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MOSMAN LAND NO.1 PTY LTD



Geotechnical Investigation

40-48 Redan Street, Mosman NSW

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1. Introduction

1.1 Background

At the request of Mosman Land No.1 Pty Ltd (the Client), EI Australia (EI) has carried out a Geotechnical Investigation (GI) for the proposed development of 40-48 Redan Street, Mosman NSW (the Site). The site locality and location is shown on the attached **Figure 1**.

This GI report has been prepared to provide geotechnical advice and recommendations to assist in the planning and design for the proposed development. This investigation and reporting has been carried out in general accordance with the agreed scope of works outlined in EI's proposal referenced P23650.1_Rev1, dated 23 October 2025.

1.2 Proposed Development

The following documents, supplied by the Client, were used to assist with the preparation of this GI report:

- Preliminary Architectural drawings provided by the Client on 21 January 2026 – File Name 260120_Mosman, Drawing No. N/A, Dated N/A
- LTS Surveyors Pty Ltd (2025) Topographical Survey Plan of No. 40-48 Redan Street, Mosman – Drawing No. 52627 001DT, Sheets 1 to 7, dated 20 August 2025.

The datum in the above survey plan is the Australian Height Datum (AHD) and all Reduced Levels (RL) mentioned in this report are also to AHD.

Based on the provided documents, EI understands that the proposed development will comprise the demolition of the existing houses at the site for the construction of two residential unit blocks, one eight-storey and one nine-storey, over a common two-level basement car park. The preliminary drawings do not provide any RLs but an indicative Finish Floor Level (FFL) RL of 52 m AHD was provided verbally by the Client in a recent meeting. On this basis we expect bulk excavations for basement construction will be between about 7.5 m to 10.0 m Below Existing Ground Levels (BEGL) assuming that the Bulk Excavation Level (BEL) is approximately RL 51.7m AHD to allow for the concrete slab. It is understood that the basement footprint is set back as follows:

- Approximately 3m from the eastern boundary and northern boundaries;
- Nil setback from the western and southern boundaries, i.e. the basement footprint extends to the common northern and western site boundaries.

1.3 Objectives

The objective of this GI was to obtain information on ground conditions at the site for geotechnical comment and recommendation on the following aspects of the proposed development;

- Excavation conditions, stability, and indicative excavation retention geotechnical design parameters.
- Protection of adjoining properties.
- Groundwater considerations for basement design.
- Building footings and indicative geotechnical design parameters.
- Assessment of soil aggressivity to buried steel and concrete elements.

1.4 Investigation Methodology and Scope of Works

The geotechnical site investigation comprised the following:

- Drilling of four boreholes across the site. All boreholes were drilled with a tight-access drilling frame to depths of between 10.32 m to 15.22 m BEGL using solid flight auger drilling in soils for BH1M and BH2M and hand auger drilling for BH3M and BH4, followed by NMLC sized core drilling into the bedrock in all boreholes. The approximate borehole locations are shown on the attached **Figure 2** (Borehole Location Plan).
- EI's Geotechnical Engineer was present full-time onsite to set out the borehole locations, direct the drilling, collect soil samples, box/photograph rock cores, and log the observed subsurface conditions.
- The resulting borehole logs and rock core photographs are attached as **Appendix A**, together with EI Australia's Soil and Rock Description Explanation Sheets that define the descriptions and terminology used on the borehole logs.
- The approximate surface levels shown on the borehole logs were interpolated from spot levels shown on the supplied survey plan. The borehole Northings and Eastings were estimated from the NSW Government online SIX Map Spatial Services/Imagery.
- On completion of drilling, a groundwater observation standpipe was installed in three of the boreholes to depths of 10.8 m to 15.2 m BEGL to enable subsequent observation of groundwater levels. Standpipe installation logs are included with the borehole logs in **Appendix A** and each one has a machine slotted PVC screen with a sand filter.
- Following the fieldwork, soil and rock core samples were sent to the National Australian Testing Authority (NATA) accredited STS Geotechnics Pty Ltd (STS) and SGS Australia Pty Ltd (SGS) laboratories for the following geotechnical index, strength, and chemistry testing:
 - › Three (3) Soil Aggressivity tests, i.e. pH, sulfides, chlorides and Electrical Conductivity (by SGS); and
 - › Rock core Point Load Strength Index testing (by STS).

The laboratory test reports are attached as **Appendix B**. Additionally the Point Load Strength Index test results are also shown graphically on the borehole logs.

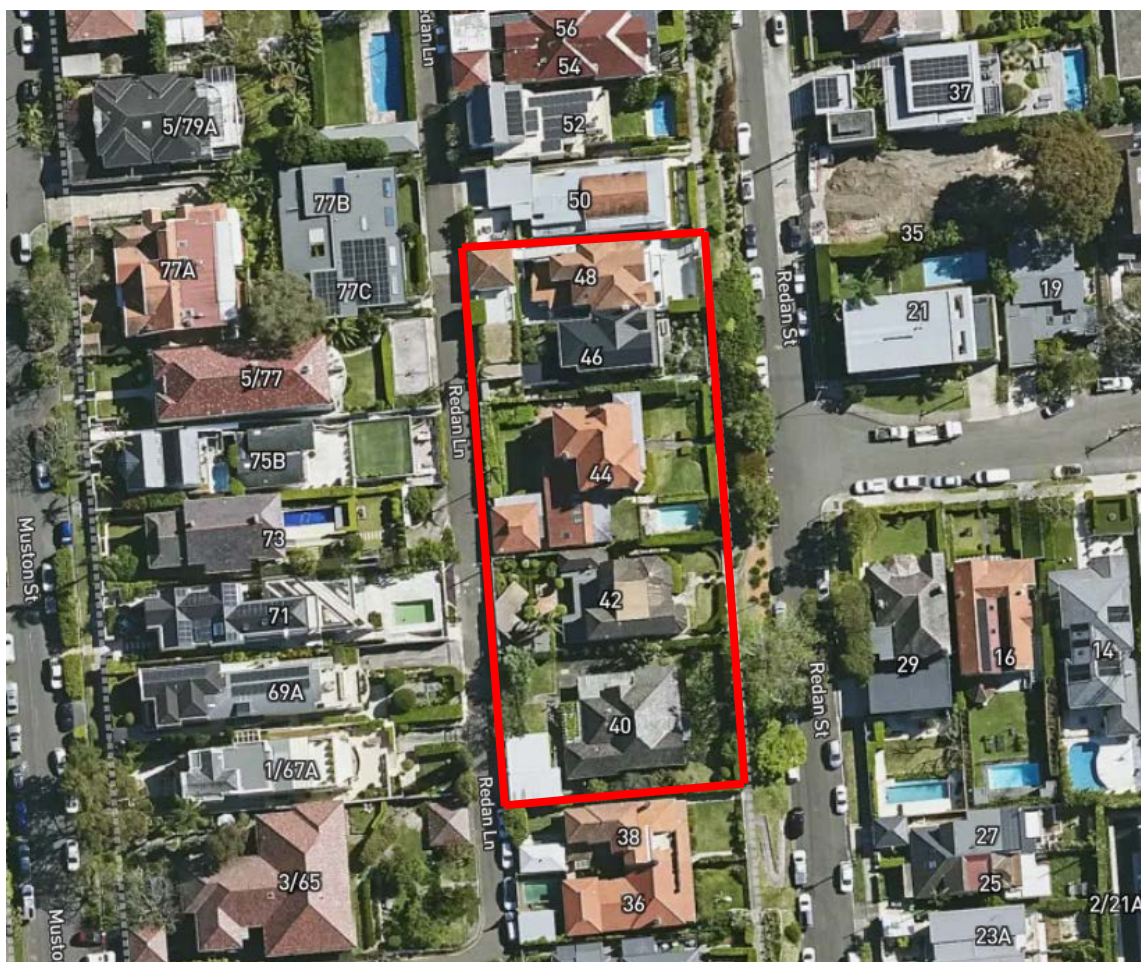
2. Site Description

2.1 Site Identification and Description

The site identification and a summary description are presented in **Table 2-1** below with an aerial photograph of the site following this table as **Plate 1**.

Table 2-1 Summary of Site Information

Information	Detail
Street Address	40-48 Redan Street, Mosman NSW
Lot and Deposited Plan (DP) Identification	Lot 1 in DP921113; Lot 11 in DP1350; Lot 9 in DP1350; Lot 2 in DP33257; Lot 1 in DP33257.
Site Area	The site area is approximately 3233m ² (based on the provided survey plan).
Brief Site Description	At the time of our investigation the site comprised 5 separate residential properties each occupied by a single or double storey brick, timber or rendered dwelling with a front and rear yard. One of the properties also had an in-ground swimming pool in the front yard.



2.2 Local Land Use

The site is situated in a residential area. Current uses on surrounding land at the time of our investigation are summarised in **Table 2-2** below.

Table 2-2 Summary of Local Land Use

Direction Relative to Site	Land Use Description
North	50 Redan Street, occupied by a two-storey rendered house, which is setback approximately 0.8m from the northern common boundary. Ground surface levels within the neighbouring property appeared to be similar to the subject site.
East	Redan Street, comprising a two lane asphalt-paved suburban street. On the opposite side there are similar residential properties each occupied by single to multi-storey storey dwellings.
South	38 Redan Street, occupied by a two-storey brick house, which was setback approximately 1.3m from the southern common boundary. Ground surface levels within the neighbouring property appeared to be approximately 0.5m lower than the subject site.
West	Redan Lane, comprising a single lane asphalt-paved suburban street. On the opposite side there are residential properties each occupied by single to multi-storey dwellings.

2.3 Regional Setting

The local topography and geological information for the site is summarised in **Table 2-3** below.

Table 2-3 Topographic and Geological Information

Attribute	Description
Topography	The topography of the area and the site generally slopes down to the east at 7° to 9°. The site itself is located toward the middle of an east facing hillside and ground surface levels range between approximately RL 64m AHD to RL 55m AHD.
Geology (Source: MinView)	Plate 2 below presents an extract of the MinView 'NSW Seamless Geology' version 2.4 map showing the site location within the local geology and indicates that the site is located on Hawkesbury Sandstone. Hawkesbury Sandstone typically comprises medium to coarse-grained quartz sandstone displaying small to large scale, high-angle cross-bedding with minor shale and laminate lenses.



Plate 2 Regional Geological Setting (Source: MinView).

3. Investigation Results

3.1 Stratigraphy

A summary of the borehole drilling is presented in **Table 3-1** below. The approximate borehole locations are shown on the attached **Figure 2** (Borehole Location Plan).

Table 3-1 Borehole drilling summary

Borehole ID	Surface RL (m AHD)	Augering		Rock Coring	
		Depth (m)	RL (m AHD)	Depth (m)	RL (m AHD)
BH1M	59.1	1.00	58.10	11.89	47.21
BH2M	60.4	0.50	59.90	10.80	49.60
BH3M	61.6	0.79	60.81	15.22	46.38
BH4	58.8	0.30	58.50	10.32	48.48

For a detailed description of subsurface conditions at each borehole location, reference should be made to the borehole logs presented in **Appendix A**.

In summary, the observed stratigraphy comprised shallow fill, 0.3 m to 0.8 m deep, over a thin layer of sand which was only found in BH1M, underlain by Sandstone Bedrock at depths of approximately 0.5 m to 1.3 m BEGL.

The stratigraphy observed in boreholes can be grouped into the four general geological units as presented in below.

Table 3-2 Summary of Subsurface Conditions

Unit	Unit Name	Depth to Top of Unit (m BEGL) ¹	RL of Top of Unit (m AHD) ¹	Observed Thickness (m)	Description
1	Fill	Surface	58.8 to 61.6	0.58 to 1.28	FILL: topsoil comprising fine to medium grained silty sand, with gravel, roots, and rootlets.
2	Residual Soil	0.8	58.3	0.2	Silty SAND: fine to medium grained. Only found in BH1M.
3	Slightly Weathered to Fresh Sandstone	0.58 to 1.28	57.52 to 60.81	5.43 to 8.73	SANDSTONE; Slightly Weathered to fresh, fine to coarse grained, typically of medium to high strength, but with occasional bands of low strength or core loss.
4	Fresh Sandstone	6.71 to 9.52	50.10 to 52.09	-	SANDSTONE: Fresh, medium to coarse grained, medium to high strength.

Note 1 Approximate depth and level as observed at the borehole locations. Depths and levels may vary across the site.

3.2 Groundwater Observations

Groundwater inflows were not observed during auger drilling. Water circulation for rock coring then prevented further observations of groundwater levels during core drilling.

After drilling was completed, groundwater observation standpipes were installed into three boreholes as summarised in **Table 3-3** below.

Table 3-3 Well Installation Depths

Borehole ID	Surface RL (m AHD)	Standpipe Depth		Top of Sand Screen Section		Screened Unit
		Depth (m)	RL (m AHD)	Depth (m)	RL (m AHD)	
BH1M	59.1	9.0	50.1	3.0	56.1	Unit 3 Sandstone
BH2M	60.4	10.8	49.6	4.8	55.6	Unit 3 and 4 Sandstone
BH3M	61.6	15.22	46.38	1.0	60.6	Unit 3 and 4 Sandstone

About one week after installation, the standpipes were developed by hand bailing. About six weeks after installation, the standpipes were sampled and pumped by an electrical groundwater pump until “dry”. Groundwater levels were measured in the BH1M, BH2M and BH3M standpipes on each site visit, and are presented in **Table 3-4** below.

Table 3-4 Observed Groundwater levels

Borehole ID	Groundwater Level		
	Measurement Date	m BEGL	RL (m AHD)
BH1M	17/12/2025	3.6	55.5
	13/01/2026	3.9	55.2
BH2M	17/12/2025	5.56	54.84
	13/01/2026	1.92	58.48
BH3M	17/12/2025	3.45	58.15
	13/01/2026	3.41	58.19

3.2.1 Rising Head Test

During the groundwater observations, a Rising Head Test was completed on two occasions in the wells. The following procedure was adopted:

- The groundwater level within the well was initially recorded;
- The well was purged using a PVC bailer;
- The rising groundwater level within the temporary well was measured at various time intervals for 1 hour.

The results were then used to estimate the permeability of the sandstone bedrock using the Hvorslev Method based on the borehole geometry. The estimated permeability of the sandstone bedrock is calculated to be between 2×10^{-7} to 2×10^{-8} m/s.

3.3 Laboratory Test Results

Following the fieldwork, soil and rock core samples were sent to the National Australian Testing Authority (NATA) accredited STS Geotechnics Pty Ltd and SGS Australia Pty Ltd (SGS) laboratories for the following geotechnical index and strength testing;

- Rock Point Load Strength Index tests;
- Soil Aggressivity tests, i.e. pH, sulfate, chloride, Electrical Conductivity and Moisture Content.

A summary of the soil test results is provided in **Table 3-5** below. The laboratory test reports are attached as **Appendix B**. Additionally the Point Load Strength Index test results are also shown graphically on the borehole logs.

Table 3-5 Summary of Soil Laboratory Test Results

Test / Sample ID	BH1M 0.9-1.0	BH2M 0.0-0.1	BH3M 0.2-0.4
Borehole ID	BH1M	BH2M	BH3M
Sample Depth (mBEGl)	0.9-1.0	0.0-0.1	0.2-0.4
Unit	2	1	1
Material	Residual Soil	Fill	Fill
USCS Description	Silty Sand	Silty Sand	Silty Sand
Aggressivity			
Chloride Cl (ppm)	13	30	3.7
Sulfate SO ₄ (ppm)	30	33	15
pH	7.7	6.2	6.6
Electrical Conductivity (µS/cm)	51	64	76
Moisture Content (%)	12.9	13.9	8.0

4. Discussion and Recommendations

4.1 Bedrock Rock Mass Classification

The sandstone rock cores were assessed and classified with reference to Pells et al (1998) "Foundations on Sandstone and Shale in the Sydney Region" Australian Geomechanics Journal Dec 1998. A summary of the resulting rock mass classification assessment for each sandstone unit is presented at **Table 4-1** below.

Table 4-1 Summary of Pells Rock Mass Assessment

Unit	Unit Name	Assessed Rock Class	Depth to Top of Unit (m BEGL) / RL of Top of Unit [m AHD]			
			BH1M	BH2M	BH3M	BH4
3	Slightly Weathered and Fresh Sandstone	Class IV/III Sandstone	1.0 [58.1]	0.5 [59.9]	0.79 [60.81]	1.28 [57.52]
4	Fresh Sandstone	Class II	9.0 [50.1]	-	9.52 [52.08]	6.71 [52.09]

4.2 Basement Excavation and Design

4.2.1 Excavation Conditions

Prior to any excavation commencing, we recommend that reference be made to the Safe Work NSW Excavation Work Code of Practice, dated January 2020. Excavation contractors should also review the attached borehole logs to make their own assessment of excavation plant suitability and production rates.

Based on an assumed lower basement design floor level of RL 52.0 m, it is expected that bulk excavations across the site will be between 7.5 m to 10.0 m deep, and comprise excavation of shallow soil and Unit 3 Sandstone (and possibly Unit 4).

It is expected that the Unit 1 Fill and 2 Residual Soil would be readily excavatable using conventional earthmoving plant such as a large excavator with a toothed bucket. Excavation of Unit 3 (and possibly Unit 4) Sandstone will require 'Hard Rock' excavation techniques such as ripping with a large bulldozer, or the use of a large excavator fitted with a hydraulic rock breaker, rock saw, or rotary grinders. It is expected that the use of small bulldozers or excavators will result in very low productivity.

The use of hydraulic rock breakers, e.g. impact hammers, for bulk and detail excavation will cause vibrations that may impact neighbouring structures and services. Rotary rock saws or grinders can reduce both overbreak and excessive vibrations. We recommend that prior to the commencement of excavations, an assessment of the likely vibrations to be generated from the selected excavation methodology/plant and the potential effect on surrounding structures be carried out.

4.2.2 Excavations Stability and Retention

Based on the shallow depth to Unit 3 bedrock (0.6 to 1.3m BEGL), and the presence of low strength or better sandstone, EI is of the opinion that the sandstone bedrock should generally be able to be excavated vertically without support.

The upper fill and sandy soil may either be excavated using temporary batters to top of bedrock where space is available, or a small retaining wall may be used if required to retain this soil. An example of the retaining wall may include steel posts embedded into the sandstone bedrock with enough room to provide passive resistance at the toe, with timber or concrete lagging.

Following demolition, EI recommends the completion of test pits around the perimeter of the site to confirm the depth to bedrock at the excavation boundary, to see if any retention systems are required to support the soil above the bedrock.

The sandstone bedrock may be excavated vertically without support, given that the excavations must be inspected by a geotechnical engineer at regular intervals to check for any inclined joints or weak seams that require stabilisation. Said inclined joints and weak seams were evident in the boreholes. Such geotechnical inspections should be carried out at depth intervals of no more than 1.5 m. If adverse defects are encountered, the stabilisation measures may comprise rock bolts, shotcrete and mesh or dental treatment of thin weak seams using non-shrink grout, and this should be allowed for.

Alternatively, full-depth soldier pile shoring walls may be adopted.

In the long-term the sandstone may be exposed, however may weather and deteriorate over time. Maintenance should be allowed at the base of the excavation to prevent build-up of weathered material from clogging up drainage systems. Alternatively, the cut face may be covered with shotcrete or a permanent wall with adequate drainage for lesser maintenance.

As a guide, **Table 4-2** below presents general geotechnical design parameters that may be adopted for initial retaining wall design.

Table 4-2 Geotechnical Design Parameters for Retaining Walls

Material	Bulk Density (kN/m ³)	Effective Cohesion c' (kPa)	Effective Friction Angle ϕ' (degrees)	Coefficient of Earth Pressure at Rest (K ₀)	Elastic Modulus (MPa)
Unit 1 Fill	18	0	25	0.58	5
Unit 2 Residual Silty Sand	18	0	28	0.53	10
Unit 4 Slightly Weathered and Fresh Sandstone	24	250	45	-	750
Unit 5 Fresh Sandstone	24	500	50	-	2000

Retaining wall analyses will also need to consider surcharges, footing loads from adjacent structures, and hydrostatic pressure. If drained walls are to be used then adequate drainage will need to be provided behind the walls, with a permanent water collection system that can periodically be flushed for drainage system maintenance. Even with permanent drainage, an allowance of potential water pressure build-up equivalent to one-third the wall height is still recommended for design.

Permission from adjacent property owners and council would be required to install anchors that extend beneath the adjacent properties and roads. If the use of anchors is not possible, then internal bracing would be required.

Anchor designs should be based on allowing effective anchorage to be developed by locating the anchor bond length behind an 'active zone', determined by drawing a line at 45° from the base of the wall up to the ground surface behind the excavated face. The following working bond stresses presented in **Table 4-3** below may be adopted for initial design of anchors on the provision that bond lengths are between 3 m to 7 m, and that anchors are to be proof loaded to at least 1.5 times their design working load.

Table 4-3 Geotechnical Design Parameters for Ground Anchors

Material	Working Bond Stress (kPa)
Unit 3 Slightly Weathered Sandstone	200
Unit 4 Fresh Sandstone	500

4.2.3 Protection of Neighbouring Structures

For the protection of neighbouring structures the type of structure, location, layout, and footing depth should be assessed at the commencement of project design works. Consideration then should be made for the following potential impacts of the proposed basement excavation works from;

- Any induced ground deformation.
- Vibrations generated from hard rock excavation.

Some adjacent ground movements will occur due to basement excavations. Lateral ground movements will be dependent on the type, design, and construction of the retention system. Experience and published data suggest that lateral movements of an adequately designed and installed retention system in soils and weathered rock will be between 0.2% and 0.5% of the retained height. For the medium and high strength rock, lateral movements in the order of 0.5 mm to 2 mm per metre height of excavation should be expected. The extent of the horizontal movement behind the excavation face may typically extend from 1 to 2 times the excavated height.

The use of excavation plant such as impact hammers will generate vibrations that may affect surrounding sensitive structures and buried services. Measures to mitigate the risks associated with vibration such as the use of rock saws or rock grinders should be considered. If there is a potential for the generated vibrations to affect surrounding structures, a vibration monitoring plan with assessed vibration limits, trigger levels, and response actions will be required for the monitoring and management of excavation works.

Prior to excavation and construction, we also recommend that dilapidation surveys be carried out on all structures surrounding the site that fall within the zone of influence of the excavation. The zone of influence for the excavation may initially be defined by a distance back from the excavation perimeter equal to three times the total excavation depth. The dilapidation survey reports would then provide a record of existing conditions prior to commencement of the work. A copy of each report should be provided to the adjoining property owner and be asked to confirm that it represents a fair assessment of existing conditions.

4.2.4 Groundwater Considerations

With reference to the encountered subsurface conditions and observed groundwater levels, we would expect minor seepage inflows into the excavation along the soil/rock interface, and through defects within the bedrock (such as jointing, and bedding planes, etc.) particularly following a periods of heavy rainfall.

We note that at the planning stage, it will be both WaterNSW and Council's preference that the basement be tanked to prevent any groundwater take, or discharge to the storm water system. However based on EI experience with similar projects at sites with shallow soil over sandstone, seepage into basement excavations may be controllable by conventional sump pumping methods for discharge into the storm water network. The initial flows into the excavation may be locally high, but would then be expected to decrease considerably with time as the bedding seams/joints above the base of the excavation are drained. On this basis the use of a drained basement at this site may be feasible, however this would have to be assessed in detail with additional groundwater investigation, long term monitoring, and inflow seepage analysis carried out with reference to the Department of Planning and Environment (DPE) guidelines "*Minimum*

requirements for building site groundwater investigation and reporting”, dated October 2022, followed then by application to Council and the relevant state authorities for approval to use a drained basement.

For a drained excavation structure, permanent floor and basement wall drainage will need to be maintained throughout the life of the structure. It is expected that such a drainage system would include both retaining wall drains and a sub-floor drainage blanket with slotted drainage pipes connected to a sump-and-pump system discharging into the storm water system. The assessment for a permanent groundwater control system should also take into account groundwater quality/chemistry which may dictate whether or not groundwater can be pumped into the storm water system. On-going long term maintenance of the drainage and pump systems with the ability to effectively back flush the system will also be required.

4.3 Building Footings

Following the completion of bulk excavations, it is expected that the exposed subgrade at floor level will comprise medium to high strength Unit 3 Sandstone of Class IV/III. On this basis it is then expected that the buildings may be founded on the sandstone subgrade using conventional pad and strip footings.

For initial footing design our recommended geotechnical footing design parameters for pad or short pile footings into the observed bedrock units are provided in **Table 4-4** below. The serviceability design end bearing value is based on an assumed footing settlement criterion of up to 1% of the footing width.

We note that higher design values may be possible for the Class II or better sandstone, however further rock quality investigations comprising the drilling of additional cored boreholes to further characterise potential rock mass strength and defect variability will be required to assess this. We also note that Unit 4 sandstone was not observed in BH2M.

Table 4-4 Geotechnical Design Parameters for Footings

Geotechnical Unit	Ultimate End Bearing ¹ (MPa)	Serviceability End Bearing ² (MPa)	Elastic Modulus ³ (MPa)
Unit 3 Sandstone (Class IV/III)	15	3.5	750
Unit 4 Sandstone ⁴ (Class II or better)	40	6	2000

Note 1 Ultimates values quoted above are based on large settlement >5% of minimum footing dimensions, as suggested by Pells et al (1998).

Note 2 Serviceability end bearing pressures quoted above are based on a footing settlement within 1% of the footing width as suggested by Pells et al (1998). Higher design values may be possible if appropriate assessment of footing performance is carried out.

Note 3 Limit state serviceability should be assessed using the modulus value to check that settlements are within tolerable limits.

Note 4 Subject to additional cored boreholes if required.

For limit state design, a geotechnical reduction factor (ϕ_g) is to be applied to the ultimate geotechnical capacity to derive the geotechnical capacity. In AS2159, ϕ_g is dependent on the assignment of an Average Risk Rating (ARR) which considers various geotechnical uncertainties, redundancy of the foundation system, and construction supervision/testing. Therefore, the assessment of ϕ_g depends on the structural design of the foundation system as well as the design and construction method, and testing (if any) to be employed by the designer and construction contractor.

The use of limit state design also requires that serviceability performance of the foundation system be assessed, including group interaction effects. Such assessment should be carried

out by experienced geotechnical professionals using well-established and soundly based methods. The modulus values given above may be adopted for initial assessments, but it should be recognised that the accuracy of settlement prediction is a function of construction methodology as well as the assessed values of material stiffness, both of which can involve uncertainty.

The recommended design parameters for pad footings and bored piles assume that the bearing surfaces are clean and free from spoil and other soft and loose material, and free of water at the time of placement of concrete. Concrete should be poured as soon as possible to prevent and degradation of the exposed rock surface and to ensure the concrete has a clean contact with rock.

During construction, geotechnical inspections of footing excavations are recommended to confirm that the required bearing strata has been reached and to assess any variation that may occur between the boreholes and inspected locations.

If shoring piles are designed to be load bearing, and should they be founded at a level above the bulk excavation level, the serviceability bearing pressure should be reduced by 50% due to edge loading effects.

4.4 Soil Aggressivity

With reference AS 2159:2009 'Piling – Design and Installation', and adopting Exposure Condition A (High permeability soils/ above groundwater) the results of the pH, chloride and sulphate content and electrical conductivity of the testing indicate the following exposure classifications:

- 'Mild' for buried concrete structural elements; and
- 'Non-Aggressive' for buried steel structural elements.

5. Further Geotechnical Inputs

It is expected that the following additional geotechnical investigation and assessments may also be required to support project planning, regulatory approvals, detailed design, and construction works:

- Detailed groundwater investigation, testing, long term groundwater level monitoring, and a Groundwater Seepage Analysis to support the feasibility assessment of a drained basement structure and the approvals process with reference to the DPE (2022) guidelines.
- Geotechnical design, stability, and possibly ground deformation assessments for excavation and/or retaining structure design.
- Spoil Waste Classification of all excavated material to be transported off site.
- Additional investigations in the form of test pits around the perimeter of the site to confirm depth to bedrock, and cored boreholes (if required for higher bearing capacities).
- Construction stage geotechnical inspections of rock faces and footing excavations.
- Construction stage excavation deformation and/or vibration monitoring.
- We also recommend that a meetings be held both after initial structural design has been completed to confirm that our recommendations have been correctly interpreted, and at the commencement of construction to discuss the primary geotechnical issues and inspection requirements.

6. Statement of Limitations

This report has been prepared for the exclusive use of Mosman Land No.1 Pty Ltd who is the only intended beneficiary of EI's work. The scope of the assessment carried out for the purpose of this report is limited to those agreed with Mosman Land No.1 Pty Ltd

No other party should rely on the document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

The GI was limited by the intent of the investigation and the presence of existing site structures. It is recommended that geotechnical inspections be carried out during construction works to confirm that the observed ground conditions are consistent with those described in this report and design documentation.

EI has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the geotechnical industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices and attachments.

The conclusions presented in this report are based on a limited investigation of conditions, with specific sampling and test locations chosen to be as representative as possible under the given circumstances.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data. EI may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EI.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations, or validation testing and analysis during construction. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions.

We draw your attention to the document "Important Information", which is included in **Appendix C** of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by EI, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

Should you have any queries regarding this report, please do not hesitate to contact EI.

References

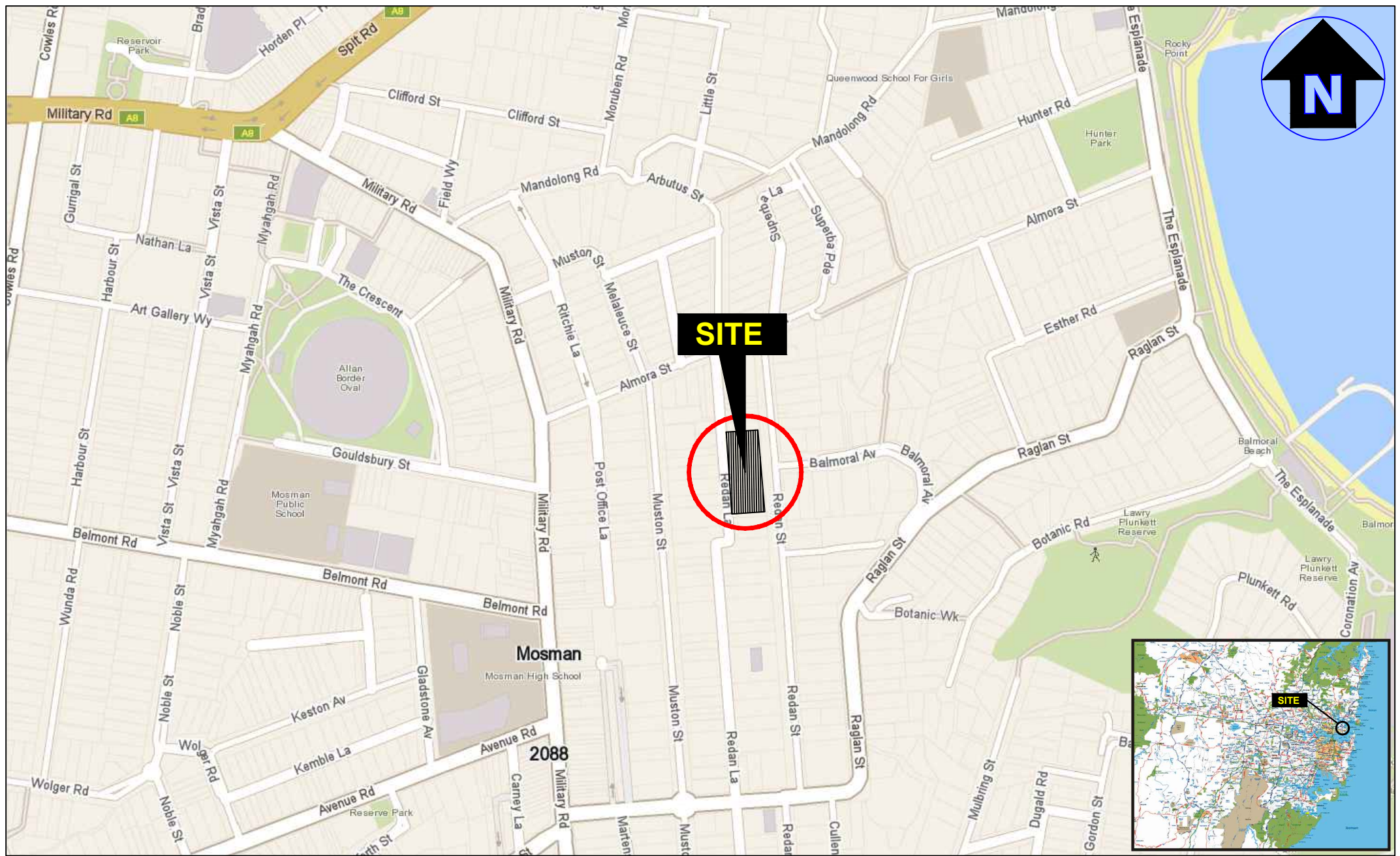
- AS1289.6.3.1:2004, Methods of Testing Soils for Engineering Purposes, Standards Australia.
- AS1726:2017, *Geotechnical Site Investigations*, Standards Australia.
- AS2159:2009, *Piling – Design and Installation*, Standards Australia.
- Safe Work Australia Excavation Work Code of Practice, dated January 2020 – WorkCover NSW
- Department of Planning and Environment (DPIE), (2022) Minimum requirements for building site groundwater investigation and reporting, version 2.2210 October 2022
- Colquhoun G.P., et al., (2024) New South Wales Seamless Geology dataset, Version 2.4 [Digital Dataset]. Geological Survey of New South Wales, Department of Regional NSW

Abbreviations

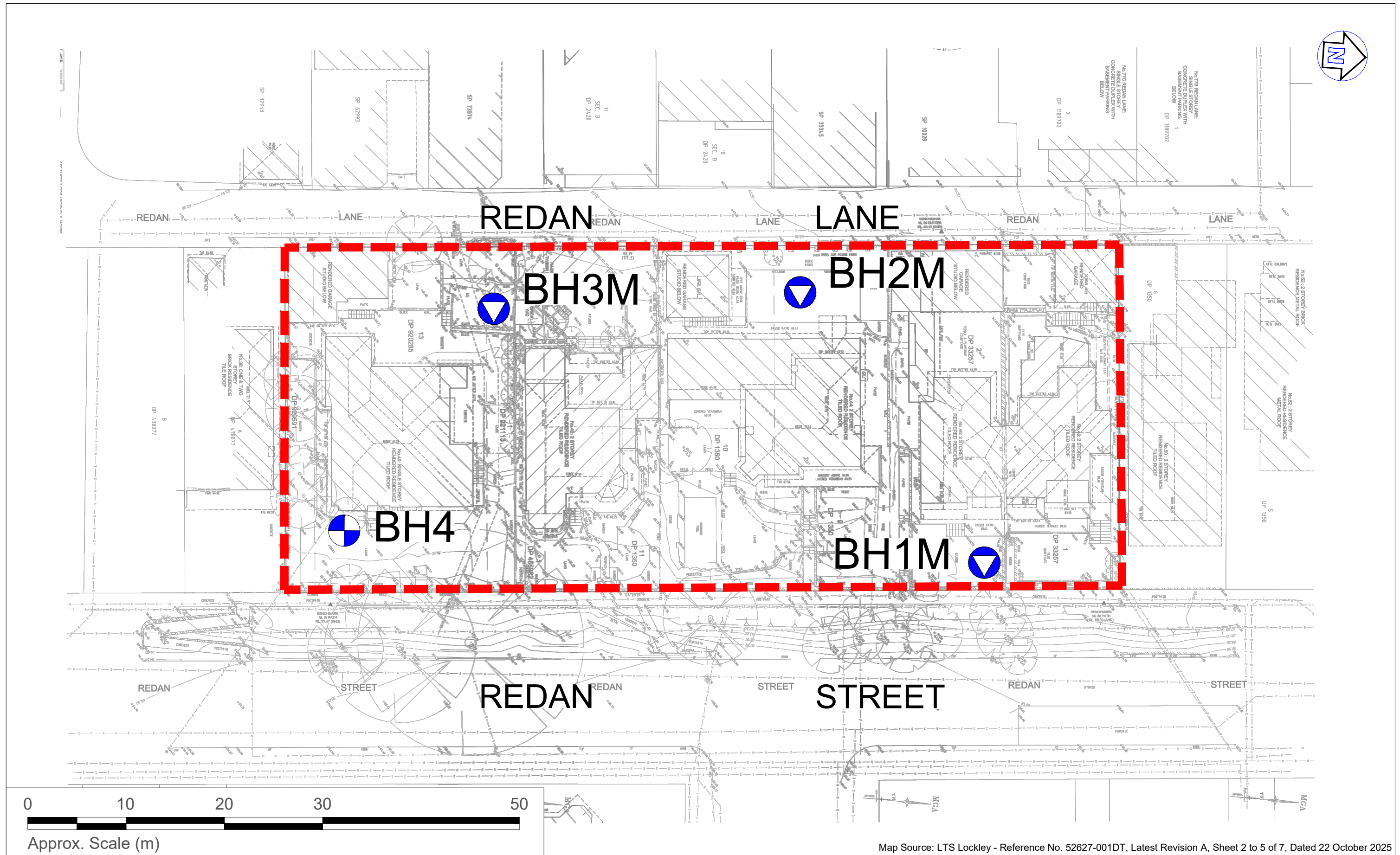
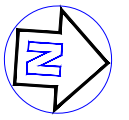
AHD	Australian Height Datum
AS	Australian Standard
BEL	Bulk Excavation Level
B EGL	Below Existing Ground Level
BH	Borehole
DP	Deposited Plan
EI	EI Australia
GI	Geotechnical Investigation
NATA	National Association of Testing Authorities, Australia
RL	Reduced Level
SPT	Standard Penetration Test

Figures

- Figure 1 Site Locality Plan
- Figure 2 Borehole Location Plan



Drawn:	J.O.
Approved:	S.K.
Date:	28-1-26
Scale:	Not To Scale



Map Source: LTS Lockley - Reference No. 52627-001DT, Latest Revision A, Sheet 2 to 5 of 7, Dated 22 October 2025

LEGEND (All Locations are Approximate)

- - - Site boundary
- ⊕ Borehole locations
- ▼ Monitoring well locations



Drawn:	J.F.
Approved:	S.K.
Date:	28-1-26

Mosman Land No.1 Pty Ltd
 Geotechnical Investigation
 40-48 Redan Street, Mosman, NSW
 Borehole Location Plan

Figure:
2
 Project: E26955.G03

Appendix A Borehole Logs And Explanatory Notes



BOREHOLE LOG

BH ID: BH1M

Location	40-48 Redan Street, Mosman NSW	Started	25 November 2025
Client	Mosman Land No.1 Pty Ltd	Completed	25 November 2025
Job No.	E26955.G03	Logged By	JO Date 25 November 2025
Sheets	1 of 3	Review By	SK Date 28 January 2026

Drilling Contractor	Hard Access Drilling	Surface RL	≈59.10 m (AHD)	Northing	6255589.5 (MGA 2020 Zone 56)
Plant	Tight-Access Drilling Frame	Inclination	90°	Easting	337727.5 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (mAHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
ADT	GWNE	BH1M_0.00-0.10	█	0.00		59.10	FILL: Silty SAND: fine to medium grained, grey-brown, trace rootlets with sub-angular to sub-rounded ironstone gravels	M	-	FILL
		BH1M_0.90-1.00	█	0.80		58.30	Silty SAND: fine to medium grained, pale grey	M	L	RESIDUAL SOIL
				1.00		58.10	<i>Log continued on next page.</i>			
				2						
				3						
				4						
				5						
				6						
				7						
				8						
				9						
				10						

This log should be read in conjunction with EI Australia's accompanying explanatory notes.



MONITORING WELL LOG

BH ID: BH1M

Location 40-48 Redan Street, Mosman NSW
Client Mosman Land No.1 Pty Ltd
Job No. E26955.G03
Sheets 1 of 1

Started 25 November 2025
Completed 25 November 2025
Logged By JO **Date** 25 November 2025
Review By SK **Date** 28 January 2026

Drilling Contractor Hard Access Drilling **Surface RL** ≈59.10 m (AHD) **Northing** 6255589.5 (MGA 2020 Zone 56)
Plant Tight-Access Drilling Frame **Inclination** 90° **Easting** 337727.5 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m(AHD))	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
	BH1M_0.00-0.10	0.00		59.10	FILL: Silty SAND: fine to medium grained, grey-brown, trace rootlets with sub-angular to sub-rounded ironstone gravels	M	Grout 0.00m - 0.50m	Well Stickup =0.0m (RL 59.10m)
	BH1M_0.90-1.00	0.80		58.30	Silty SAND: fine to medium grained, pale grey		Sand 0.50m - 1.00m	0.0m - 3.0m PVC casing (50mm Ø)
		1.00		58.10	SANDSTONE: medium to coarse grained, pale grey, with some bands of indistinct and distinct cross bedding		Bentonite 1.00m - 3.00m	
		2.00						
		3.00						
		4.00						
		5.00						
		5.30		53.80	NO CORE: 200mm thick			
		5.50		53.60	SANDSTONE: medium to coarse grained, pale grey, with a trace of carbonaceous laminae and nodules, indistinctly cross bedded at 5°-10°		Sand 3.00m - 9.00m	3.0m - 9.0m PVC screen (50mm Ø)
		6.00		53.40				
		7.00						
		8.00						
		8.68		50.42	NO CORE: 140mm thick			
		8.82		50.28	SANDSTONE: fine to medium grained, pale grey, indistinctly cross bedded			
		9.00		50.10	SANDSTONE: medium to coarse grained, pale grey, massive		Bentonite 9.00m - 9.30m	
		10.00		49.10	SANDSTONE: medium to coarse grained, distinctly cross bedded at 0°-10°			
		10.75		48.35	From 10.75m, As above, but massive to indistinctly cross bedded at 0°-5°		Cuttings 9.30m - 11.89m	
		11.00		47.21	Terminated at 11.89m.			
		12.00						
		13.00						
		14.00						
		15.00						
		16.00						
		17.00						
		18.00						
		19.00						
		20.00						

This log should be read in conjunction with EI Australia's accompanying explanatory notes.

CORE PHOTOGRAPH OF BOREHOLE: BH1M

Project	Proposed Residential Development	East	337730.4	Depth Range	1.00m to 11.89m
Location	40-48 Redan Street, Mosman	North	6255582.0	Contractor	Hard Access Drilling
Position	See Figure 2	Surface RL	~59.1m	Drill Rig	Tight-Access Drilling Frame
Job No.	E26955.G03	Inclination	90°	Logged	JO Date 25/11/25
Client	Mosman Land No.1 Pty Ltd	Box	1 to 2 of 2	Checked	SK Date 28/01/26





BOREHOLE LOG

BH ID: BH2M

Location	40-48 Redan Street, Mosman NSW	Started	26 November 2025
Client	Mosman Land No.1 Pty Ltd	Completed	26 November 2025
Job No.	E26955.G03	Logged By	JO Date 26 November 2025
Sheets	1 of 3	Review By	SK Date 28 January 2026

Drilling Contractor	Hard Access Drilling	Surface RL	60.40 m (AHD)	Northing	6255567.3 (MGA 2020 Zone 56)
Plant	Tight-Access Drilling Frame	Inclination	90°	Easting	337701.3 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH2M_0.00-0.10		0.00		60.40	FILL: Silty SAND: fine to medium grained, dark brown with rootlets trace sub-angular to sub-rounded fine to medium grained, pale grey sandstone gravels	M	-	FILL
				0.50		59.90	<i>Log continued on next page.</i>			
				1						
				2						
				3						
				4						
				5						
				6						
				7						
				8						
				9						
				10						

This log should be read in conjunction with EI Australia's accompanying explanatory notes.



BOREHOLE CORE LOG

BH ID: BH2M

Location	40-48 Redan Street, Mosman NSW	Started	26 November 2025
Client	Mosman Land No.1 Pty Ltd	Completed	26 November 2025
Job No.	E26955.G03	Logged By	JO Date 26 November 2025
Sheets	2 of 3	Review By	SK Date 28 January 2026

Drilling Contractor	Hard Access Drilling	Surface RL	60.40 m (AHD)	Northing	6255567.3 (MGA 2020 Zone 56)
Plant	Tight-Access Drilling Frame	Indination	90°	Easting	337701.3 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50)					DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING					
									VL	J	M	H	VH		EH	30	100	300	1000	3000
							Log continued from previous page.													
NMLC	90%	75	0	0.58		59.82	NO CORE: 80mm thick SANDSTONE: fine to medium grained, pale grey-brown, indistinctly cross bedded at 0°-5°	SW						0.70-0.72: XWS						
		100	99	1.60		58.80	SANDSTONE: medium to coarse grained, pale grey, distinctly cross bedded at 0°-10°							1.25: BP 3° PR SM CN 1.44: BP 0° PR SM CN 1.45: BP 0° PR SM CN 1.57: BP 13° PR SM CN 1.75: BP 3° PR SM CN 2.17: BP 0° PR SM CN 2.34-2.37: XWS 3.19: BP 0° PR SM CN 3.54: JT 20° PR SM CN 3.57: BP 10° PR SM CN 3.66: JT 35° CU SM CN 4.46-4.67: JT 80° PR SM CN 4.67-4.70: XWS						
		100	96	4.70		55.70	SANDSTONE: medium to coarse grained, pale grey, with some bands of indistinct and distinct cross bedding							5.82: BP 10° PR SM CN 6.58: JT 80° PR SM CN 7.47: BP 7° PR SM CN 7.75: BP 3° PR SM CN 8.75: BP 0° PR SM CN 9.47: BP 0° PR SM CN 9.93-10.12: JT 75° PR SM CN						
		100	100	7				FR												
		100	78	9																

This log should be read in conjunction with El Australia's accompanying explanatory notes.



MONITORING WELL LOG

BH ID: BH2M

Location	40-48 Redan Street, Mosman NSW	Started	26 November 2025
Client	Mosman Land No.1 Pty Ltd	Completed	26 November 2025
Job No.	E26955.G03	Logged By	JO Date 26 November 2025
Sheets	1 of 1	Review By	SK Date 28 January 2026

Drilling Contractor	Hard Access Drilling	Surface RL	60.40 m (AHD)	Northing	6255567.3 (MGA 2020 Zone 56)
Plant	Tight-Access Drilling Frame	Indina on	90°	Eas ng	337701.3 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
	BH2M_0.00-0.10	0.00		60.40	FILL: Silty SAND: fine to medium grained, dark brown with rootlets trace sub-angular to sub-rounded fine to medium grained, pale grey sandstone gravels	M	Grout 0.00m - 0.50m	Well Stickup =0.0m (RL 60.40m)
		0.50		59.90	NO CORE: 80mm thick			
		0.58		59.82	SANDSTONE: fine to medium grained, pale grey-brown, indistinctly cross bedded at 0°-5°		Sand 0.50m - 2.80m	0.0m - 4.80m PVC casing (50mm Ø)
		1.60		58.80	SANDSTONE: medium to coarse grained, pale grey, distinctly cross bedded at 0°-10°		Bentonite 2.80m - 4.80m	
		4.70		55.70	SANDSTONE: medium to coarse grained, pale grey, with some bands of indistinct and distinct cross bedding		Sand 4.80m - 10.80m	4.80m - 10.80m PVC screen (50mm Ø)
		10.45		49.49	SANDSTONE: medium to coarse grained, grey, with a trace of carbonaceous shale, cross bedded at 0°-10°			
		11.00		49.60	Terminated at 10.80m.			

This log should be read in conjunction with EI Australia's accompanying explanatory notes.

CORE PHOTOGRAPH OF BOREHOLE: BH2M

Project Proposed Residential Development
Location 40-48 Redan Street, Mosman
Position See Figure 2
Job No. E26955.G03
Client Mosman Land No.1 Pty Ltd

East 337735.4
North 6255571.6
Surface RL ~60.4m
Inclination 90°
Box 1 to 2 of 2

Depth Range 0.50m to 10.80m
Contractor Hard Access Drilling
Drill Rig Tight-Access Drilling Frame
Logged JO **Date** 26/11/25
Checked SK **Date** 28/01/26





BOREHOLE LOG

BH ID: BH3M

Location	40-48 Redan Street, Mosman NSW	Started	08 December 2025
Client	Mosman Land No.1 Pty Ltd	Completed	09 December 2025
Job No.	E26955.G03	Logged By	JF Date 09 December 2025
Sheets	1 of 3	Review By	SK Date 28 January 2026

Drilling Contractor	STS Geotechnics Pty Ltd	Surface RL	61.60 m (AHD)	Northing	6255534.0 (MGA 2020 Zone 56)
Plant	Tight-Access Drilling Frame	Inclination	90°	Easting	337703.9 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
HA	GWNE	BH3M_0.20-0.40		0.00		61.60	FILL: Silty SAND: fine to medium grained, dark grey, trace of rootlets	M	-	FILL
				0.79		60.81	<i>Log continued on next page.</i>			
				1						
				2						
				3						
				4						
				5						
				6						
				7						
				8						
				9						
				10						

This log should be read in conjunction with EI Australia's accompanying explanatory notes.



MONITORING WELL LOG

BH ID: BH3M

Location	40-48 Redan Street, Mosman NSW	Started	08 December 2025
Client	Mosman Land No.1 Pty Ltd	Completed	09 December 2025
Job No.	E26955.G03	Logged By	JF Date 09 December 2025
Sheets	1 of 1	Review By	SK Date 28 January 2026

Drilling Contractor	STS Geotechnics Pty Ltd	Surface RL	61.60 m (AHD)	Northing	6255534.0 (MGA 2020 Zone 56)
Plant	Tight-Access Drilling Frame	Inclination	90°	Easting	337703.9 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
	BH3M_0.20-0.40	0.00		61.60	FILL: Silty SAND: fine to medium grained, dark grey, trace of rootlets	M	Grout 0.15m - 0.30m	Well Stickup = -0.15m (RL 61.45m)
		0.79		60.81	SANDSTONE: fine to medium grained, pale grey and orange brown, indistinctly cross bedded at 0°-10°		Bentonite 0.30m - 1.00m	0.15m - 3.15m PVC casing (50mm Ø)
		2.00		59.00	NO CORE: 90mm thick			
		2.09		59.09	SANDSTONE: fine to medium grained, pale grey with orange brown staining, and grey and dark grey laminae, indistinctly cross bedded at 0°-15°			
		3.57		58.03	NO CORE: 320mm thick			
		3.89		57.71	SANDSTONE: medium to coarse grained, pale grey with grey and dark grey laminae, in bands of indistinct and distinct cross bedding at 0°-10°			
		8.43		53.17	NO CORE: 460mm thick		Sand 1.00m - 15.22m	
		8.89		52.71	SANDSTONE: medium to coarse grained, pale grey with grey and dark grey laminae, and a trace of fine grained quartz pebbles, indistinctly cross bedded at 0°-10°			3.15m - 15.22m PVC screen (50mm Ø)
		10.08		51.62	From 10.08m, As above, but with some carbonaceous laminae			
		14.09		47.60	SANDSTONE: medium to coarse grained, pale grey, with some fine grained quartz pebbles, carbonaceous laminae and nodules, indistinctly cross bedded at 0°-10°			
		15.00		46.38	Terminated at 15.22m.			

This log should be read in conjunction with EI Australia's accompanying explanatory notes.

Project Proposed Residential Development
Location 40-48 Redan Street, Mosman
Position See Figure 2
Job No. E26955.G03
Client Mosman Land No.1 Pty Ltd

East 337706.8
North 6255529.4
Surface RL ~61.6m
Inclination 90°
Box 1 to 2 of 4

Depth Range 0.79m to 9.00m
Contractor STS
Drill Rig Tight-Access Drilling Frame
Logged JF **Date** 8/12/25
Checked SK **Date** 28/01/26



CORE PHOTOGRAPH OF BOREHOLE: BH3M

Project	Proposed Residential Development	East	337706.8	Depth Range	9.00m to 15.22m
Location	40-48 Redan Street, Mosman	North	6255529.4	Contractor	STS
Position	See Figure 2	Surface RL	~61.6m	Drill Rig	Tight-Access Drilling Frame
Job No.	E26955.G03	Inclination	90°	Logged	JF Date 8/12/25
Client	Mosman Land No.1 Pty Ltd	Box	3 to 4 of 4	Checked	SK Date 28/01/26





BOREHOLE LOG

BH ID: BH4

Location 40-48 Redan Street, Mosman NSW Client Mosman Land No.1 Pty Ltd Job No. E26955.G03 Sheets 1 of 2	Started 09 December 2025 Completed 10 December 2025 Logged By JF Date 10 December 2025 Review By SK Date 28 January 2026
---	---

Drilling Contractor STS Geotechnics Pty Ltd	Surface RL 58.80 m (AHD)	Northing 6255522.6 (MGA 2020 Zone 56)
Plant Tight-Access Drilling Frame	Indination 90°	Easting 337732.8 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
HA	GWN	BH4_0.10-0.30		0.00		58.80	FILL: Silty SAND: fine to medium grained, dark grey, trace of rootlets	M	-	FILL
				0.30		58.50	<i>Log continued on next page.</i>			
				1						
				2						
				3						
				4						
				5						
				6						
				7						
				8						
				9						
				10						
				11						

This log should be read in conjunction with EI Australia's accompanying explanatory notes.



BOREHOLE CORE LOG

BH ID: BH4

Location 40-48 Redan Street, Mosman NSW
 Client Mosman Land No.1 Pty Ltd
 Job No. E26955.G03
 Sheets 2 of 2

Started 09 December 2025
 Completed 10 December 2025
 Logged By JF Date 10 December 2025
 Review By SK Date 28 January 2026

Drilling Contractor STS Geotechnics Pty Ltd Surface RL 58.80m (AHD) Northing 6255522.6 (MGA 2020 Zone 56)
 Plant Tight-Access Drilling Frame Indination 90° Easting 337732.8 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50)					DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING				
									VL	J	M	H	VH		EH	30	100	300	1000
Log continued from previous page.																			
				0			NO CORE: 980mm thick												
		25	0	1.28		57.52	SANDSTONE: fine to medium grained, brown, with red brown staining, indistinctly cross bedded at 0°-5°	HW						1.31: BP 0° CU RO Clay VN					
		100	100	1.56		57.24	SANDSTONE: fine to medium grained, pale grey with grey laminae, indistinctly cross bedded at 0°-15°							1.35: BP 0° IR RO Clay VN					
				2				FR						1.42: BP 5° PR RO Clay VN					
		80	80	3										1.51: BP 0-10° PR SM tree roots Infilled					
				3.31		55.49	NO CORE: 220mm thick							1.55-1.56: XWS					
				3.53		55.27	SANDSTONE: fine to medium grained, grey and pale grey, with dark grey laminae, indistinctly cross bedded at 0°-10°												
				4															
		100	85	4.52		54.28	SANDSTONE: medium to coarse grained, pale grey with dark grey laminae, in bands of indistinct and distinct cross bedding at 0°-15°							2.53: BP 5° PR RO quartz SN					
				5										2.95: BP 5° PR RO Clay VN					
		100	96	6										3.31: BP 0° PR RO Clay VN					
				7															
		100	100	7.00		51.80	From 7.00m, As above, but with a trace of carbonaceous laminae	FR						4.44-4.46: XWS					
				8										4.52: BP 5° IR RO Cb Infilled					
		100	100	9										5.20: BP 10° PR RO Cb Infilled					
				9.20		49.60	SANDSTONE: medium to coarse grained, pale grey, with dark grey laminae, cross bedded at 0°-10°							5.28-5.29: XWS					
		100	88	9.70		49.10	SANDSTONE: medium to coarse grained, pale grey, with fine grained quartz pebbles and carbonaceous laminae, indistinctly cross bedded at 0°-10°							5.72: BP 0° PR RO Cb VN					
				10										6.54: JT 80° PR RO Cb VN					
				10.09										6.56-6.59: XWS					
				10.15										6.71: BP 0° PR Cb VN					
				11			Terminated at 10.32m.							7.82: BP 5° PR Cb VN					
														8.62: JT 65° PR RO CN					
														9.34: BP 0° PR RO Clay VN					
														9.59: BP 5° PR RO Clay VN					
														9.72: BP 0° PR RO Cb VN					
														10.04: JT 75° PR RO CN					
														10.09: JT 75° PR RO CN					
														10.15: JT 60° PR RO CN					

This log should be read in conjunction with EIA Australia's accompanying explanatory notes.

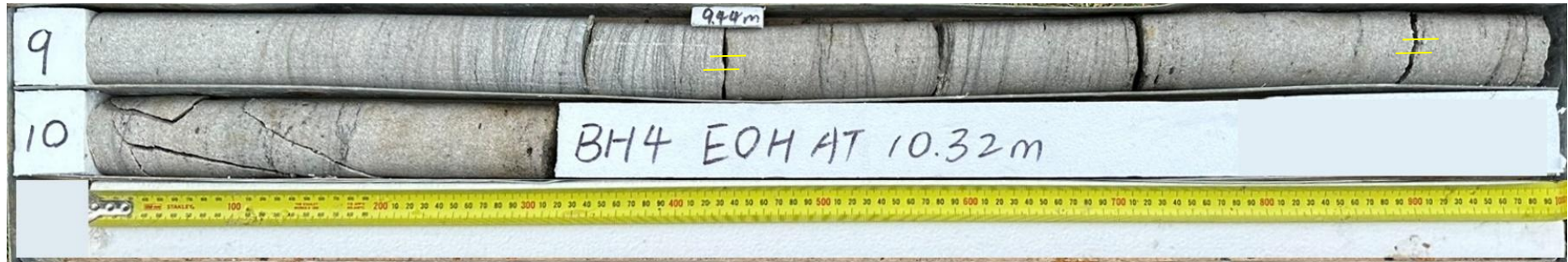
Project Proposed Residential Development
Location 40-48 Redan Street, Mosman
Position See Figure 2
Job No. E26955.G03
Client Mosman Land No.1 Pty Ltd

East 337732.8
North 6255522.6
Surface RL ~58.8m
Inclination 90°
Box 1 to 2 of 3

Depth Range 0.30m to 9.00m
Contractor STS
Drill Rig Tight-Access Drilling Frame
Logged JF **Date** 10/12/25
Checked SK **Date** 28/01/26



Project	Proposed Residential Development	East	337732.8	Depth Range	9.00m to 10.32m	
Location	40-48 Redan Street, Mosman	North	6255522.6	Contractor	STS	
Position	See Figure 2	Surface RL	~58.8m	Drill Rig	Tight-Access Drilling Frame	
Job No.	E26955.G03	Inclination	90°	Logged	JF	Date 10/12/25
Client	Mosman Land No.1 Pty Ltd	Box	3 of 3	Checked	SK	Date 28/01/26



EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT LOGS

DRILLING/EXCAVATION METHOD

HA	Hand Auger	ADH	Hollow Auger	NQ	Diamond Core - 47 mm
DT	Diatube Coring	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
NDD	Non-destructive digging	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
AD*	Auger Drilling	RC	Reverse Circulation	HMLC	Diamond Core - 63 mm
*V	V-Bit	PT	Push Tube	EX	Tracked Hydraulic Excavator
*T	TC-Bit, e.g. AD/T	WB	Washbore	HAND	Excavated by Hand Methods

PENETRATION RESISTANCE

L	Low Resistance	Rapid penetration/ excavation possible with little effort from equipment used.
M	Medium Resistance	Penetration/ excavation possible at an acceptable rate with moderate effort from equipment used.
H	High Resistance	Penetration/ excavation is possible but at a slow rate and requires significant effort from equipment used.
R	Refusal/Practical Refusal	No further progress possible without risk of damage or unacceptable wear to equipment used.

These assessments are subjective and are dependent on many factors, including equipment power and weight, condition of excavation or drilling tools and experience of the operator.

WATER

 **Standing Water Level**

 **Partial water loss**

 **Water Seepage**

 **Complete Water Loss**

GWNO GROUNDWATER NOT OBSERVED - Observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave-in of the borehole/ test pit.

GWNE GROUNDWATER NOT ENCOUNTERED - Borehole/ test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/ test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following a 150mm seating drive
30/80mm	Where practical refusal occurs, the blows and penetration for that interval are reported, N is not reported
RW	Penetration occurred under the rod weight only, N<1
HW	Penetration occurred under the hammer and rod weight only, N<1
HB	Hammer double bouncing on anvil, N is not reported



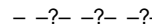
Sampling

DS	Disturbed Sample
ES	Sample for environmental testing
BDS	Bulk disturbed Sample
GS	Gas Sample
WS	Water Sample
U50	Thin walled tube sample - number indicates nominal sample diameter in millimetres

Testing

FP	Field Permeability test over section noted
FVS	Field Vane Shear test expressed as uncorrected shear strength (sv= peak value, sr= residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket Penetrometer test expressed as instrument reading in kPa
WPT	Water Pressure tests
DCP	Dynamic Cone Penetrometer test
CPT	Static Cone Penetration test
CPTu	Static Cone Penetration test with pore pressure (u) measurement

GEOLOGICAL BOUNDARIES

 = Observed Boundary (position known)
  = Observed Boundary (position approximate)
  = Boundary (interpreted or inferred)

ROCK CORE RECOVERY








TCR=Total Core Recovery (%)

RQD = Rock Quality Designation (%)

$$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$$

$$= \frac{\sum \text{Axial lengths of core} > 100\text{mm}}{\text{Length of core run}} \times 100$$

METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT LOGS

	FILL		ORGANIC SOILS (OL, OH or Pt)		CLAY (CL, CI or CH)
	COUBLES or BOULDERS		SILT (ML or MH)		SAND (SP or SW)
	GRAVEL (GP or GW)	Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay			

CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS 1726:2017, Section 6.1 – Soil description and classification.

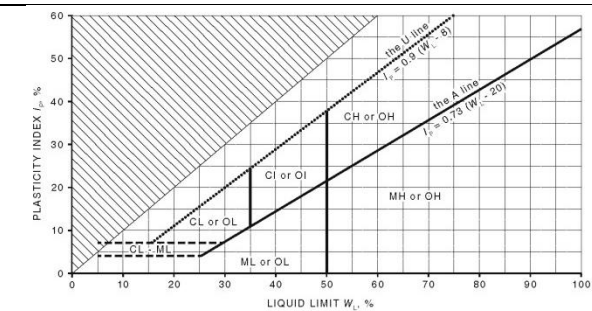
PARTICLE SIZE CHARACTERISTICS

Fraction	Components	Sub Division	Size mm
Oversize	BOULDERS		>200
	COBBLES		63 to 200
Coarse grained soil	GRAVEL	Coarse	19 to 63
		Medium	6.7 to 19
		Fine	2.36 to 6.7
	SAND	Coarse	0.6 to 2.36
		Medium	0.21 to 0.6
		Fine	0.075 to 0.21
Fine grained soil	SILT		0.002 to 0.075
	CLAY		<0.002

GROUP SYMBOLS

Major Divisions	Symbol	Description
GRAVEL More than 50% of coarse fraction is >2.36mm	GW	Well graded gravel and gravel-sand mixtures, little or no fines, no dry strength.
	GP	Poorly graded gravel and gravel-sand mixtures, little or no fines, no dry strength.
	GM	Silty gravel, gravel-sand-silt mixtures, zero to medium dry strength.
	GC	Clayey gravel, gravel-sand-clay mixtures, medium to high dry strength.
	SW	Well graded sand and gravelly sand, little or no fines, no dry strength.
	SP	Poorly graded sand and gravelly sand, little or no fines, no dry strength.
SAND More than 50% of coarse fraction is <2.36 mm	SM	Silty sand, sand-silt mixtures, zero to medium dry strength.
	SC	Clayey sand, sandy-clay mixtures, medium to high dry strength.
	ML	Inorganic silts of low plasticity, very fine sands, rock flour, silty or clayey fine sands, zero to medium dry strength.
CLAY Liquid Limit less < 50%	CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, medium to high dry strength.
	OL	Organic silts and organic silty clays of low plasticity, low to medium dry strength.
	MH	Inorganic silts of high plasticity, high to very high dry strength.
	CH	Inorganic clays of high plasticity, high to very high dry strength.
OH Liquid Limit > 50%	OH	Organic clays of medium to high plasticity, medium to high dry strength.
	PT	Peat muck and other highly organic soils.

PLASTICITY PROPERTIES



MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Non-cohesive and free-running.
M	Moist	Soils feel cool, darkened in colour. Soil tends to stick together.
W	Wet	Soils feel cool, darkened in colour. Soil tends to stick together, free water forms when handling.

Moisture content of cohesive soils shall be described in relation to plastic limit (PL) or liquid limit (LL) for soils with higher moisture content as follows: Moist, dry of plastic limit ($w < PL$); Moist, near plastic limit ($w \approx PL$); Moist, wet of plastic limit ($w < PL$); Wet, near liquid limit ($w \approx LL$); Wet, wet of liquid limit ($w > LL$).

CONSISTENCY

Symbol	Term	Undrained Shear Strength (kPa)	SPT "N" #
VS	Very Soft	≤ 12	≤ 2
S	Soft	>12 to ≤ 25	>2 to ≤ 4
F	Firm	>25 to ≤ 50	>4 to ≤ 8
St	Stiff	>50 to ≤ 100	>8 to ≤ 15
VSt	Very Stiff	>100 to ≤ 200	>15 to ≤ 30
H	Hard	>200	>30
Fr	Friable	-	-

DENSITY

Symbol	Term	Density Index %	SPT "N" #
VL	Very Loose	≤ 15	0 to 4
L	Loose	>15 to ≤ 35	4 to 10
MD	Medium Dense	>35 to ≤ 65	10 to 30
D	Dense	>65 to ≤ 85	30 to 50
VD	Very Dense	>85	Above 50

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material. # SPT correlations are not stated in AS1726:2017, and may be subject to corrections for overburden pressure, moisture content of the soil, and equipment type.

MINOR COMPONENTS

Term	Assessment Guide	Proportion by Mass
Add 'Trace'	Presence just detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: $\leq 5\%$ Fine grained soil: $\leq 15\%$
Add 'With'	Presence easily detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: 5 - 12% Fine grained soil: 15 - 30%
Prefix soil name	Presence easily detectable by feel or eye in conjunction with the general properties of primary component	Coarse grained soils: $>12\%$ Fine grained soil: $>30\%$

CLASSIFICATION AND INFERRED STRATIGRAPHY

Rock is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 2017, Section 6.2 – Rock identification, description and classification.

ROCK MATERIAL STRENGTH CLASSIFICATION

Symbol	Term	Point Load Index, $I_{s(50)}$ (MPa) [#]	Field Guide
VL	Very Low	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	0.1 to 0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	0.3 to 1	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	1 to 3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

[#] **Rock Strength Test Results** ▼ Point Load Strength Index, $I_{s(50)}$, Axial test (MPa)

● Point Load Strength Index, $I_{s(50)}$, Diametral test (MPa)

Relationship between rock strength test result ($I_{s(50)}$) and unconfined compressive strength (UCS) will vary with rock type and strength, and should be determined on a site-specific basis. However UCS is typically $20 \times I_{s(50)}$.

ROCK MATERIAL WEATHERING CLASSIFICATION

Symbol	Term	Field Guide
RS	Residual Soil	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
XW	Extremely Weathered	Rock is weathered to such an extent that it has soil properties - i.e. it either disintegrates or can be remoulded, in water.
DW	Distinctly Weathered	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores. In some environments it is convenient to subdivide into Highly Weathered and Moderately Weathered, with the degree of alteration typically less for MW.
	MW	
SW	Slightly Weathered	Rock slightly discoloured but shows little or no change of strength relative to fresh rock.
FR	Fresh	Rock shows no sign of decomposition or staining.

ABBREVIATIONS AND DESCRIPTIONS FOR ROCK MATERIAL AND DEFECTS

CLASSIFICATION AND INFERRED STRATIGRAPHY

Rock is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 2017, Section 6.2 – Rock identification, description and classification.

DETAILED ROCK DEFECT SPACING

Defect Spacing			Bedding Thickness (Stratification)	
Spacing/width (mm)	Descriptor	Symbol	Term	Spacing (mm)
<20	Extremely Close	EC	Thinly laminated	<6
			Laminated	6 – 20
20-60	Very Close	VC	Very thinly bedded	20 – 60
60-200	Close	C	Thinly bedded	60 – 200
200-600	Medium	M	Medium bedded	200 – 600
600-2000	Wide	W	Thickly bedded	600 – 2,000
2000-6000	Very Wide	VW	Very thickly bedded	> 2,000

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT TYPES

Defect Type	Abbr.	Description
Joint	JT	Surface of a fracture or parting, formed without displacement, across which the rock has little or no tensile strength. May be closed or filled by air, water or soil or rock substance, which acts as cement.
Bedding Parting	BP	Surface of fracture or parting, across which the rock has little or no tensile strength, parallel or sub-parallel to layering/ bedding. Bedding refers to the layering or stratification of a rock, indicating orientation during deposition, resulting in planar anisotropy in the rock material.
Contact	CO	The surface between two types or ages of rock.
Sheared Surface	SSU	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.
Sheared Seam/ Zone (Fault)	SS/SZ	Seam or zone with roughly parallel almost planar boundaries of rock substance cut by closely spaced (often <50 mm) parallel and usually smooth or slickensided joints or cleavage planes.
Crushed Seam/ Zone (Fault)	CS/CZ	Seam or zone composed of disoriented usually angular fragments of the host rock substance, with roughly parallel near-planar boundaries. The brecciated fragments may be of clay, silt, sand or gravel sizes or mixtures of these.
Extremely Weathered Seam/ Zone	XWS/XWZ	Seam of soil substance, often with gradational boundaries, formed by weathering of the rock material in places.
Infilled Seam	IS	Seam of soil substance, usually clay or clayey, with very distinct roughly parallel boundaries, formed by soil migrating into joint or open cavity.
Vein	VN	Distinct sheet-like body of minerals crystallised within rock through typically open-space filling or crack-seal growth.

NOTE: Defects size of <100mm SS, CS and XWS. Defects size of >100mm SZ, CZ and XWZ.

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT SHAPE AND ROUGHNESS

Shape	Abbr.	Description	Roughness	Abbr.	Description
Planar	PR	Consistent orientation	Polished	POL	Shiny smooth surface
Curved	CU	Gradual change in orientation	Slickensided	SL	Grooved or striated surface, usually polished
Undulating	UN	Wavy surface	Smooth	SM	Smooth to touch. Few or no surface irregularities
Stepped	ST	One or more well defined steps	Rough	RO	Many small surface irregularities (amplitude generally <1mm). Feels like fine to coarse sandpaper
Irregular	IR	Many sharp changes in orientation	Very Rough	VR	Many large surface irregularities, amplitude generally >1mm. Feels like very coarse sandpaper

Orientation:

Vertical Boreholes – The dip (inclination from horizontal) of the defect.

Inclined Boreholes – The inclination is measured as the acute angle to the core axis.

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT COATING

DEFECT COATING			DEFECT APERTURE		
Coating	Abbr.	Description	Aperture	Abbr.	Description
Clean	CN	No visible coating or infilling	Closed	CL	Closed.
Stain	SN	No visible coating but surfaces are discoloured by staining, often limonite (orange-brown)	Open	OP	Without any infill material.
Veneer	VNR	A visible coating of soil or mineral substance, usually too thin to measure (< 1 mm); may be patchy	Infilled	-	Soil or rock i.e. clay, silt, talc, pyrite, quartz, etc.

Appendix B Laboratory Certificates

CLIENT DETAILS

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Project **E26955.G03 40-48 Redan Street, Mosman NSW**
 Order Number **E26955.G03**
 Samples **2**

LABORATORY DETAILS

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SGS Reference **SE293714 R0**
 Date Received **1/12/2025**
 Date Reported **8/12/2025**

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES



Dong LIANG
 Metals/Inorganics Team Leader



Ly Kim HA
 Organic Section Head

Soluble Anions (1:5) in Soil/Solids by Ion Chromatography [AN245] Tested: 8/12/2025

PARAMETER	UOM	LOR	BH1M_0.9-1.0	BH2M_0-0.1
			SOIL - 28/11/2025 SE293714.001	SOIL - 28/11/2025 SE293714.002
Chloride	mg/kg	0.25	13	30
Sulfate	mg/kg	5	30	33

pH in soil (1:5) [AN101] Tested: 5/12/2025

PARAMETER	UOM	LOR	BH1M_0.9-1.0	BH2M_0-0.1
			SOIL - 28/11/2025 SE293714.001	SOIL - 28/11/2025 SE293714.002
pH	pH Units	0.1	7.7	6.2

Conductivity and TDS by Calculation - Soil [AN106] Tested: 5/12/2025

PARAMETER	UOM	LOR	BH1M_0.9-1.0	BH2M_0-0.1
			SOIL - 28/11/2025 SE293714.001	SOIL - 28/11/2025 SE293714.002
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	51	64

Moisture Content [AN002] Tested: 4/12/2025

PARAMETER	UOM	LOR	BH1M_0.9-1.0	BH2M_0-0.1
			SOIL - 28/11/2025 SE293714.001	SOIL - 28/11/2025 SE293714.002
% Moisture	%w/w	1	12.9	13.9

METHOD

METHODOLOGY SUMMARY

AN002

The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.

AN101

pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl₂) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.

AN106

Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos/cm or µS/cm @ 25°C. For soils, an extract of as received sample with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Salinity can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. Reference APHA 2510 B.

AN245

Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO₂, NO₃ and SO₄ are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
***	Indicates that both * and ** apply.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
NAD	No Asbestos Detected.	LNR	Sample listed, but not received.		
		NA	Not Applicable.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received. Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- a. 1 Bq is equivalent to 27 pCi
- b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <https://www.sgs.com/en-au/industry/environmental-health-and-safety>.

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CLIENT DETAILS

LABORATORY DETAILS

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Project	E26955.G03, 40-48 Redan Street, Mosman	SGS Reference	SE294654 R0
Order Number	E26955.G03	Date Received	15/12/2025
Samples	1	Date Reported	18/12/2025

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES



Dong LIANG
Metals/Inorganics Team Leader



Ly Kim HA
Organic Section Head

Soluble Anions (1:5) in Soil/Solids by Ion Chromatography [AN245] Tested: 17/12/2025

			BH3M_0.2-0.4
			SOIL
			-
			8/12/2025
PARAMETER	UOM	LOR	SE294654.001
Chloride	mg/kg	0.25	3.7
Sulfate	mg/kg	5	15

pH in soil (1:5) [AN101] Tested: 17/12/2025

			BH3M_0.2-0.4
			SOIL
			-
			8/12/2025
PARAMETER	UOM	LOR	SE294654.001
pH	pH Units	0.1	6.6

Conductivity and TDS by Calculation - Soil [AN106] Tested: 17/12/2025

			BH3M_0.2-0.4
			SOIL
			-
			8/12/2025
PARAMETER	UOM	LOR	SE294654.001
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	76

Moisture Content [AN002] Tested: 16/12/2025

			BH3M_0.2-0.4
			SOIL
			-
			8/12/2025
PARAMETER	UOM	LOR	SE294654.001
% Moisture	%w/w	1	8.0

METHOD

METHODOLOGY SUMMARY

AN002

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AN245

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FOOTNOTES

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For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <https://www.sgs.com/en-au/industry/environmental-health-and-safety>.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

Appendix C Important Information

SCOPE OF SERVICES

The geotechnical report (“the report”) has been prepared in accordance with the scope of services as set out in the contract, or as otherwise agreed, between the Client And EI Australia (“EI”). The scope of work may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

RELIANCE ON DATA

EI has relied on data provided by the Client and other individuals and organizations, to prepare the report. Such data may include surveys, analyses, designs, maps and plans. EI has not verified the accuracy or completeness of the data except as stated in the report. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations (“conclusions”) are based in whole or part on the data, EI will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to EI.

GEOTECHNICAL ENGINEERING

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared for a specific client, for a specific project and to meet specific needs, and may not be adequate for other clients or other purposes (e.g. a report prepared for a consulting civil engineer may not be adequate for a construction contractor). The report should not be used for other than its intended purpose without seeking additional geotechnical advice. Also, unless further geotechnical advice is obtained, the report cannot be used where the nature and/or details of the proposed development are changed.

LIMITATIONS OF SITE INVESTIGATION

The investigation programme undertaken is a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions. The data derived from the site investigation programme and subsequent laboratory testing are extrapolated across the site to form an inferred geological model, and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite investigation, the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. The engineering logs are the subjective interpretation of subsurface conditions at a particular location and time, made by trained personnel. The actual interface between materials may be more gradual or abrupt than a report indicates.

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

Subsurface conditions can be modified by changing natural forces or man-made influences. The report is based on conditions that existed at the time of subsurface exploration. Construction operations adjacent to the site, and natural events such as floods, or ground water fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report. EI should be kept apprised of any such events, and should be consulted to determine if any additional tests are necessary.

VERIFICATION OF SITE CONDITIONS

Where ground conditions encountered at the site differ significantly from those anticipated in the report, either due to natural variability of subsurface conditions or construction activities, it is a condition of the report that EI be notified of any variations and be provided with an opportunity to review the recommendations of this report. Recognition of change of soil and rock conditions requires experience and it is recommended that a suitably experienced geotechnical engineer be engaged to visit the site with sufficient frequency to detect if conditions have changed significantly.

REPRODUCTION OF REPORTS

This report is the subject of copyright and shall not be reproduced either totally or in part without the express permission of this Company. Where information from the accompanying report is to be included in contract documents or engineering specification for the project, the entire report should be included in order to minimize the likelihood of misinterpretation from logs.

REPORT FOR BENEFIT OF CLIENT

The report has been prepared for the benefit of the Client and no other party. EI assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of EI or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own inquiries and obtain independent advice in relation to such matters.

OTHER LIMITATIONS

EI will not be liable to update or revise the report to take into account any events or emergent circumstances or fact occurring or becoming apparent after the date of the report.