Preliminary Acid Sulfate Soil Assessment

50 Rednal Street Mona Vale 2105
Lot 23 DP 24428

Prepared By:
Copley Marine Consulting Group Pty Ltd

On Behalf of Client:
Katherine Onions

Address:
50 Rednal Street, Mona Vale
Lot 23 DP 24428

Date of issue:
12/10/2023

COPLEY MARINE GROUP
Suite 2, Level 1, 14 - 16 Suakin Street, Pymble, NSW, 2073
Telephone: +61 2 9844 5428 Email:alister@copleymarine.com.au Web: www.copleymarine.com.au

Document Control

Rev	Date	Amendment Description	Author	Initials	Review	Initials
A	11/10/2023	Draft for review	K Hamann	KH	A. Copley	AC

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1.1. Introduction

The owners of **50 Rednal Street, Mona Vale** (the Site) are proposing to install a new mooring pen. These waterfront structures will all be located below the Mean High Water Mark (MHWM) at the site.

Regarding the potential presence of Acid Sulphate Soils (ASS), the part of the property above the mean high water mark is identified on the relevant Council map as containing Class 5 soils. The part of the site relevant to this application is below MHWM and it is shown as containing Class 1 soil and indicates a high probability that acid sulfate soil (ASS) could be present at the site.

This preliminary ASS assessment has been prepared by Copley Marine Group (GMG) as part of the standard development application requirements for a mooring pen.

Clause 7.1 of the Pittwater Local Environmental Plan 2014 (PLEP) requires that development consent may only be granted if an Acid Sulfate Soils Management Plan accompanies the application. However, two variations to this are provided within the clause; firstly, that the requirement may be waived if a preliminary assessment has been carried out which concludes that a management plan would not be required, and secondly if the development would involve the removal of less than 1 tonne of soil and would not lower the water table.

This ASS preliminary assessment:
- considers the PLEP, relevant mapping and guidelines relating to ASS;
- considers the proposed works and the potential of the disturbance that may require further management;
- outlines the mitigation measures that will be implemented to manage potential ASS;
- determines if an ASS Management Plan is required for the site, in accordance with the Acid Sulfate Soil Manual 1998, (*Acid Sulfate Soil Management Advisory Committee NSW ASSMAC 1998*).

1.2. Project Proposal

The works will consist of the installation of a mooring pen with four (4) piles and a berthing area (8m by 4.9m).

1.3. Planning controls and guidelines

The relevant planning controls and guidelines include:

- PLEP;
- Acid Sulfate Soil Manual 1998 (Acid Sulfate Soil Management Advisory Committee NSW ASSMAC 1998); and
- Model Acid Sulfate Soils Local Environmental Plan 1999 (Model ASS LEP).

The proposed 'water recreational facilities' are permissible with consent under the PLEP, and the design has been completed in accordance with Council's development controls. The planning portal online mapping tool identifies potential ASS on the site (Class 1 and 5) which require further consideration in relation to the proposed works.

The Acid Sulfate Soil Manual (1998) notes that a preliminary assessment of the site should:

1. review the relevant planning instruments (section 1.3);

2. establish the nature of the proposed works – (refer to **sections 1.2 & 1.6**);
3. review information from contractors experienced in such works and take advice from acid sulfate expert consultants (throughout document);
4. establish whether ASS are present on the site and if they are in concentrations that warrant the preparation of an ASS Management Plan (refer to **sections 1.4 & 1.6)**;
5. provide information to assist in designing a soil and water assessment program – if needed;
6. provide information to assist in decision making.

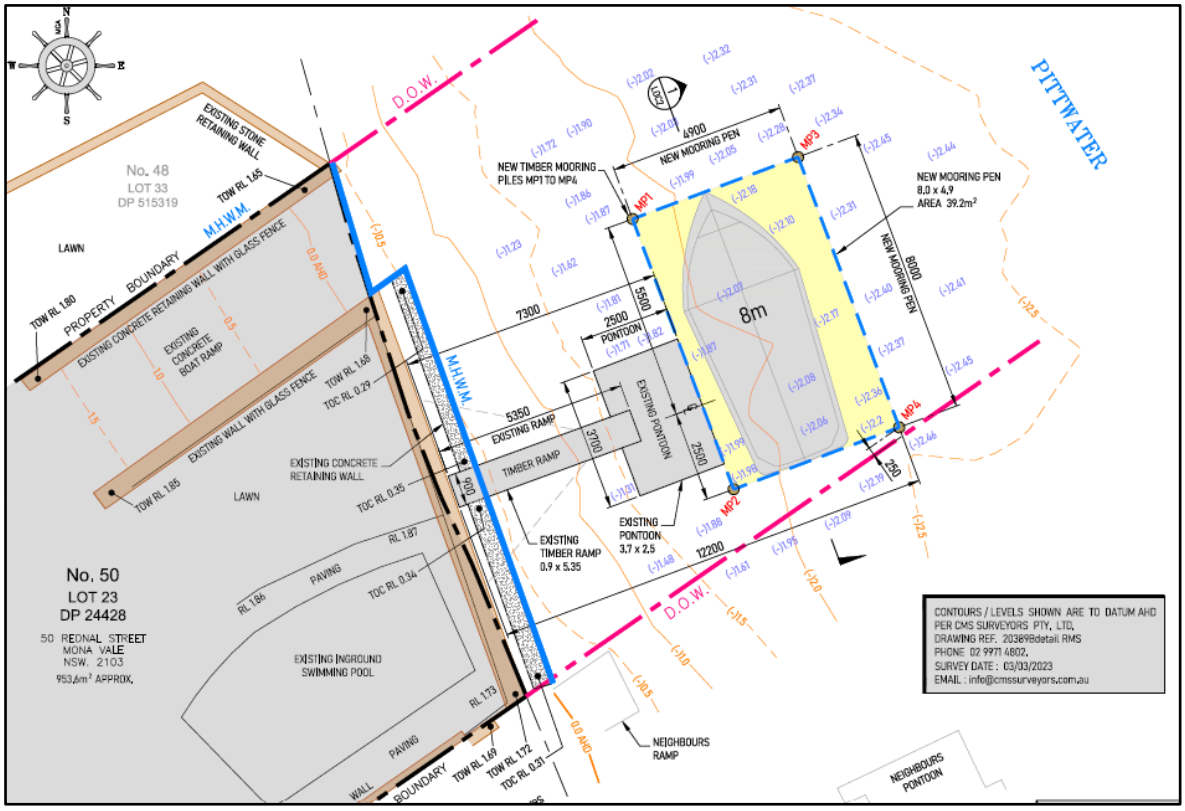

Figure 1 – Proposed works

1.4. ASS Maps

Preliminary site investigations using Council's online mapping tool identify the site as having Class 1 and Class 5 soils with a high probability of ASS (coloured blue for Class 1 and cream for Class 5 on **Figure 2**) below the MHWM where the proposed works will occur.

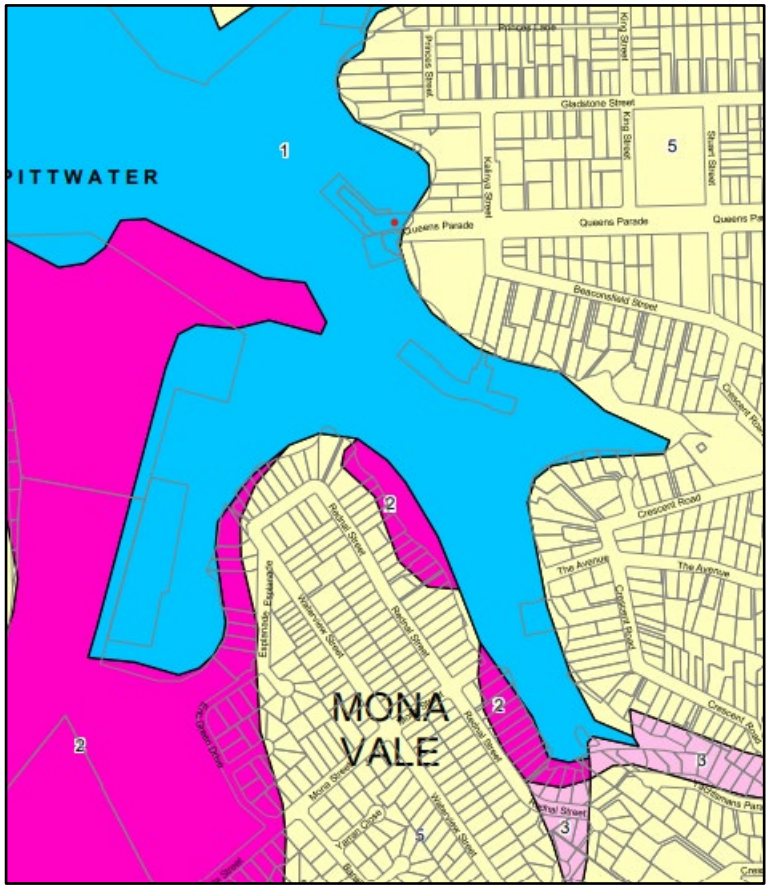

Figure 2- Pittwater LEP 2014 Mapping

1.5. Understanding ASS

ASS are naturally occurring soils containing 'iron sulfides'. The disturbance of this soil and subsequent exposure to air begins an oxidation process which creates of sulfuric acid. Sulfuric acid can leach into natural waterways, casing significant environmental damage.

Acid sulfate soil requires time out of the water, exposed to the air, to activate the formation of sulfuric acid. It is understood that due to time and natural ecological action, sediments on the surface of the seabed in this area of up to approximately 0.5m are saturated by overlaying oxygenated waters. This upper layer of sedimentation offers no significant potential of acid sulfate soil.

Regardless, it is essential to implement appropriate management practices to protect the environment and ensure that the proposal is sustainable.

1.6. Works and Risk Analysis

The works are in a Class 1 area, identifying that there is a "high possibility" of ASS. The key risk associated with the proposal is the pile driving works directly into Class 1 soils (in the seabed).

PILE DRIVING

The piling for the jetty piles will be completed by barge using a mechanical auger, approximately up to a maximum depth of 2.5m into the solid seabed.

Pile driving exerts downwards forces on the seabed. During pile driving, the sediment remains under water, resettling on the seabed quite quickly due to the natural compounds in the water of the area.

Spoil will not be removed from the water and therefore not exposed to the air but may create temporary turbidity of the water. This turbidity will dissipate quickly and is not an environmental issue in this part of the Hawkesbury River.

As there will be no removal of soil from the water and any disturbance will further be controlled in water, there will be **minimal risk of any exposure** of the soil to the air to trigger any oxidation process and any formation of sulfuric acid.

The overall analysis returns a **"low" risk level** for any pollutants associated with ASS. The information provided in this report meet the provisions of PLEP.

FURTHER CONCERNS

Responding to PLEP section 7.1(6), the development would not involve the removal of more than 1 tonne of soil and would not lower the water table.

Construction works involving piles without any excavation works, will have no material impact on the local water-table (intertidal or sub-tidal), either from the perspective of the level of the water-table or from the perspective of the balance of freshwater vs groundwater vs saline waters.

No other disturbance to the seabed area will be undertaken as part of this proposed development.

1.7. ASS - Mitigation Measures

As the project managing entity, GMG requires contractors under its project management banner to adhere to accepted best practise during all constructions works, as will be noted as part of the Construction Environmental Management Plan (CEMP) prepared for the issue of a Construction Certificate.

Maritime structures in the local waterway must be maintained in good and safe repair as per License agreements with Crown Lands. This means that piling works will always be necessary and so best practise for acid sulfate soil mitigation has been developed for general use by environmentally conscious contractors. This best practise as outlined below, is the generally accepted best workable mitigation plan for pile works.

Best practise mitigation methods include:

- The use of specific barge mounted piling equipment; and
- Undertaking works during mid-high tide if necessary, so that soil is not exposed to oxygen.

With these measures in place, the works are classified low risk in terms of the potential for ASS to be disturbed, exposed to the air and oxidised.

Silt curtains are not required in this location to control turbidity due to the naturally turbid waters.

The environmental mitigations identified above will be implemented within the CEMP for the site to assist in limiting the disturbance of soil. As the proposal is low risk, a detailed ASS Management Plan is not required for the works.

1.8. Conclusion

This preliminary assessment of the proposed works has been prepared in accordance with clause 7.1 of the PLEP and the Acid Sulfate Soils Manual 1998.

The proposed works are in an area with Class 1and 5 ASS classification on the ASS hazard map which requires a preliminary assessment of the associated risk of the works and the impact to the environment.

The piling works will be completed using a piling barge with washing facilities with no soil being removed from the water (or a wet environment) to start the oxidization process. While temporary turbidity of the water will occur, the piling works will be completed individually and hence the volume of disturbance will be limited and closely managed.

A site CEMP will include measures to assist in limiting the disturbance of soil.

The preliminary assessment has found that potential ASS will not be oxidised and therefore an ASS Management Plan is not required (as per the *Acid Sulfate Soils Manual 1998*). In addition, it is considered the works meet the objectives of clause 7.1 of the PLEP in that the development would not disturb, expose or drain ASS and cause environmental damage.