

18 November 2025
Ref. E25559.E14_Rev0

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Desktop Acid Sulfate Soil Assessment Letter; 13-15 Oxford Street, 17 Oxford Street & 2 Verona Street, Paddington NSW

1. Introduction

1.1 Background

17 Oxford Street Pty Ltd ('the client') engaged El Australia (El) to complete a desktop acid sulfate soil assessment (ASSA) for 13-15 Oxford Street, 17 Oxford Street & 2 Verona Street, Paddington NSW (henceforth referred to as 'the site').

The site is located within the local government area (LGA) of Sydney (**Figure 1, Appendix A**). It is further identified as Strata Plan (SP) 22113 (13-15 Oxford Street), Lot 1 in Deposited Plan (DP) 137013 (17 Oxford Street) and Lot 1 in DP75105 (2 Verona Street), covering a cumulative area of approximately 2,533m² (**Figure 2, Appendix A**).

Based on most recent aerial photography, taken on 11 July 2025 and site inspection on 16 September 2025, the site was occupied by three separate buildings including;

- A three storey commercial property (17 Oxford Street);
- A two storey commercial property, currently in use as a construction site office (2 Verona Street); and
- A residential apartment complex with included single level basement, currently occupied (13-15 Oxford Street).

The land was designated for redevelopment and this assessment was prepared to accompany a State Significant Development Application (SSDA), SSD-87245208, dated 15 July 2025 for a mixed-use development with infill affordable housing. The site is located at 13–15, 17 Oxford Street, and 2 Verona Street, Paddington. The aim of this assessment was to evaluate the potential for acid sulfate soils (ASS) to be present on the land. Specifically, this report has been prepared to respond to the SEARs requirements issued below.

SEAR Requirement Reference

Response Reference in this Report

12. Ground and Water Conditions

- Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site and including soil erosion.
- Where required provide a Groundwater Impact Assessment in accordance with relevant Groundwater Guidelines. If the proposed development is on land identified as having high salinity or acid sulfate soil potential in an EPI provide a Salinity Management Plan or Acid Sulfate Soil Management Plan that includes appropriate management measures and strategies.

Based on the desktop review, it was concluded that there is no evidence that actual (AASS) or passive (PASS) acid sulfate soil is present within the boundaries of the subject site.

See **Section 4 Conclusion**.

1.2 Proposed Development

Based on the provided architectural plans, site redevelopment will involve;

- The demolition of existing structures on site, with retention of the two-storey masonry façade at 17 Oxford Street.
- Construction of a seven-storey, mixed use infill affordable housing development comprising:
 - Apartments located along the Oxford and Verona Street frontages including:
 - 30 market dwellings; and
 - 14 affordable housing dwellings, to be managed by a registered Community Housing Provider for a minimum of 15 years.
 - Four Terraces on the existing 2 Verona Street lot.
 - Cultural and creative uses (including cinema/bar) at basement and ground levels.
 - Ground level retail.
 - Two levels of basement car parking.
 - Associated landscaping including a central landscaped courtyard and rooftop communal open space.

The bottom basement is proposed to have a relative level (RL) of 36.95 metres Australian Height Datum (mAHD), with potential locally deeper excavations required for footings, lift overrun pits, crane pads and service trenches.

Project Objectives

The main objective of this assessment was to evaluate the potential for ASS to be present on the site. Should there be potential for ASS to be present on site, a secondary objective was to provide advice for the management of such soils during any excavation.

1.3 Scope of works

To achieve the above objectives, the following scope of work was completed:

- Review of topographical, geological and soil landscape maps, including the relevant ASS planning and risk maps; and
- Review of previous environmental and geotechnical investigations prepared for the site (if any).

1.4 Regulatory Framework

The work reported herein was completed with reference to the following publications:

- EPA (1995) *Assessing and Managing Acid Sulfate Soils - Guidelines for Land Management in NSW Coastal Areas*;
- Ahern *et al.* (1998) *Acid Sulfate Soil Manual*;
- Sullivan *et al.* (2018) *National Acid Sulfate Soils Guidance: National Acid Sulfate Soils Identification and Laboratory Methods Manual*; and
- *Sydney Local Environmental Plan 2012*.

2. Site Description

2.1 Site Identification

The site identification details and associated information are presented in **Table 2-1**. The site locality and layout plans are presented in **Appendix A**.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Address	13-15 Oxford Street, 2 Verona Street & 17 Oxford Street, Paddington, NSW
Location	The property is bound by Oxford Street and Verona Street and is located north of 17 Oxford Street, Paddington. - North: Medium density residential and commercial properties, followed by corner South Dowling Street and Oxford Street; - East: Oxford Street, followed by medium density residential properties. - South: Verona Street followed by residential properties; and - West: Medium density residential properties followed by South Dowling Street.
Geographical Coordinates	North-eastern corner of 13-15 Oxford Street; - Northing: 335356.593887 - Easting: 6249493.454392 Coordinates in GDA2020 MGA56; (Source: https://portal.spatial.nsw.gov.au/explorer/index.html)
Total Area	2,533m ²
Lot and DP	SP22113 (13-15 Oxford Street); Lot 1 in DP137013 (17 Oxford Street); and Lot 1 in DP75105 (2 Verona Street).
LGA	Sydney
Current Zoning	E1: Local Centre (13-15 Oxford Street and 17 Oxford Street) R1: General residential (2 Verona Street) (<i>Sydney Local Environmental Plan 2012</i>)
Current Land Uses	Based on most recent aerial photography, taken on 11 July 2025 and site inspection on 16 September 2025, the site was occupied by three separate buildings including; - A three storey commercial property (17 Oxford Street) - A two storey commercial property, currently in use as a construction site office (2 Verona Street) - A residential apartment complex with included single level basement, currently occupied (13-15 Oxford Street)

2.2 Regional Setting

Local topography, (hydro)geology and soil landscape information is summarised in **Table 2-2**.

Table 2-2 Regional Setting Information

Attribute	Description
Topography	With reference to supplied survey plans (Boxall, 2025), the site slopes to the north-east, with recorded elevations ranging from 47.27 mAHD at the north-eastern corner of the site on Oxford Street to 50.59 mAHD at the south-wester corner of the site, on Verona Street.
Drainage	Likely to be consistent with the general slope of the site (to the east). Any runoff would be expected to flow into either the municipal stormwater system or surface flow, consistently with the site topography, into the drainage pathways.
Geology	According to the Department of Mineral Resources Sydney 1:100,000 Geological Series Sheet 9130 (DMR, 1983), the site is situated within the transition from Ashfield Shale (Rwa) to Hawkesbury Sandstone (Rh). Ashfield Shale consists of black to dark-grey shale and laminite, and Hawkesbury Sandstone consists of medium to coarse-grained quartz

Attribute	Description
	sandstone, very minor shale and laminate lenses.
Soil Landscape	The site overlies the transition from Blacktown (bt) residual landscape to Gymea (gy) erosional landscape. Blacktown (bt) residual landscape is characterised by gently undulating rises on Wianamatta Group shales, and Gymea (gy) erosional landscape is characterised by undulating to rolling rises and low hills on Hawkesbury Sandstone.
Nearest Surface Water Features	Rushcutters Creek approximately 1.1km east of the site which flows to Rushcutters Bay, approximately 1.3km north-east of the site.
Anticipated Groundwater Flow Direction	Groundwater flow direction is anticipated to be north-easterly, towards Rushcutters Creek which flows to Rushcutters Bay.

3. Desktop Review

3.1 Definition of Acid Sulfate Soils

Acid sulfate soils are naturally occurring sediments containing iron sulfides, which have been deposited in estuarine conditions. As ASS comprise natural materials, their occurrence is not related to site boundaries or anthropogenic contamination; rather, they extend across regions suitable for their deposition.

When ASS are exposed to air (e.g. due to bulk excavation or dewatering), oxygen reacts with the iron sulfides, producing sulfuric acid (and iron oxides). The acid can be produced in large quantities and drain into waterways causing severe short and long term socio-economic and environmental impacts, including damage to manmade structures and natural ecosystems.

ASS can be classified as either:

- actual acid sulfate soil (AASS), within which are materials that have already reacted with oxygen to produce acid; or
- potential acid sulfate soil (PASS), within which are materials that contain iron sulfides, but have not been exposed to oxygen (e.g. soils below the water table) and therefore have not produced sulfuric acid (though they have the capacity to do so).

Aquatic organisms are extremely sensitive to acid drainage. The impacts from ASS leachates include:

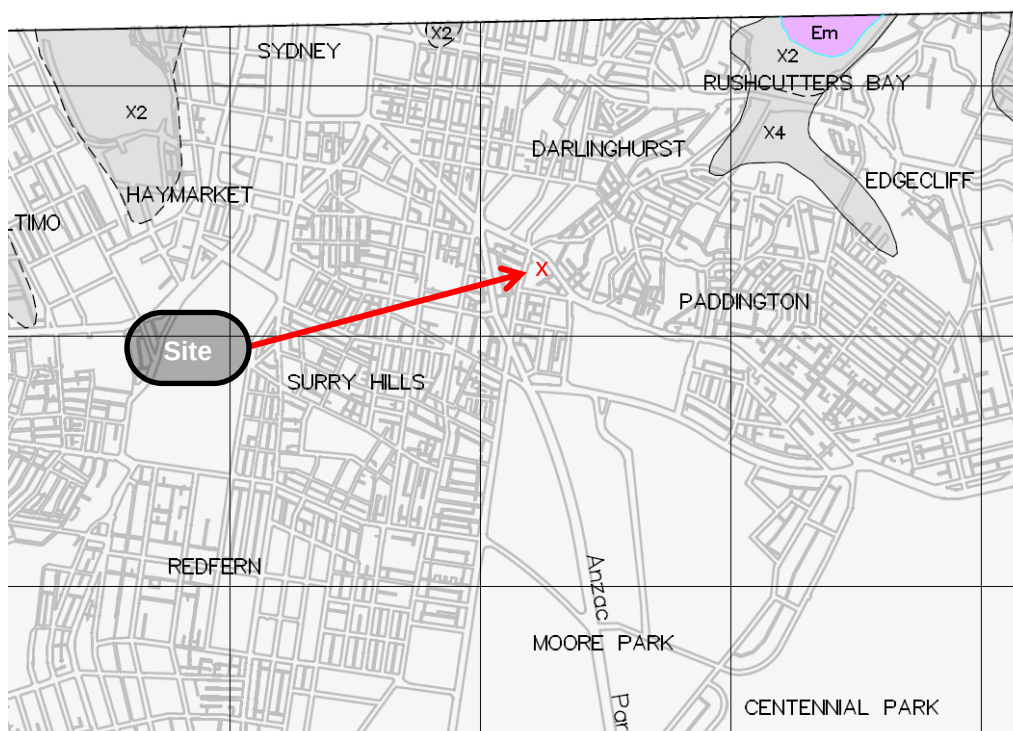
- Dissolved metals (aluminium in particular) can be toxic to both aquatic life forms;
- Dissolved sulfate salts can increase the salinity of freshwater; and
- Acidic sediment may “fix” phosphates and other nutrients, preventing their uptake by plants.

3.2 Acid Sulfate Soil Planning and Risk Maps

The *Sydney Local Environmental Plan 2012 - Acid Sulfate Soil Planning Map, Acid Sulfate Soils Map-Sheet ASS_022*, indicates that the site lies within a Class 5 area. In such cases, the site is located within 500m on adjacent class 1,2,3 or 4 land and acid sulfate soils are unlikely to be encountered.

With reference to the *Botany Bay Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997)*, the site lies within an area of No Known Occurrence. In such cases, ASS are not known or expected to occur and “land management activities are not likely to be affected by ASS materials.”

Figure 3-1 Botany Bay Acid Sulfate Soil Risk Map



3.3 Geomorphic Characteristics of ASS

The likelihood of ASS occurrence on-site was considered in relation to the geomorphic indicators given in Ahern *et al.* (1998) *Acid Sulfate Soil Manual*. These considerations are summarised in **Table 3-1**.

Table 3-1 Consideration of Geomorphic Indicators

Geomorphic Feature	Presence On-Site
Quaternary / Holocene age sediments	Unlikely to be present Based on geology maps and relative elevation ($\geq 48\text{m AHD}$)
Soil horizons less than 5m AHD	Not present Based on relative elevation ($\geq 48\text{m AHD}$)
Marine / estuarine sediments or tidal lakes	Unlikely to be present Based on maps and relative elevation ($\geq 48\text{m AHD}$)
Coastal wetland, back swamp, waterlogged or scaled areas, inter-dune swales or coastal sand dunes	Unlikely to be present Based on maps and aerial imagery
Dominant vegetation is mangroves, reeds, rushes and other swamp or marine tolerant species	Not present Based on maps and aerial imagery
Geology containing sulfide-bearing material	Unlikely to be present Based on maps and relative elevation ($\geq 48\text{m AHD}$)
Deep older (Pleistocene) estuarine sediments	Unlikely to be present Based on geology maps and relative elevation ($\geq 48\text{m AHD}$)

3.4 Review of the Geotechnical Investigation (EI, 2022)

EI previously carried out a Geotechnical Investigation, titles:

- EI (2022) Geotechnical Investigation, ref. E25559.G03, dated 24 May 2022

Based on finding of that investigation, subsurface conditions comprised of anthropogenic fill material (to a depth of 2.4 to 3.3m), overlying natural orange sand (to a depth of approx. 6.2m), overlying sandstone bedrock. No visual indicators of ASS (including rotten egg odour or dark organic clays) were identified.

3.5 Likelihood of ASS Occurrence

Based on the preliminary (desktop) findings, a review of ASS risk maps and geomorphic features relevant to the site indicated that the potential presence of ASS on-site was low. Additionally, ASS are generally linked with alluvial and marine sediments of the Holocene era (<10,000 years ago). The soils encountered on site likely comprise Ashfield Shale and Hawkesbury Sandstone of the Mesozoic era (between 252 and 66 million years ago). Therefore, as the soils encountered at the site are not consistent in age or origin to produce Acid Sulfate Soils, the presences of ASS is considered low risk.

4. Conclusion

The site identified as 13-15 Oxford Street, 17 Oxford Street & 2 Verona Street, Paddington NSW was the subject of this desktop ASSA, which was completed as part of a series of investigations in support of a proposed land redevelopment application to the New South Wales Department of Planning.

The key findings of this ASSA were as follows:

- The site was situated within relatively elevated (≥ 48 m AHD) terrain, perched on a Hawkesbury Sandstone/ Ashbury Shale formation.
- With reference to the *Botany Bay Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997)*, the site lies within an area of *No Known Occurrence*.
- The *Sydney Local Environmental Plan 2012 - Acid Sulfate Soil Planning Map, Acid Sulfate Soils Map- Sheet ASS_022*, indicates that the site lies within a Class 5 area.
- Based on ASS risk maps and geomorphic features of the site, the presence of ASS on site is considered unlikely and of low risk.

Based on the findings from this assessment and with due consideration of EI's *Statement of Limitations (Section 5)*, EI concluded that the potential for ASS to be present at the site was low. The likelihood that acid sulfate conditions would be generated during the proposed development was regarded as negligible. Hence, further investigation in ASS the preparation of an ASS management plan is unwarranted.

5. Statement of Limitations

This report has been prepared for the exclusive use of 17 Oxford Street Pty Ltd, whom is the only intended beneficiary of EI's work. The scope of the assessment carried out for the purpose of this report was limited to that agreed with 17 Oxford Street Pty Ltd.

The findings presented in this report are the result of discrete and specific sampling methodologies used in accordance with best industry practices and standards. Due to the site-specific nature of soil sampling from point locations, it is considered likely that all variations in subsurface conditions across a site cannot be fully defined, no matter how comprehensive the field investigation program.

While normal assessments of data reliability have been made, EI assumes no responsibility or liability for errors in any data obtained from previous assessments conducted on site, regulatory agencies (e.g. Council, EPA), statements from sources outside of EI, or developments resulting from situations outside the scope of works of this project.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change at any time in response to variations in natural conditions, chemical reactions and other events (e.g. groundwater movement and or spillages of contaminating substances). These changes may occur subsequent to EI's assessment.

EI's assessment is based upon the restricted program of surface and subsurface sampling, screening and chemical testing which was set out in the proposal. Neither EI, nor any other reputable consultant, can provide unqualified warranties nor does EI assume any liability for site conditions not observed or accessible during the time of the investigations.

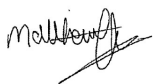
This report was prepared for the above named client and no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

This report and associated documents remain the property of EI subject to payment of all fees due for this assessment. The report shall not be reproduced except in full and with prior written permission by EI.

Should you require anything further, please do not hesitate to contact the undersigned.

For and on behalf of

EI AUSTRALIA



Matthew Chee
Environmental Engineer

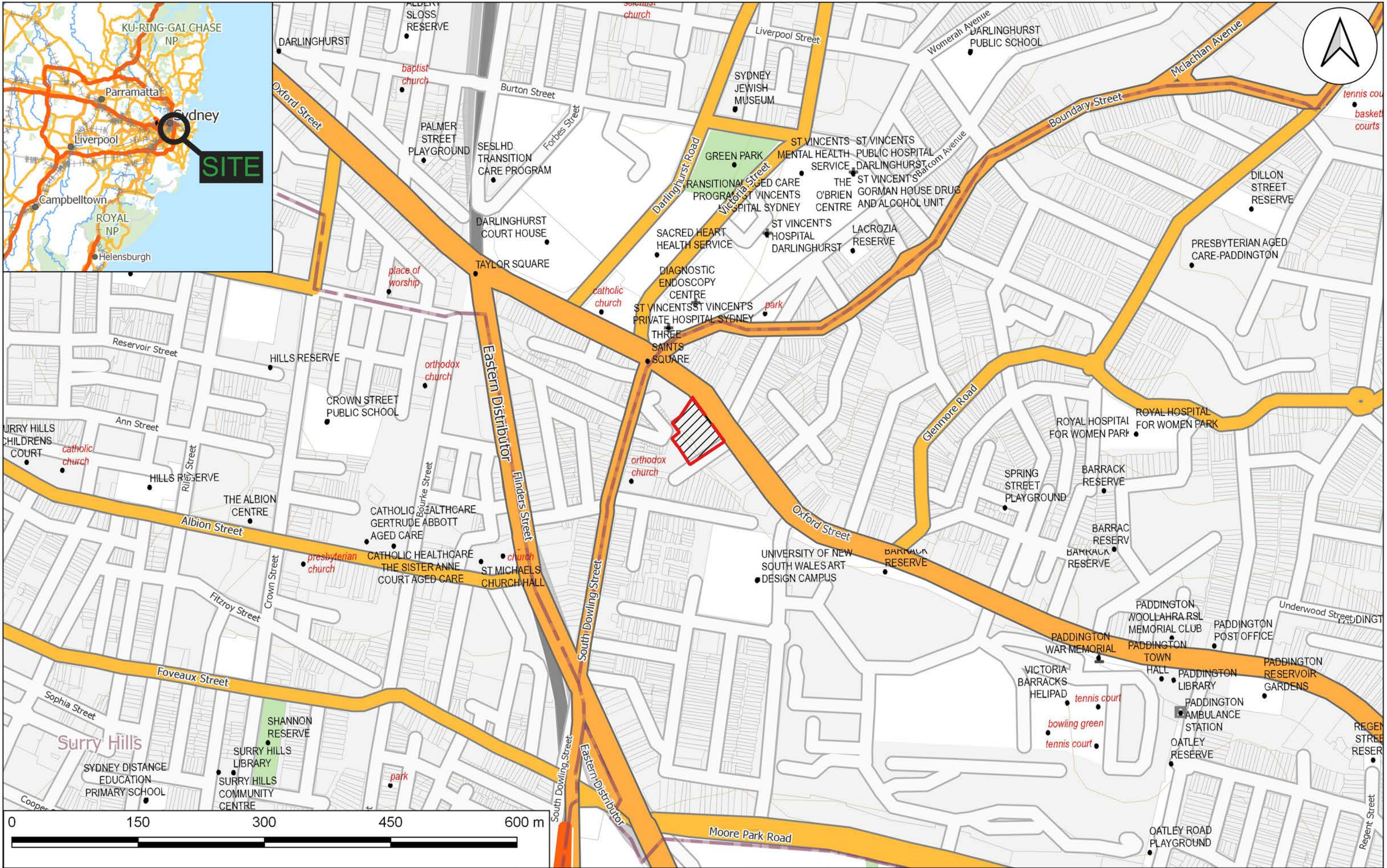


Emmanuel Woelders
Senior Environmental Scientist

Appendix A: Figures

Figure 1 Site Locality Plan

Figure 2 Site Layout Plan



LEGEND Note: All locations are approximate  Site Location	 Practical Solutions for Built Environments Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088	Drawn:	M.C.	17 Oxford Street Pty Ltd Acid Sulfate Soil Assessment 13-15 Oxford Street, 17 Oxford Street & 2 Verona Street, Paddington NSW Site Locality Plan	Figure: 1
		Approved:	E.W.		Project: E25559.E14 Rev0
		Date:	19/09/2025		



LEGEND Note: Areas are approximate Site Boundary Proposed Basement Boundary Proposed deep soil/landscape area	 Practical Solutions for Built Environments Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088	Drawn:	M.C.	17 Oxford Street Pty Ltd Acid Sulfate Soil Assessment 13-15 Oxford Street, 17 Oxford Street & 2 Verona Street, Paddington NSW Site Layout Plan	Figure: 2
		Approved:			Project: E25559.E14_Rev0
		Date:	18/11/2025		

Map Source: NSW SIXMaps, accessed 19/09/25