

PRELIMINARY ASSESSMENT: Acid Sulfate

For Proposed Aged Care Centre at **23-25 Bassett Street, Mona Vale**

<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 checked="" 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** Demolish the existing two houses and aged care centre and construct a new aged care centre with basement parking by excavating to a maximum depth of ~2.0m into the slope.
- 1.2** Details of the proposed development are shown on 3 drawings prepared by Gartner Trovato Architects, Project number 1816, drawings numbered A-03, 04, and 08, Revision B, dated 17/7/20.

2. Site Description

The site was inspected on the 27th December, 2019 and on the 14th July, 2020.

The property is located on the near-level terrain at the base of a hillslope that rises to the N. The Sydney 1:100 000 Geological sheet indicates the site is underlain by the Narrabeen Group of Rocks with the contact point of Alluvial Stream and Estuarine Sediment (Qha) in close

proximity to the S of the property. Ground testing indicates the Alluvial Stream and Estuarine Sediment underlies the proposed works. These 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 majority of the underlying natural sand is a bleached massive sand (wa2). Their documentation indicates these soils range in pH from 5.5 to 7.0.

The sand sediments are likely 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 ~2.0m will be required to install the basement level of the proposed aged care centre. It will cover an area of ~2230m². 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 concrete, preventing access of oxygen to the soil and therefore greatly reducing the potential for acid generation.

4. Watertable

The water table was encountered a depth of ~2.2m below the current surface (~RL1.8). This is below the base of the proposed foundations and, thus, will not impact on the proposed development. It should be noted the water table 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 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 (~RL4.1) – AH1

Depth (m)	Material Encountered
0.0 to 1.7	FILL , disturbed sandy soil, dark brown, very loose to dense, dry, medium to coarse grained with fine trace organic matter and trace clay.
1.7 to 2.5	SAND , yellow, dense, dry, coarse grained.
2.5 to 3.0	SAND , yellow, dense, very wet, coarse grained.

End of hole @ 3.0m in very wet sand. Auger hole collapsing from and watertable encountered at ~2.5m.

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
0.5	6.8	No Reaction	6.7	0.1	-
1.0	6.9	No Reaction	6.7	0.2	-
1.5	7.0	No Reaction	6.9	0.1	-
2.0	6.7	No Reaction	6.3	0.4	-
2.5	6.6	No Reaction	6.4	0.2	-
3.0	6.6	No Reaction	6.5	0.1	-

AUGER HOLE 2 (~RL4.1) – AH2

Depth (m)	Material Encountered
0.0 to 1.0	FILL , disturbed sandy soil, dark brown, dense to very dense, dry, medium to coarse grained with fine trace organic matter and trace clay.
1.0 to 1.2	SAND , yellow, dense, dry, coarse grained.

End of hole @ 1.2m in dense sand. No watertable 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
0.5	7.2	No Reaction	7.1	0.1	-
1.2	7.1	No Reaction	7.0	0.1	-

AUGER HOLE 3 (~RL4.2) – AH3

Depth (m)	Material Encountered
0.0 to 0.6	FILL , disturbed sandy soil, dark brown, medium dense to dense, dry, medium to coarse grained with fine trace organic matter and trace clay.
0.6 to 2.2	SAND , yellow, loose to medium dense, dry, coarse grained.
2.2 to 2.6	SAND , yellow, medium dense, very wet, coarse grained.

End of hole @ 2.6m in very wet sand. Auger hole collapsing from and watertable encountered at ~2.2m.

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
0.5	6.7	No Reaction	6.6	0.1	-
1.0	6.7	No Reaction	6.7	0.0	-
1.5	6.7	Very Weak Effervescence	6.5	0.2	-
2.0	6.7	No Reaction	6.6	0.1	-
2.6	7.1	No Reaction	7.1	0.0	-

AUGER HOLE 4 (~RL4.5) – AH4

Depth (m)	Material Encountered
0.0 to 0.6	FILL , disturbed sandy soil, dark brown, medium dense, dry, medium to coarse grained with fine trace organic matter and trace clay.
0.6 to 2.5	SAND , yellow, medium dense, dry, coarse grained.
2.5 to 3.0	SAND , yellow, medium dense, very wet, coarse grained.

End of hole @ 3.0m in very wet sand. Auger hole collapsing from and watertable encountered at ~2.5m.

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
0.5	7.0	No Reaction	7.0	0.0	-
1.0	6.8	No Reaction	6.7	0.1	-
1.5	7.0	No Reaction	6.8	0.2	-
2.0	7.0	No Reaction	6.9	0.1	-
2.5	6.7	No Reaction	6.5	0.2	-
3.0	6.8	No Reaction	6.5	0.3	-

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 6.6. 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 6.8. 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 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 all the tests.

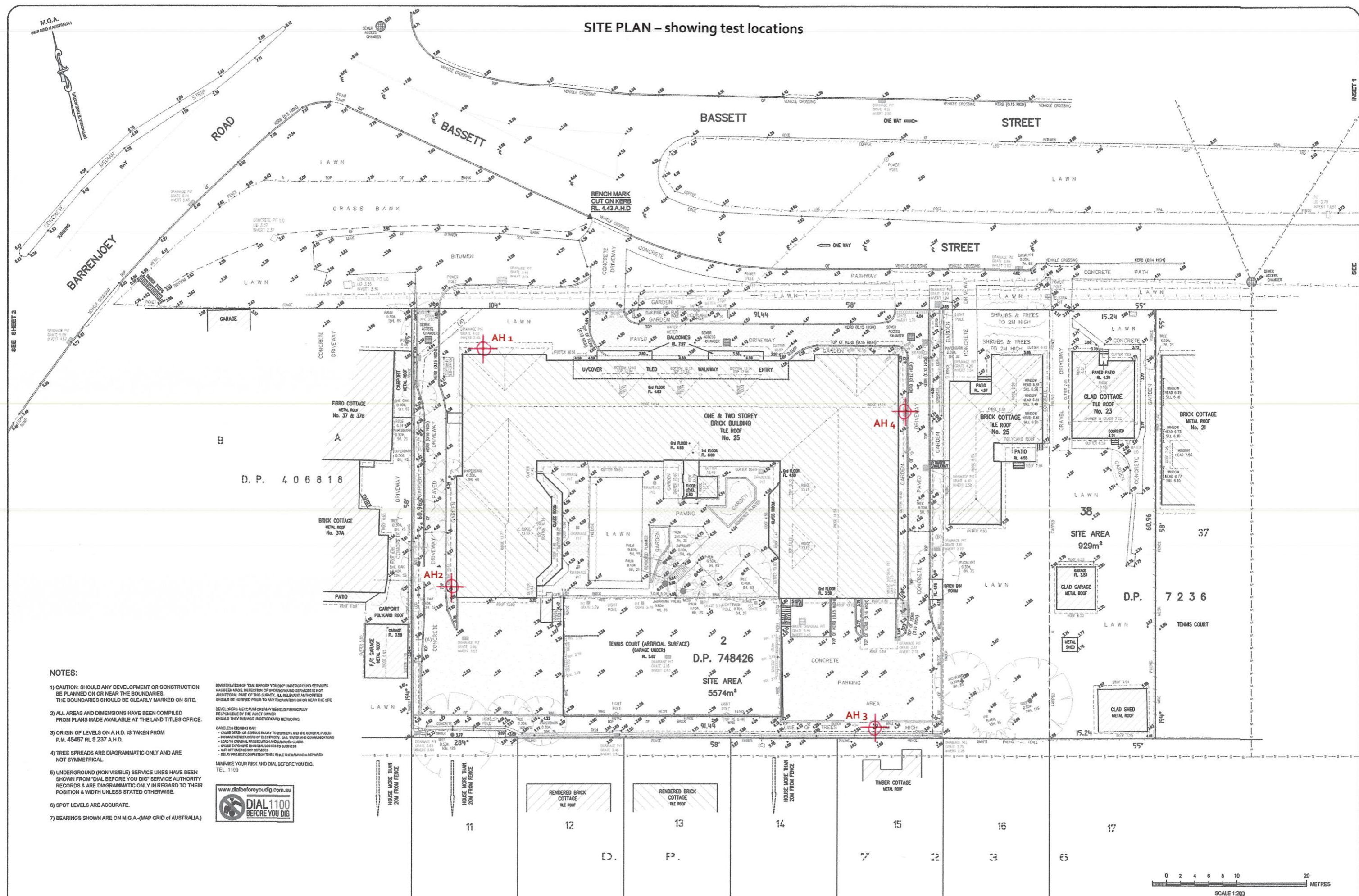
This preliminary assessment indicates that an Acid Sulfate Soils management plan is not required for the proposed works.

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SITE PLAN – showing test locations



- NOTES:**
- 1) CAUTION: SHOULD ANY DEVELOPMENT OR CONSTRUCTION BE PLANNED ON OR NEAR THE BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE.
 - 2) ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE AT THE LAND TITLES OFFICE.
 - 3) ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM P.M. 45467 RL 5.237 A.H.D.
 - 4) TREE SPREADS ARE DIAGRAMMATIC ONLY AND ARE NOT SYMMETRICAL.
 - 5) UNDERGROUND (NON VISIBLE) SERVICE LINES HAVE BEEN SHOWN FROM "DIAL BEFORE YOU DIG" SERVICE AUTHORITY RECORDS & ARE DIAGRAMMATIC ONLY IN REGARD TO THEIR POSITION & WIDTH UNLESS STATED OTHERWISE.
 - 6) SPOT LEVELS ARE ACCURATE.
 - 7) BEARINGS SHOWN ARE ON M.G.A.-(MAP GRID OF AUSTRALIA)

INVESTIGATION OF "DIAL BEFORE YOU DIG" UNDERGROUND SERVICES HAS BEEN MADE. DETECTION OF UNDERGROUND SERVICES IS NOT AN EXTENSIVE PART OF THIS SURVEY. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE.

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:

- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCORRECT USES OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND FINANCIAL CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESSES
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGES ARE REPAIRED

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- (A) EASEMENT TO DRAIN WATER 1 WIDE
 (B) EASEMENT TO DRAIN WATER 1 WIDE
 (C) EASEMENT TO DRAIN WATER 1 WIDE

LEGEND

TREE
 DENOTES APPROX 0.10m DIAMETER AT TREE
 DENOTES APPROX. 4m SPREAD AT TREE

ROADS
 DENOTES CENTRE LINE OF ROAD
 DENOTES TOP OF DUTCH
 DENOTES TOP OF WALL

BOARDS
 DENOTES APPROX 0.10m DIAMETER AT TREE
 DENOTES APPROX. 4m SPREAD AT TREE

OVERHEAD ELECTRIC LINES
 UNDERGROUND ELECTRIC LINES
 TELEPHONE LINES
 WATER LINES
 GAS LINES

TOTAL SITE AREA
 6503m²

PLAN SHOWING BOUNDARIES, RELATIVE HEIGHTS & PHYSICAL FEATURES OVER LOT 2 IN D.P. 748426 & LOT 38 IN D.P. 7236 KNOWN AS Nos 23-25 BASSETT STREET, MONA VALE.

L.G.A.: PITTWATER

CLIENT	THOMPSON HEALTH CARE PTY LTD	REF No.	15006
PROPERTY	Nos 23-25 BASSETT STREET, MONA VALE	DATUM	A.H.D.
SCALE	1:200 @ B1	DATE	04/03/2016
SURVEYED	A.M./B.W.	DRAWN	R.P./J.M.
DWG No.	15006A	SHEET No.	1 of 1
REV No.	00		

