

PRELIMINARY ACID SULPHATE SOILS ASSESSMENT

900 Henry Lawson Drive Picnic Point

19 June 2025

Prepared for Robert Bakhos

TABLE OF CONTENTS

1. INTRODUCTION	4
2. PROPOSED DEVELOPMENT	7
3. SITE ASSESSMENT	7
4. SUBSURFACE CONDITIONS	8
5. ASSESSMENT	10
6. LIMITATIONS AND DISCLAIMERS	11

Report prepared by
Sami Azzi
Principal | Geotechnical Engineer



1. INTRODUCTION

Australian Ground Sciences (AGS) was commissioned to undertake a preliminary desktop assessment for the presence and potential disturbance of acid sulfate soils (ASS) at the proposed residential development located at 900 Henry Lawson Drive, Picnic Point, New South Wales. The location of the site is presented on Figure A. Based on the Acid Sulfate Soil Risk Maps produced by the NSW Government, the subject site is located within a mapped Class 5 ASS risk area, as indicated on Figure B.

Class 5 areas are typically defined as land situated within 500 metres of adjacent Class 1, 2, 3, or 4 land. These zones are generally considered to pose a low risk of containing actual acid sulfate soils; however, the classification serves to trigger consideration for potential offsite impacts on nearby higher-risk areas. As such, Class 5 ASS land must be assessed to determine whether proposed development activities have the potential to disturb actual or potential ASS.

The objective of this preliminary assessment is to evaluate the likelihood that construction of the proposed development may disturb ASS, either directly through excavation or indirectly through changes to groundwater flow, dewatering, or drainage alterations. This includes assessing whether further investigation—such as subsurface sampling, laboratory analysis of soil acidity and sulfide content, and preparation of an Acid Sulfate Soil Management Plan (ASSMP)—may be required in accordance with the relevant guidelines.

This desktop assessment was prepared with reference to the Acid Sulfate Soil Manual (1998), published by the Acid Sulfate Soils Management Advisory Committee (ASSMAC), which remains the principal technical guideline for the identification and management of acid sulfate soils in New South Wales. The assessment is based on a review of publicly available mapping, topographic and geological data, aerial photography, and local environmental planning instruments.

It is important to note that this report represents a desktop-level assessment only and does not include any site-specific fieldwork. No soil sampling, acid base accounting, or laboratory testing has been undertaken to confirm the presence or absence of actual or potential acid sulfate soils. Furthermore, this report does not include an assessment of other potential contamination issues unrelated to acid sulfate soils.

The findings of this report are intended to support the preliminary planning phase of the development and to assist in determining whether further investigation or management measures are required to mitigate the potential risks associated with acid sulfate soil disturbance. Should site works involve excavation below natural ground level, dewatering, or significant changes to site hydrology, it is recommended that a targeted ASS investigation be undertaken prior to construction.

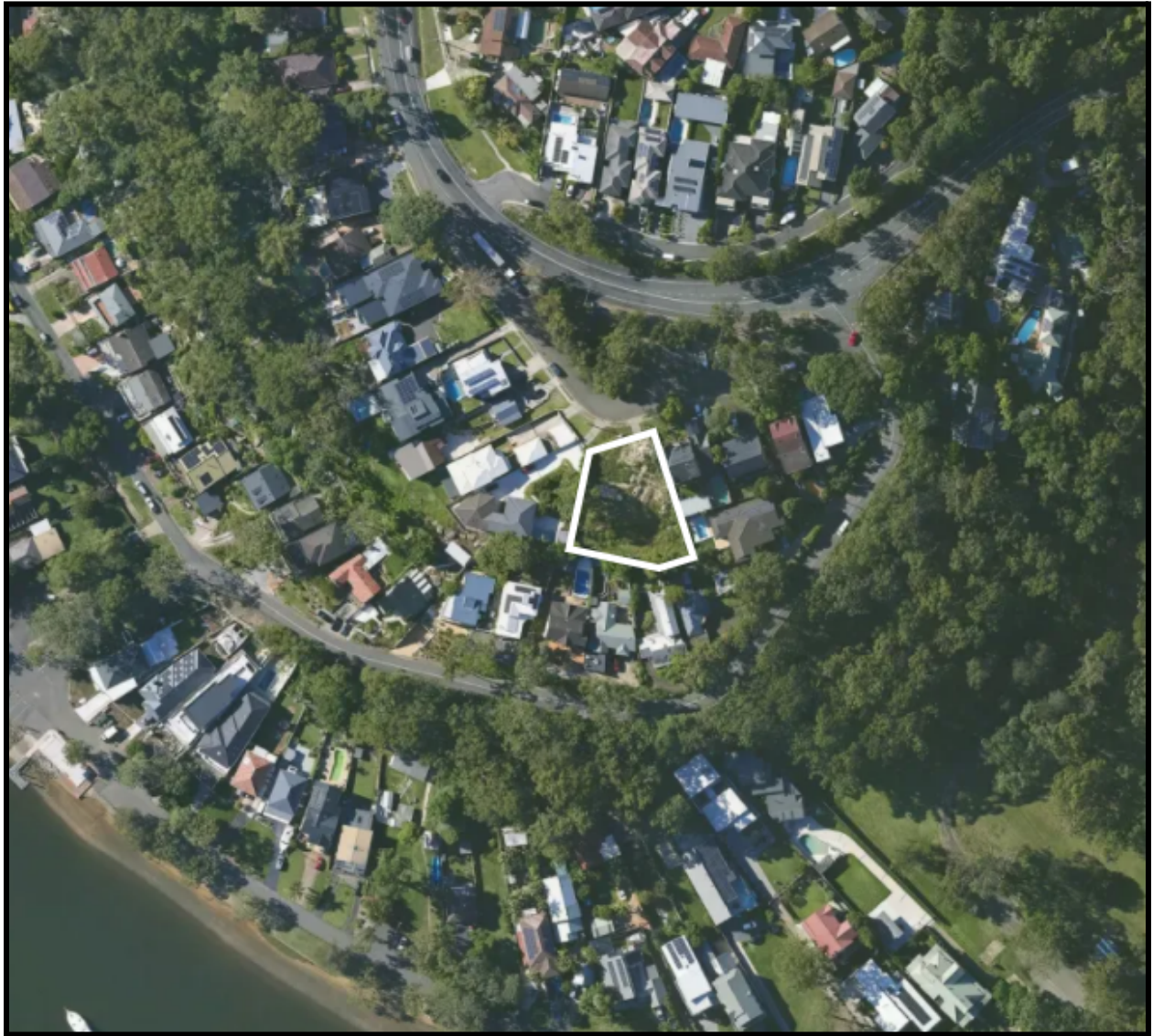


Figure A: Site Location

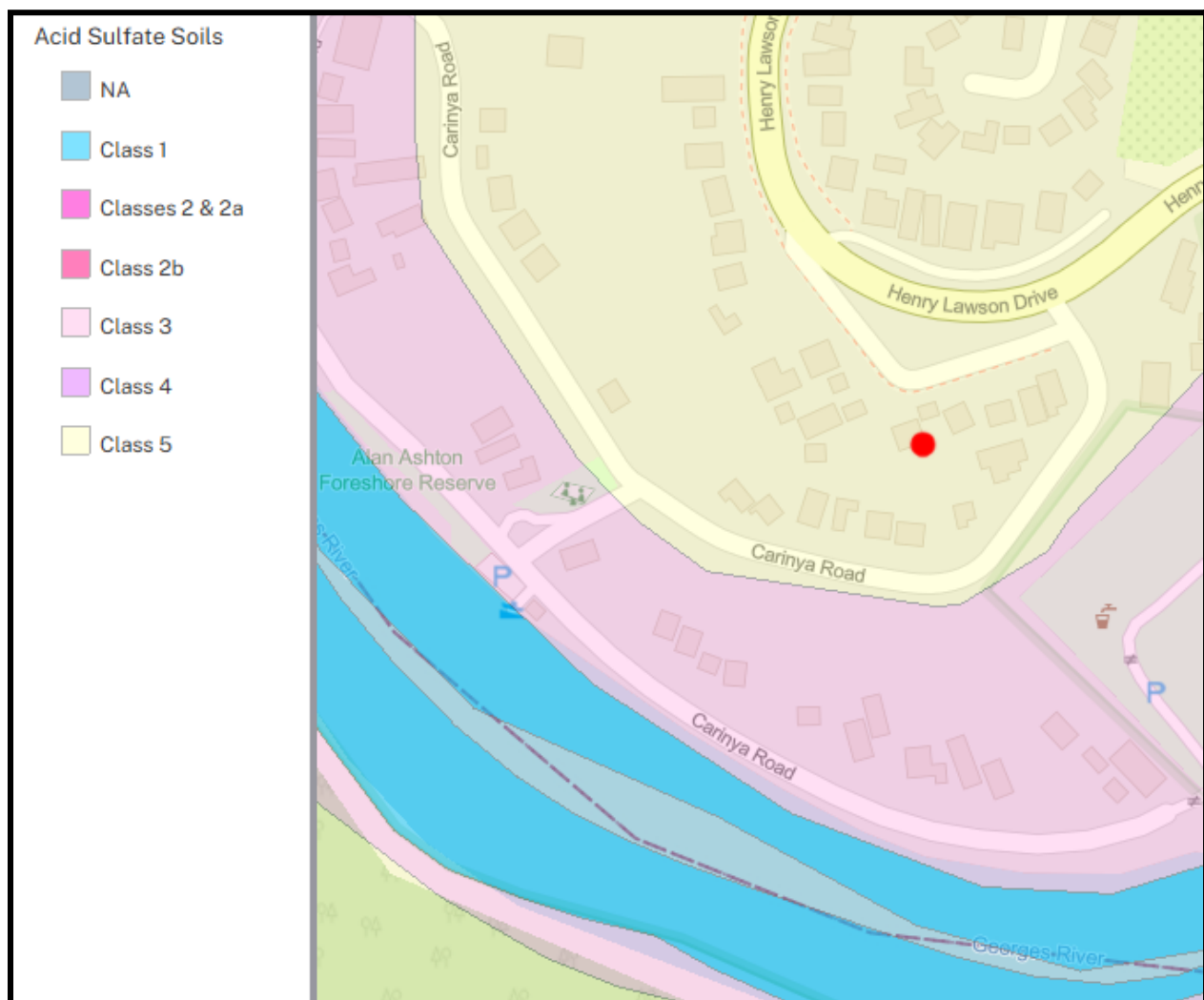


Figure B: Site on Acid Sulphate Soils Risk Map

2. PROPOSED DEVELOPMENT

Based on our review of the provided architectural drawings, we understand that the proposed development will comprise the construction of a dual occupancy residential dwelling and two in-ground swimming pools. We have assumed, for the purposes of this assessment, that the maximum depth of excavation required across the site will not exceed approximately 1.5 metres (for the swimming pools).

It is further understood that the development does not include any basement levels or significant subgrade structures beyond the proposed swimming pools. Accordingly, no large-scale or deep excavation works—such as deep footings, retention systems, or cut-and-fill platforms—are anticipated as part of the current scope of works. This assumption forms the basis for assessing the potential for disturbance of acid sulfate soils in accordance with current guidelines.

Should the proposed works be modified to include deeper excavation, piling, dewatering, or other ground disturbance activities beyond those currently assumed, further assessment may be required.

3. SITE ASSESSMENT

As part of our assessment, Australian Ground Sciences conducted a site inspection and completed one hand-augered borehole to obtain preliminary insights into the site's surface conditions and subsurface profile. The subject site is located within an area of gently undulating topography and is bounded to the north by Henry Lawson Drive. It is surrounded predominantly by low-density residential development, consistent with the suburban character of the Picnic Point locality.

The site is situated approximately 200 metres northwest of the Georges River, a major waterway known to influence the distribution of acid sulfate soils in low-lying estuarine environments. Notably, the site lies approximately 100 metres from the nearest mapped Class 3 ASS risk land and approximately 200 metres from Class 1 land, both of which are considered higher risk classifications under the NSW ASS mapping framework.

During the site walkover, no visible signs of indicator vegetation typically associated with acid sulfate environments—such as mangroves, salt-tolerant grasses, or paperbark swamp species—were observed either on the site or in its immediate surrounds. The surface conditions did not exhibit characteristics commonly associated with ASS-prone landscapes, such as waterlogged soils, tidal influence, or organic-rich estuarine sediments. The site appeared to be

free of any hydrological or ecological features indicative of potential or actual acid sulfate soil presence.

Based on our visual inspection and the general setting of the site, it is considered unlikely that the landform represents a geomorphic environment typically associated with the formation or persistence of acid sulfate soils. The topographic elevation, surrounding development, and absence of estuarine or tidal features suggest a low likelihood of encountering ASS material in shallow surface or near-surface soils at this location.

4. SUBSURFACE CONDITIONS

According to the 1:100,000 scale Geological Map of Sydney (Map Sheet 9130), the site is mapped as being underlain by Hawkesbury Sandstone, which typically comprises medium- to coarse-grained quartz sandstone with occasional shale and laminate interbeds. This geological formation is not typically associated with the natural occurrence of acid sulfate soils.

To supplement the desktop findings, three hand-augered boreholes were completed at the site to assess near-surface soil conditions. The location of the borehole is shown on Figure C. The borehole profiles encountered sandstone bedrock at relatively shallow depth - between 0.2m and 0.7m below existing grade. No acid sulfate odours—commonly described as a “rotten egg” or sulfurous smell, indicative of hydrogen sulfide gas release—were noted during drilling. Additionally, the borehole remained dry throughout the drilling process and upon completion, indicating that groundwater was not encountered within the investigated depth.

These subsurface conditions, comprising shallow residual soils and bedrock, are consistent with the regional geology and support the conclusion that the site is unlikely to be underlain by actual or potential acid sulfate soils within the proposed excavation depth.



Figure C: Borehole Location

5. ASSESSMENT

Our assessment comprised a desktop review of publicly available geological and acid sulfate soil risk mapping, a walkover inspection of the site, and an evaluation of subsurface soil and groundwater conditions encountered during our recent geotechnical investigation. Collectively, the information gathered indicates that the site is not located within a geomorphic or environmental setting typically associated with the presence of acid sulfate soils (ASS). No indicator vegetation—such as mangroves, saltmarsh species, or paperbark swamps—was observed on site or in the immediate surrounding area.

In addition to the on-site findings, spatial analysis of the surrounding ASS risk areas indicates that the nearest Class 3 and Class 1 ASS zones are located at a considerable distance from the site. Due to the separation distance and the difference in elevation between the site and these areas, it is considered highly unlikely that excavation activities associated with the proposed development would induce any measurable drawdown of the groundwater table within the mapped Class 1, 2, 3, or 4 ASS areas. This conclusion applies even under a hypothetical scenario where the natural groundwater table at the site is higher than expected.

Based on the available architectural and planning documentation, the proposed development does not include a basement level, and excavation depths are not anticipated to exceed approximately 1.5 metres. As such, site levelling and swimming pool excavation are not expected to require significant dewatering. Even if dewatering is required, the low permeability of the shallow sandstone would not cause significant changes in the water table level in nearby Class 1, 2, 3 and 4 land.

Based on our assessment, it is considered that there is a low potential for ASS material to be disturbed at this site and its surrounds. It is also not expected that the water table at nearby class 1,2,3 and 4 ASS land would be lowered due to excavation and dewatering at the site. Considering that the Department of Environmental Planning describes works that pose a likely ASS risk as those within 500m of nearby class 1,2,3 or 4 land which are likely to lower their water table below 1m AHD, the potential risks associated with disturbing ASS as part of this development are low. As such, we consider that a subsurface ASS investigation and the preparation of an ASS Management Plan is not considered to be necessary for the proposed development. If the understood construction methodology, development size, or excavation depths are changed, incoAGSct or perceived to have been miscommunicated by any party then the undersigned should be contacted and this report revised.

6. LIMITATIONS AND DISCLAIMERS

This report has been prepared based on the expected site conditions, assumed construction methodology, structure type/size and scope of works inferred from the provided drawings and documents. The conclusions of this report are based on walkover inspection observations and a desktop assessment but have not included subsurface investigations and laboratory testing, which is required for higher confidence in ASS detection.

The assessment has been made based on site conditions observed during our inspection, which may change in time, especially after climactic events. Groundsciences should be contacted and advice sought if such conditions change. The conclusions of this report are based on investigation conditions at specific locations and are subject to subsurface circumstances. The locations are chosen to be as representative as practicably possible, though conditions may vary between locations and beneath the extent of our boreholes. Additional investigation work may need to be required if there are changes to the proposed development or land use and if our assumptions are found to be incorrect. AGS should be contacted immediately under these circumstances.

This report has been prepared for a specific project at a specific location, which we have understood based on the provided information. This report shall not be used as a substitute for a waste classification, geotechnical report or stage 1 or stage 2 contamination report.

This report has been prepared specifically for the addressed client and should not be issued to a third party without the explicit permission of Groundsciences. Any third party which relies on this report without our consent does so at their own risk and therefore we do not accept any liability for loss or damages suffered as a result.

AGS will not accept responsibility for any unidentified AASS or PASS issues for this site or the surrounding area. Any unexpected issues that may be encountered during construction should be inspected by an appropriately qualified consultant as soon as possible.