

2 August 2024

Mr James Puustinen
Project Manager - Capital Works
Macquarie Point Development Corporation
41 Evans Street
Hobart, TAS, 6004

Dear James,

Macquarie Point - Preliminary Results of Acid Sulfate Soil Investigation

1.0 Introduction

The Macquarie Point Development Corporation (the Corporation) has engaged the services of AECOM Australia Pty Ltd (AECOM) in the role of Project Remediation Consultant to assist with the development, implementation, and ongoing oversight of remediation at the Macquarie Point Site in Hobart, Tasmania (the Site).

The *Tasmanian Acid Sulfate Soil Management Guidelines* (the Guidelines) (DPIPWE, 2009) require an assessment of Acid Sulfate Soil (ASS) is undertaken where the potential exists for ASS to be present, and preparation and implementation of an ASS Management Plan if any risk of disturbance of ASS exists from land use or proposed development. The Site is mapped as having a low probability (6-70%) of Potential Acid Sulfate Soil (PASS) being present on LISTmap's Coastal Acid Sulfate Soils (0 – 20m AHD) layer.

The proposed future development of the Site provided in the *Mac Point Draft Precinct Plan* (the Precinct Plan) (MPDC, 2023) indicates that excavation or disturbance of soil within this layer is likely to be required. As a result, AECOM was requested by the Corporation to undertake an assessment of Site soils to assess if Actual Acid Sulfate Soil (AASS) or PASS is present, and if an ASS Management Plan will be required for future development.

This letter is intended to provide AECOM's preliminary assessment of the data received to date associated with AASS/PASS and inform the Corporation of potential future implications and considerations for development in line with the Precinct Plan. It is noted that analysis, validation, and interpretation of all data from this assessment is not yet complete, and any conclusions or interpretation in this letter are preliminary and subject to change as more data is received.

2.0 Scope of Work

The following scope of work has been completed as part of the ASS Investigation to date:

- Between 16 April and 21 May 2024, 258 soil samples were collected from 20 bore holes across the Site by WSP Australia Pty Ltd (WSP) as part of a separate scope of work which WSP was engaged by the Corporation to complete.

Samples were collected every 0.5 m of depth until dolerite bedrock was encountered (excluding limited locations where core loss occurred during drilling), and of each lithological layer encountered during bore advancement. The samples were immediately frozen on Site.

- Collected samples were analysed as per the analytical suites in **Table 1** below.

Table 1 ASS Investigation - Analytical Suites

Analytical Suite	Number of Samples Analysed	Comments
pH Field Screen	258	All samples collected were tested by pH Field Screen
Chromium Reducible Sulfur (CRS)	80	CRS analysis was selected based on results of pH Field Screen
Suspension Peroxide Combination Acidity (SPOCAS)	8	SPOCAS assessment was conducted on 1 in 10 CRS samples to validate results.
Slab Tray Incubation	42	Slab tray incubation has been undertaken to assess the Acid Neutralising Capacity (ANC) of soil under "real world" conditions. Results of this assessment are expected between September and October 2024.

Following completion of slab tray incubation, results of the ASS Investigation will be issued in a report, detailing methodology and results of assessment, and providing recommendations for requirements to be captured in an ASS Management Plan for future Site development.

3.0 Preliminary Results and Potential Future Implications

As discussed in the meeting with the Corporation on 8 July 2024, preliminary review of pH Field Screen, CRS, and SPOCAS analysis results have indicated:

- No AASS has been identified in any soil samples collected and analysed.
- PASS has been identified both in fill material, and in deeper natural estuarine material, in the central and eastern portions of Macquarie Point.
- Preliminary results indicate that the natural ANC of Site soil is likely to be greater than PASS concentrations in the majority of locations.

ANC measures the existing ability for soil to prevent acidification of PASS and generation of AASS if disturbed by construction, and based on these values, PASS is considered unlikely generate AASS or represent a risk if disturbed by construction.

Under the *National Acid Sulfate Soil Guidance* (the NASSG) (WQA, 2018), ANC reported by the assessment methods used as part of the initial assessment (CRS and SPOCAS) may not be used in assessing AASS or PASS unless confirmed by further testing which reflects more realistic field conditions. Slab Tray Incubation testing currently underway is intended to provide measures of ANC to assess if the values provided by CRS or SPOCAS assessment are representative of the ANC of soil.

However, some samples (primarily natural estuarine soil beneath the water table) did not have ANC sufficient to neutralise the detected PASS acidity, and may require consideration of further mitigation or management during excavation or stadium construction.

As noted above, full assessment of the potential ASS management requirements for development of the Site will be conducted and reported when the final set of analytical results are received. However, from a preliminary review of available data, the following mitigation measures may be required during development of the Site:

- An ASS Management Plan will be required and should be included in construction documentation.

- Initial indications are that Site soil consisting of shallow fill material above the water table, which is understood to be the bulk of soil to be disturbed by future development, is likely to have sufficient natural ANC to prevent acidification during and following construction. If this is the case, limited to no additional management will be required for the majority of development work.

If ANC is not sufficient to prevent acidification of fill when disturbed, noting that this is considered unlikely as the soil is already largely exposed to air, additional measures such as additives to excavated soil to prevent acidification may be required. The extent of soils which may require treatment, and quantities of additives required, cannot be assessed until additional data from Slab Tray Incubation testing is received.

- Deeper PASS, consisting of natural estuarine soils which may not have sufficient ANC, may require additional management procedures to prevent acidification. It is AECOM's understanding that the primary activities planned as part of future development which may come into contact or disturb deeper natural soils are:

- Installation of piles to dolerite to support future structures, such as the proposed Hobart Stadium
- Excavation of soil in the eastern portion below the water table to construct an underground carpark as part of the proposed Antarctic Science Precinct.

The mitigations or management measures which may be required in the ASS Management Plan for these scenarios are likely to include:

- Assessing if the underground car park or pile installation will expose PASS to oxygen (above the water table) and excavation of any potentially exposed PASS if so. Excavated PASS may require *ex situ* treatment such as liming or other measures to prevent potential acidification when exposed to air.
- Consideration of protective measures for materials which will be in contact with PASS, noting that the saline conditions of groundwater at the Site are likely to require similar protective measures in any event.

As noted at the start of this document, these initial ASS investigation results and AECOM's interpretation are preliminary and limited to initial examination of available data and are subject to change as further analytical data is received and existing data is re-reviewed and fully interpreted.

Yours faithfully



Robert Crowe
Principal Environmental Engineer
robert.crowe@aecom.com

Mobile: +61 422 692 187



Paul Carstairs
Technical Director
Paul.Carstairs@aecom.com

Mobile: +61 427 575 123

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References

DPIPWE, 2009, *Tasmanian Acid Sulfate Soil Management Guidelines*, Department of Primary Industries, Parks, Water and Environment, December 2009

MPDC, 2023, *Mac Point Draft Precinct Plan*, Macquarie Point Development Corporation, October 2023

WQA, 2018, *National Acid Sulfate Soils Guidance – National acid sulfate soils identification and laboratory methods manual*, Water Quality Australia, June 2018