m		
	EXISTING	PROPOSED	REQUIRED
GROSS FLOOR AREA	115m ²	140+150=290m ²	
GARAGE / CARPORT	0m ²	45m ²	
SITE COVERAGE	164m ² / 23%	244.5m ² / 34%	
HARD SURFACE	149.5m ² / 21%	77.5m ² / 11%	
POOL WATER SURFACE	35m ² / 5%	35m ² / 5%	
LANDSCAPED AREA	368.7m ² / 51%	360.2m ² / 50%	

Do not scale from plans. All dimensions and levels shown on plan are subject to confirmation on site.

ISSUE	DATE	DESCRIPTION	DRWN	CHKD
	18.10.2023	MEASURED DRAWINGS	TM	KM
	13.04.2024	CONCEPT 3.1	KM	
3	27.08.2024	DA ISSUE	KM	

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PROJECT TITLE: ALTERATION & ADDITION

PROJECT NO.: 2023-015

AT: 13 GARDEN STREET,
NORTH NARRABEEN 2101

FOR: PETER & PHOEBE BRISBANE

SHEET TITLE: SITE PLAN

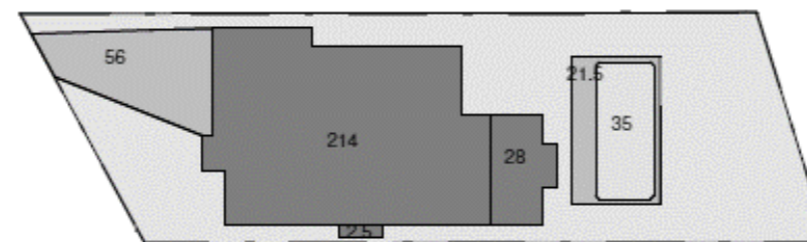
SHEET NO: A101

SCALE A3: As indicated



2 SITE ANALYSIS - EXISTING

A101 1 : 500

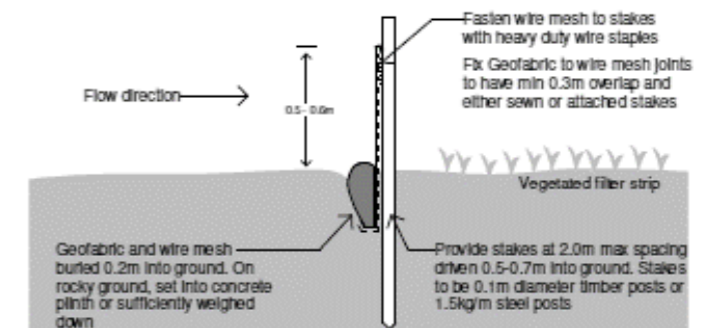


4 SITE ANALYSIS - PROPOSED

A101 1 : 500

DISTURBED AREA

UNDISTURBED AREA



SILT FENCE DETAIL & NOTES:

1. Silt fences should be installed on a site as early as possible, ideally before excavation or other soil disturbance begins
2. Install a silt fence down-slope from the construction area, always along the contour (curve) of the slope you are protecting – don't install in straight lines
3. Significant downward slopes should use the curved installation method
4. Stockpiles of soil and building materials must be contained by a silt fence
5. Leave the silt fence in place until vegetation is established, or sediment is stabilised
6. Silt fencing requires frequent inspections, particularly after each runoff event (storm, rainfall etc.), to check for damage or clogging of the fence by silt and debris
7. Silt fences are best used for sites where the soil disturbance area is up to 0.5 of a hectare