

The background of the cover is a photograph of industrial machinery, likely a drilling rig, with various pipes, valves, and mechanical components. The image is overlaid with a dark, semi-transparent geometric pattern consisting of several overlapping triangles and quadrilaterals in shades of grey, black, and teal. The text is centered over this pattern.

Site Hydrogeology Report 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Reference: P3444_06

Date: 22 April 2026

Morrow Geotechnics Pty Ltd

2/5-7 Malta Street, Fairfield East NSW 2165

79/6 Bellambi Lane, Bellambi NSW 2518

E: info@morrowgeo.com.au

P: 02 8599 7579

ABN 42 605 892 126

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Author	Andrew Butel Hydrogeologist/Senior Engineering Geologist	
Reviewer	Alan Morrow Principal Geotechnical Engineer	



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1. Introduction

1.1 Overview

Morrow Geotechnics Pty Ltd has carried out a Groundwater Study and prepared a Site Hydrogeology Report for the proposed development at 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW (the site) also known as Lot 30 in DP 4215, Lot 71 in DP 4665, Lot 7 in DP 17373, Lot B in DP 344051 and Lot 1 in DP 127411.

The following geotechnical report has been prepared for the site:

- Morrow Geotechnics Pty Ltd, Geotechnical Investigation Report, *59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW*, referenced P3444_05 and dated 22 April 2026 (MG 2026).

The geotechnical report presents the results of site investigations for the proposed development and geotechnical recommendations for design and construction.

1.2 Proposed Development

Architectural drawings for the proposed development have been prepared by DKO Architecture for project number 13688 and dated 30 March 2026. From the drawings provided morrow geotechnics understands the proposed involves the construction of a eight-storey multi-residence development over three levels of basement carpark. Excavation for the basement is expected to extend to a depth of approximately 19 m below existing ground level (mBGL) to RL 72.70 mAHD. The basement area is approximately 3922 m² with a 291 m perimeter.

1.3 Proposed Dewatering Schedule

Given the relatively low permeability of the sandstone profile encountered in the geotechnical investigation it is proposed to construct the basement as a drained soldier pile wall. Dewatering through spear points and pumping is not proposed for the construction period, rather any groundwater seepage will be allowed to drain through strip drainage installed behind shotcrete panels and collected by sump pits within the basement.

The excavation program for the proposed basement is expected to take up to 6 months. Temporary construction dewatering is expected to occur for construction seepage inflows during this 6 month period.

1.4 Objectives

The objective of this Site Hydrogeology Report is to provide results on the presence of water at the site and comment on whether there is an aquifer present at the site in accordance with the definition of aquifer as laid out in the NSW DPI Office of Water Aquifer Interference Policy. Section 1.2 of the policy defines an aquifer as

“the term ‘aquifer’ is commonly understood to mean a groundwater system that is sufficiently permeable to allow water to move within it, and which can yield productive volumes of groundwater”

Further, this report provides analysis of the permeability of soils encountered within boreholes at the site and geotechnical advice and recommendations on the management of groundwater in the design and construction of the proposed development.

2. Geological Model

2.1 Published Geological Mapping

Information on regional sub-surface conditions, referenced from the Department of Mineral Resources Geological Map Sydney 1:100,000 (Geological Series Sheet 9130) indicate that the site is located on the boundary of (Rwa) Ashfield Shale of the Wianamatta Group, which is typically comprised of black to dark-grey shale and laminate, and (Rh) Hawkesbury Sandstone, which is typically comprised of medium to coarse-grained quartz sandstone, with very minor shale and laminite lenses. Regional Geology is shown on **Drawing 2** attached to this report.

2.2 Soil Landscapes

The Soil Conservation Service of NSW Sydney 1:100,000 Soil Landscapes Series Sheet 9130 (4th Edition) indicates that the erosional landscape at the site likely comprises Glenorie Landscape. Generally, comprises gently undulating to rolling low hills on Wianamatta Group shales with inclined slopes of typically 5-20%. Soils of Glenorie landscape generally comprises shallow to moderately deep (<1000cm) red and brown podzolic soil in the upper slopes. These soils are noted moderately reactive. Soil Landscapes are shown on **Drawing 3** attached to this report.

2.3 Site Description

During the Geotechnical and Hydrogeological Investigations, the site was occupied by five residential lots.

Table 1 Site Description

Address	Lot/DP	Comments
1A Valley Road	B/34401	Occupied by a two storey brick residence with an in-ground pool and tennis court
1B Valley Road	7/17373	Occupied by a two storey brick residence with an in-ground pool
59 Trafalgar Avenue	71/4665	Occupied by a two storey brick residence with an in-ground pool
61 Trafalgar Avenue	30/4215	Occupied by a two storey brick residence with an in-ground pool
63 Trafalgar Avenue	1/127411	Occupied by a two storey brick residence with an in-ground pool and tennis court

The site covers approximately 6672 m². The site topography slopes moderately towards the south, with elevations ranging from RL 91.35 mAHD in the north west corner to RL 81.3 mAHD in the south west corner of the site. The site is bordered to the north, east, south and west by residential properties.

2.4 Stratigraphic Model

The stratigraphy at the site is characterised by fill/topsoil and residual soil overlying sandstone bedrock. Observations taken during the investigation have been used to produce a stratigraphic model of the site.

A summary of the subsurface conditions across the site, interpreted from the investigation results, is presented in **Table 2** and **Table 3** below. More detailed descriptions of subsurface conditions at the test locations are available in the borehole logs presented in **Drawing 1** attached to this report.

The details of the method of soil and rock classification, explanatory notes and abbreviations adopted in the borehole logs are also presented in **Appendix A**.

Table 2 Summary of Inferred Subsurface Conditions

Unit	Material	Generalised Description
1	Fill/Topsoil	FILL: Silty to gravelly SAND, loose, fine grained, fine to coarse sized gravel. Unit 1 is inferred to be uncontrolled and poorly compacted.
2	Residual Clay	Residual Silty to gravelly CLAY, firm to stiff, medium to high plasticity, fine to coarse sized gravel, subangular to subrounded ironstone gravel, less than or equal to plastic limit.
3	Class V Sandstone	Extremely to highly weathered Sandstone, extremely low to very low strength, fine grained, with extremely weathered seams and ironstone bands, 5° laminations.
4	Class IV Sandstone	Moderately to Slightly weathered Sandstone, very low to low strength, fine grained. Defects consist of Extremely weathered and crushed seams as well as partings between 1° and 5° and Joints between 20° – 90°.
5	Class III Sandstone	Fresh Sandstone, medium strength, fine grained. Generally massive with some carbonaceous laminations.
6	Class II Sandstone	Fresh Sandstone, high strength, fine grained. Generally massive with some carbonaceous laminations. A medium strength shale band was encountered within Unit 6 in BH1 at between 34.65 and 35.43 mBGL.

Table 3 Encountered Subsurface Conditions

Unit	Material	Approx. Depth Range of Unit ¹ mBGL (RL mAHD)				
		BH1	BH2	BH3	BH4	BH5
1	Fill/Topsoil	0.0 to 0.2 (91.3 to 91.1)	0.0 to 0.7 (85.4 to 84.7)	0.0 to 0.3 (87.5 to 87.2)	0.0 to 0.5 (81.7 to 81.2)	0.0 to 0.4 (83.8 to 83.4)
2	Residual Clay	0.2 to 1.0 (90.9 to 90.1)	0.7 to 1.0 (84.7 to 84.4)	0.3 to 0.5 (87.2 to 87.0)	0.5 to 2.5 (81.2 to 79.2)	0.4 to 1.5 (83.4 to 82.3)
3	Class V Sandstone	1.0 to 2.0 (90.1 to 89.1)	1.0 to 4.8 (84.4 to 80.6)	0.5 to 2.4 (87.0 to 85.1)	2.5 to 3.0 (79.2 to 78.7)	1.5 to 2.5 (82.3 to 81.3)
4	Class IV Sandstone	2.0 to 6.4 (89.1 to 84.9)	4.8 to 6.0 (80.6 to 79.4)	2.4 to 4.7 (85.1 to 82.8)	3.0 to 3.6 (78.7 to 78.1)	2.5 to 3.6 (81.3 to 80.2)
5	Class III Sandstone	6.4 to 7.7 (84.9 to 83.6)	6.0 to 8.0 (79.4 to 77.4)	4.7 to 9.3 (82.8 to 78.2)	3.6 to 7.2 (78.1 to 74.5)	3.6 to 6.6 (80.2 to 77.2)
6	Class II Sandstone	7.7 to 35.7 (83.6 to 55.6)	8.0 to 20.5 (77.4 to 64.9)	9.3 to 20.4 (78.2 to 67.1)	7.2 to 18.0 (74.5 to 63.7)	6.6 to 18.0 (77.2 to 65.8)

Notes:

¹ Depth ranges shown are based on material observed within test locations and will vary across the site.

2.5 Acid Sulfate Soils

According to the Ku-ring-gai Council Local Environmental Plan 2015 the site is located in a Class 5 area of Acid Sulfate Soils (see location in **Drawing 4** attached to this report). Class 5 areas are within 500 m of areas mapped as Class 4 to 1, however Acid Sulphate Soils are not expected within Class 5 Areas.

2.6 Groundwater Dependent Ecosystems

Groundwater Dependent Ecosystems (GDEs) are ecosystems that rely on groundwater to fulfill all or part of their water needs, ensuring the survival of their plant and animal communities, as well as their ecological processes and services (NSW DPE 2023). The reliance of GDEs on groundwater can be seasonal, continual, or episodic (Howe et al. 2007). These ecosystems vary widely in size, ranging from just a few meters to several square kilometres. GDEs can be categorized into three main types (Eamus et al. 2006; Richardson et al. 2011):

- **Groundwater Dependent Vegetation (Terrestrial GDEs):** These ecosystems depend on the subsurface presence of groundwater, often accessed through the capillary fringe or vadose zone (the unsaturated subsurface area just above the water table) (Naumburg et al. 2005; Eamus et al. 2006a). Within these communities, plant species may exhibit varying degrees of groundwater dependency, from complete reliance on groundwater to partial or infrequent dependency (Hatton and Evans 1998; Zencich et al. 2002; Eamus et al. 2006; Froend and Drake 2006).
- **Aquatic GDEs:** These environments occur where groundwater surfaces, such as in rivers, wetlands, and springs. Aquatic GDEs are considered dependent on groundwater if groundwater is essential to the biota and ecological processes at any stage of the ecosystem's life span (Howe et al. 2007).
- **Subterranean GDEs:** These ecosystems exist within the saturated zones of aquifers, including water-filled spaces in various geological matrices such as karst (caves), fractured rock, and alluvial systems. They also encompass hyporheic ecosystems, which occur within the sediments of surface waters, acting as a transitional zone between surface and groundwater ecosystems (Hose et al. 2022).

GDEs include a wide range of environments like aquifers, lakes, streams, springs, cave systems, swamps, and wetlands. They rely on groundwater to meet their water requirements, which is crucial for maintaining their flora and fauna. The level of groundwater dependence and the nature of this reliance affect how GDEs respond to changes in groundwater quality and quantity. Groundwater extraction can negatively impact these ecosystems.

According to New South Wales Government mapping (see location in **Drawing 5** attached to this report), areas of low to medium probability GDEs surround the site with High Ecological Value Aquatic Ecosystems (HEVAE) identified at Gordon Creek 500m to the north east of site and Roseville park 550m to the east of the site.

2.7 Groundwater Monitoring Bores

According to the Bureau of Meteorology (BOM) Australian Groundwater Explorer no water supply bores are located with 500m of the site, bore locations are shown on **Figure 1** below.



Figure 1: Water Supply Works Monitoring Bores

3. Hydrogeological Model

3.1 Groundwater Observations

Standpipe piezometer wells were installed within the boreholes (BH1, BH2 & BH5) as part of the geotechnical investigations. Monitoring well construction details are found in **Table 4** below. Before the installation of the piezometers, drill cuttings and water in the boreholes were flushed out. The monitoring wells were constructed using 50 mm diameter screw threaded PVC casing, sections of which were machine slotted. The annulus between the casing and boreholes was backfilled using 2 mm filter gravel pack to above the top of the screen. A bentonite plug with a minimum thickness of 0.5 m was then installed above the gravel pack, the remaining annulus was backfilled with drill cuttings. The wells were each finished with a cement plug and a gatic cover.

Groundwater levels within the three piezometer wells have been monitored by Morrow Geotechnics between 28 February 2025 & 4 June 2025 and 12 March 2026 & 10 April 2026.

Table 4 Piezometer Details

Piezometer	BH1	BH2	BH5
Top of Piezometer approx. RL (mAHD)	91.3	85.4	83.8
Piezometer Depth mBGL	35.0	20.4	18.0
Bentonite Plug Depth mBGL	0.0 to 1.5	2.5 to 5.0	1.0 to 3.0
Screen Depth mBGL	1.5 to 35.0	5.5 to 20.4	3.0 to 18.0
Well Development Date	28/02/2025	28/02/2025	28/02/2025

Table 5 Water Levels from Manual Readings

Monitoring Date	Piezometer Groundwater Level mBGL (RL mAHD)		
	BH1	BH2	BH5
7/03/2025	8.80 (82.50 mAHD)	3.13 (82.27 mAHD)	2.28 (81.52 mAHD)
2/04/2025	8.55 (82.75 mAHD)	2.60 (82.80 mAHD)	1.95 (81.85 mAHD)
4/06/2025	6.90 (84.40 mAHD)	2.03 (83.37 mAHD)	1.65 (82.15 mAHD)
21/04/2026	8.25 (83.05 mAHD)	2.57 (82.83 mAHD)	2.25 (81.55 mAHD)

Automatic dataloggers were installed within BH1, BH2 and BH5 in order to provide long term groundwater measurements. Dataloggers were installed between 28 February 2025 & 4 June 2025 and 12 March 2026 & 21 April 2026. The data loggers were set to measure groundwater levels at one hour intervals. Graphs of water level measurements taken by the automatic dataloggers are displayed in **Figure 2** to **Figure 9** below. Daily rainfall totals taken from Bureau of Meteorology North Ryde Golf Club AWS [station 66213] for the monitoring period are displayed alongside water level measurements.

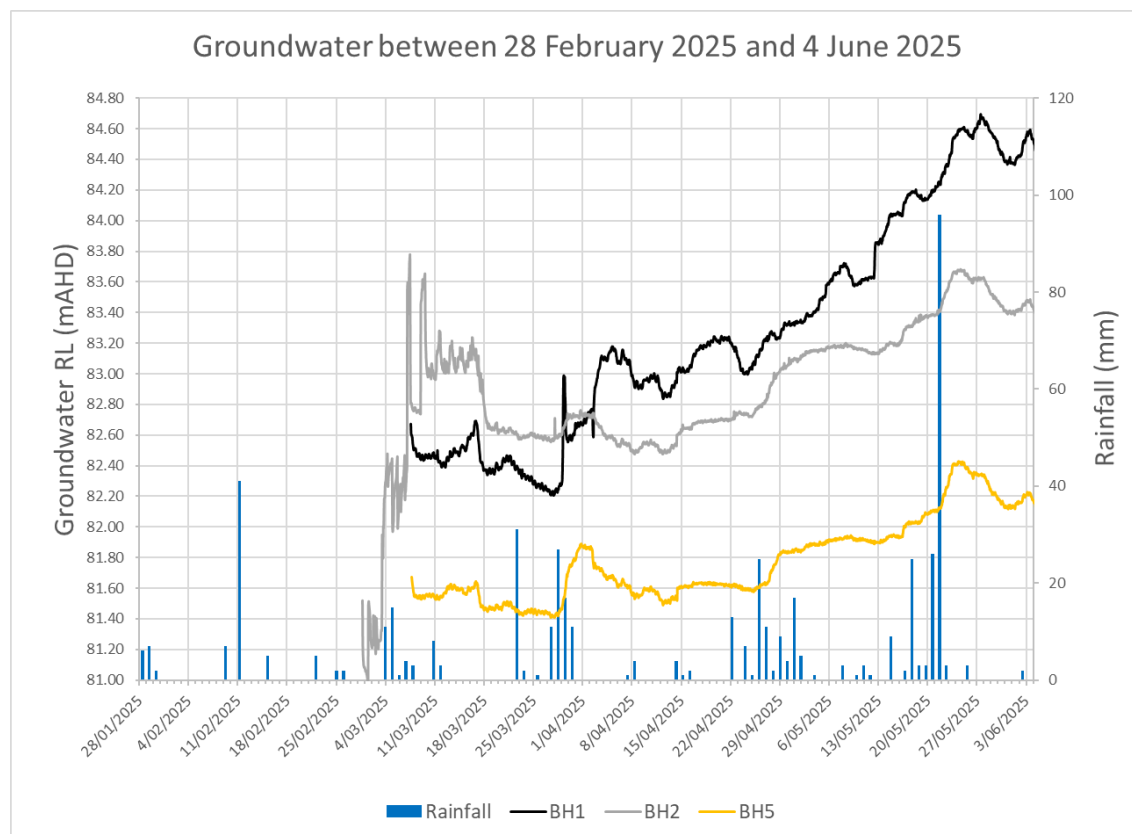


Figure 2: Data Logger Measurements and Daily Rainfall 28 February 2025 to 4 June 2025

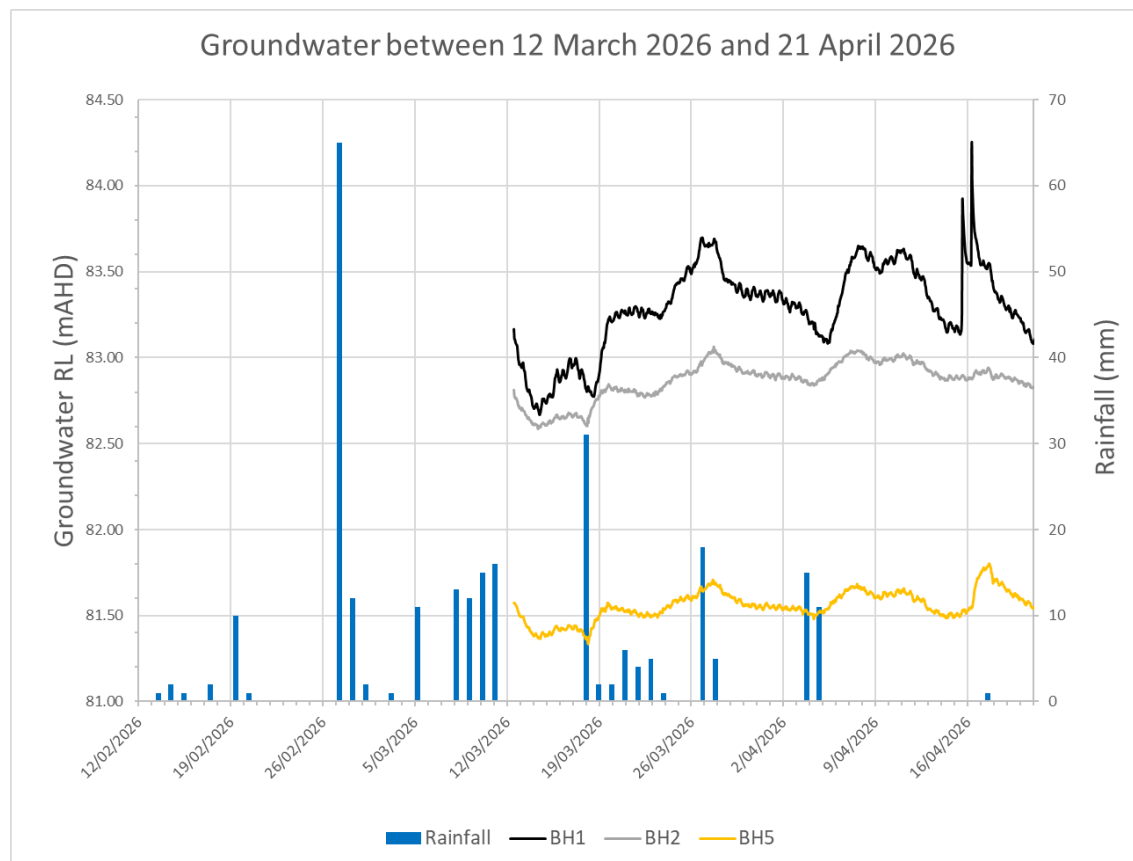


Figure 3: Data Logger Measurements and Daily Rainfall 12 March 2026 to 21 April 2026

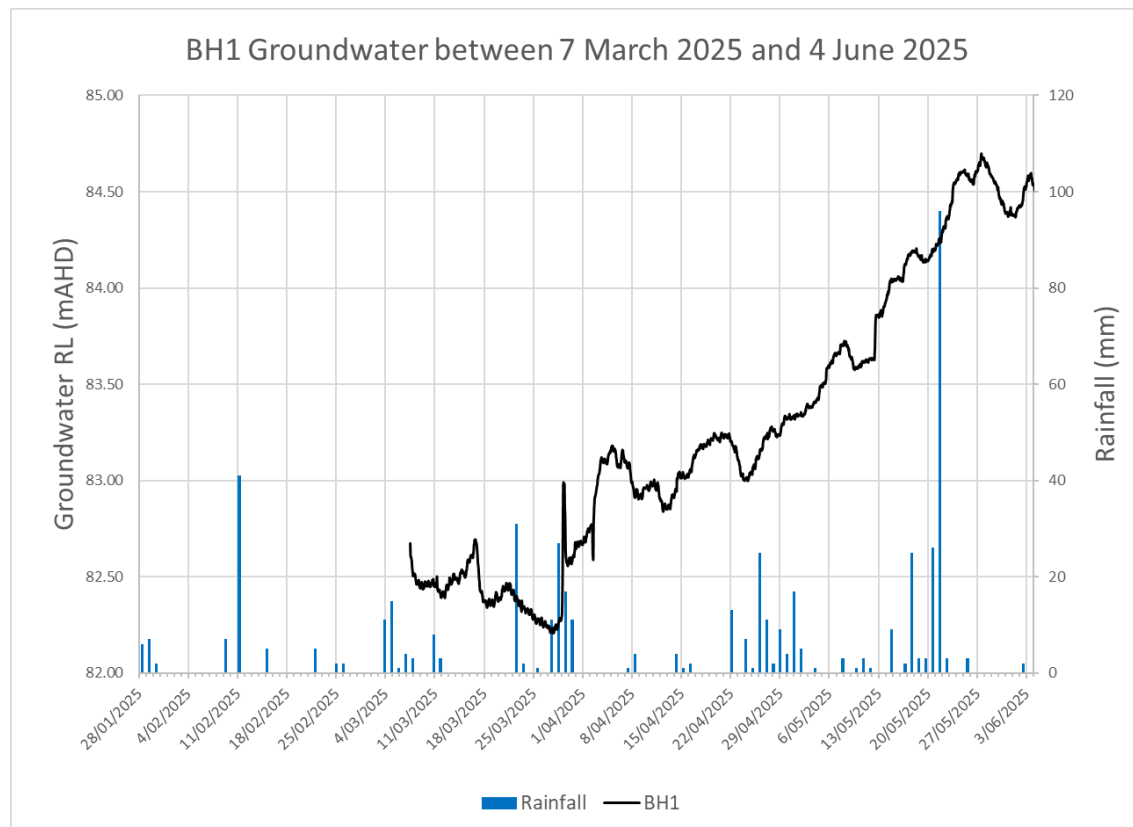


Figure 4: BH1 Data Logger Measurements and Daily Rainfall 28 February 2025 to 4 June 2025

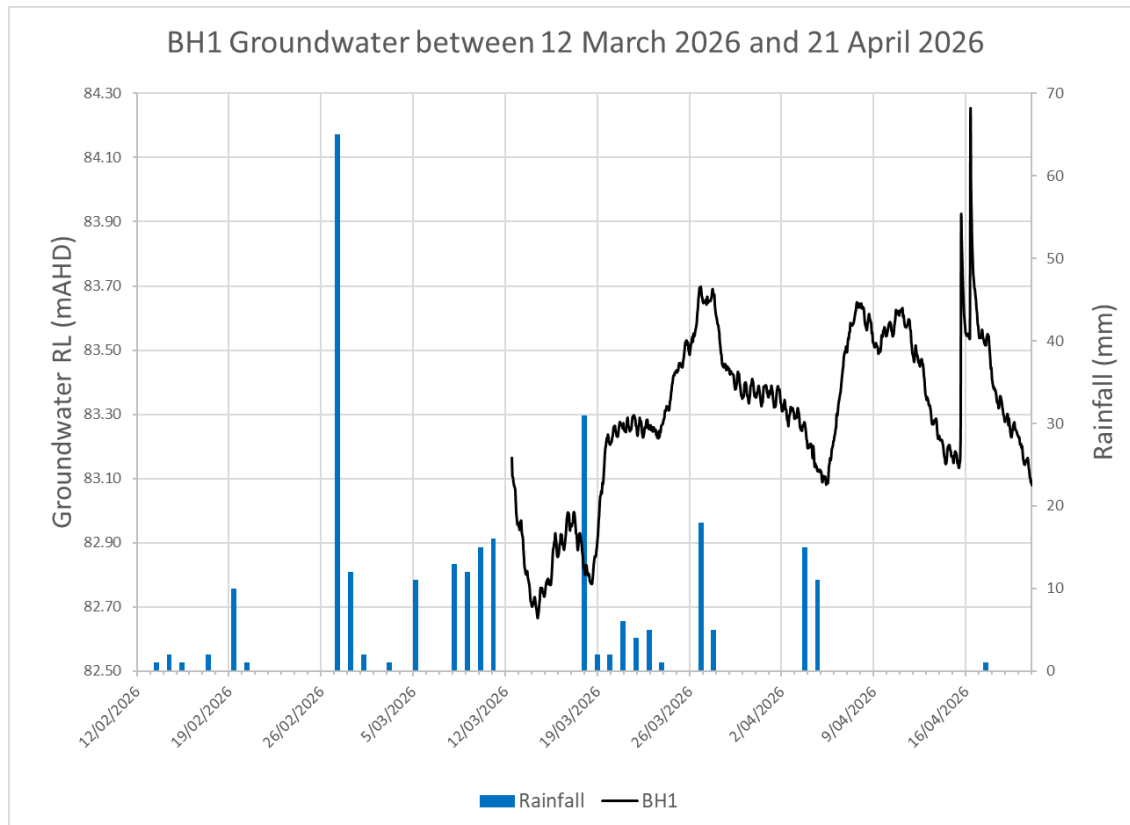


Figure 5: BH1 Data Logger Measurements and Daily Rainfall 12 March 2026 to 21 April 2026

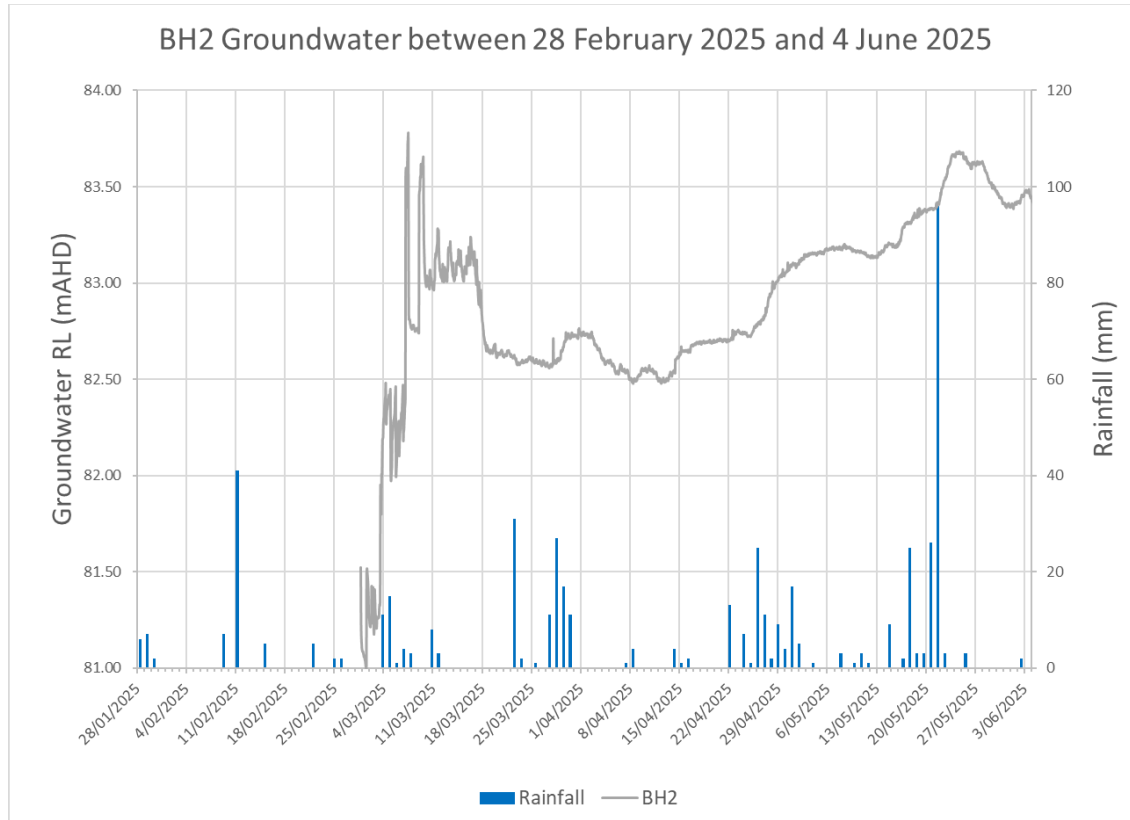


Figure 6: BH2 Data Logger Measurements and Daily Rainfall 28 February 2025 to 4 June 2025

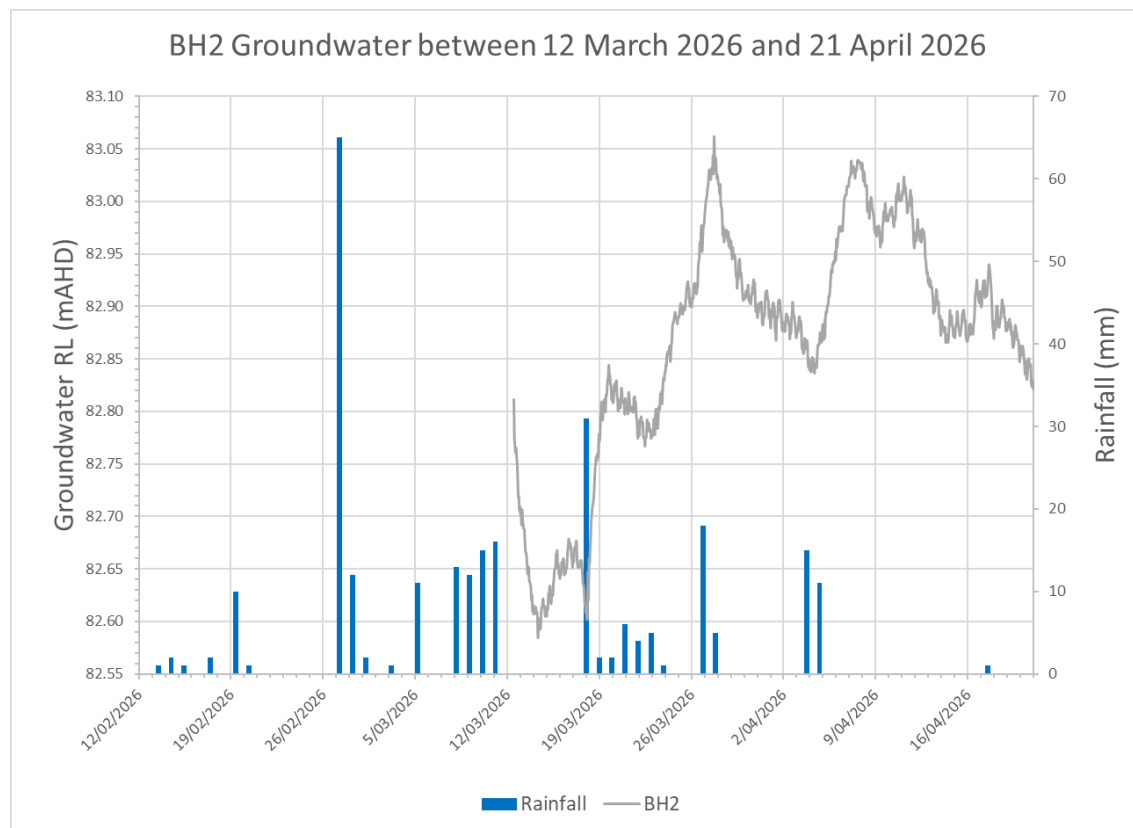


Figure 7: BH2 Data Logger Measurements and Daily Rainfall 12 March 2026 to 21 April 2026

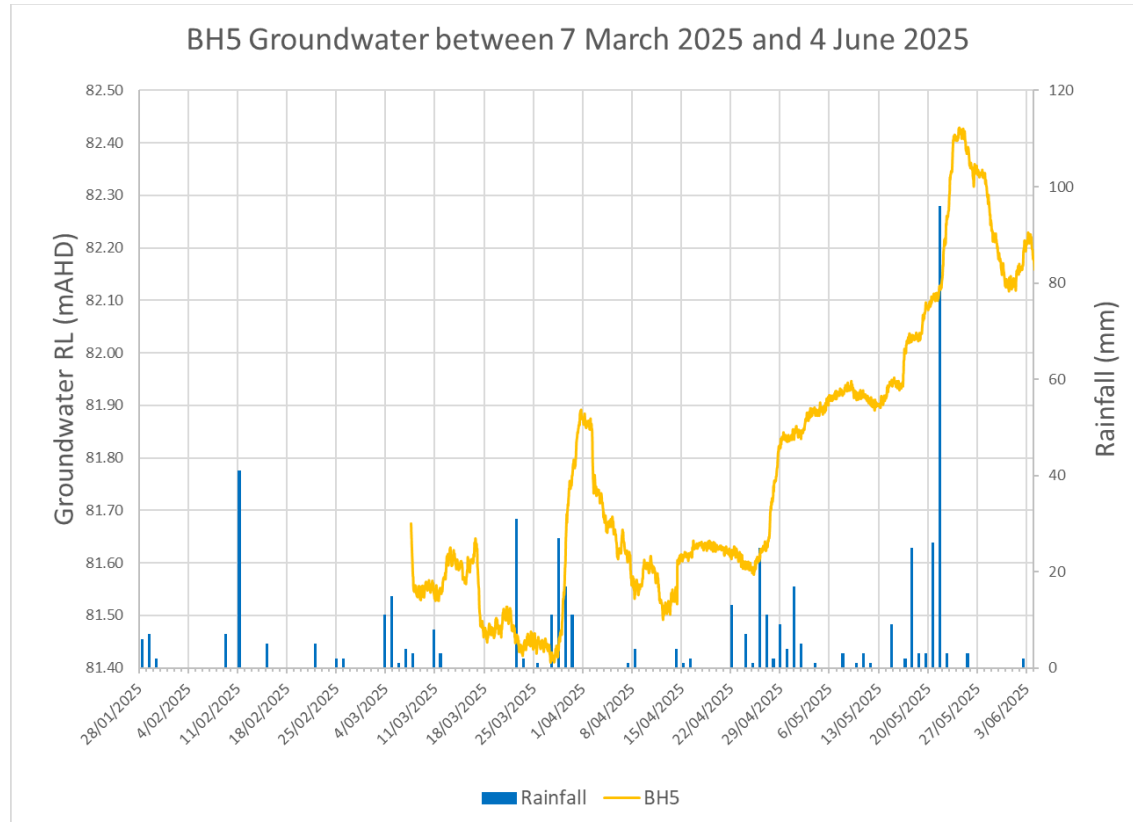


Figure 8: BH5 Data Logger Measurements and Daily Rainfall 28 February 2025 to 4 June 2025

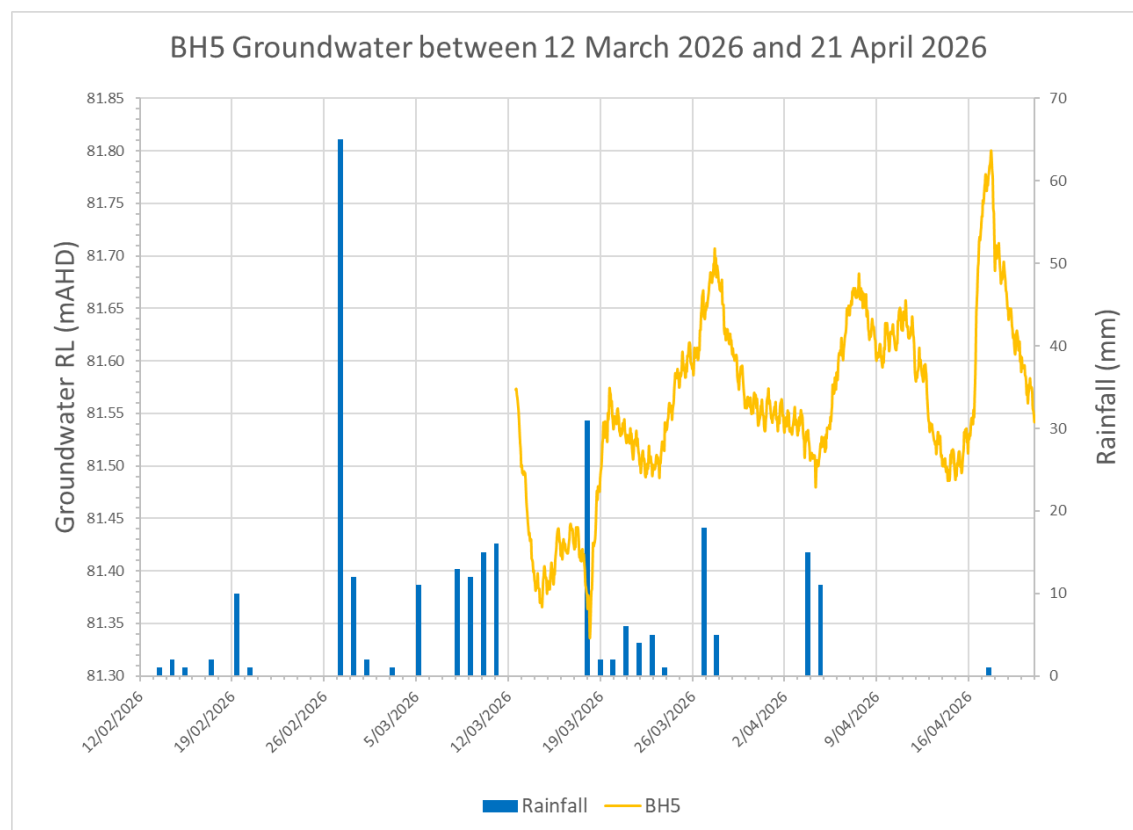


Figure 9: BH5 Data Logger Measurements and Daily Rainfall 12 March 2026 to 21 April 2026

A summary of the groundwater observations within the three wells is provided below:

Table 6 Groundwater Observation Summary 7 March 2025 to 4 June 2025

Monitoring Date	Piezometer Groundwater Level mBGL (RL mAHD)		
	BH1	BH2	BH5
Maximum Water Level	6.60 mBGL	1.62 mBGL	1.37 mBGL
	(84.69 mAHD)	(83.77 mAHD)	(82.42 mAHD)
Minimum Water Level	9.09 mBGL	4.40 mBGL	2.39 mBGL
	(82.20 mAHD)	(80.99 mAHD)	(81.41 mAHD)
Average Water Level	8.01 mBGL	2.50 mBGL	2.01 mBGL
	(83.28 mAHD)	(82.89 mAHD)	(81.78 mAHD)
Median Water Level	8.13 mBGL	2.57 mBGL	2.13 mBGL
	(83.16 mAHD)	(82.82 mAHD)	(81.66 mAHD)

Table 7 Groundwater Observation Summary 7 March 2025 to 4 June 2025

Monitoring Date	Piezometer Groundwater Level mBGL (RL mAHD)		
	BH1	BH2	BH5
Maximum Water Level	7.06 mBGL (84.23 mAHD)	2.33 mBGL (83.06 mAHD)	2.00 mBGL (81.80 mAHD)
Minimum Water Level	8.63 mBGL (82.66 mAHD)	2.81 mBGL (82.58 mAHD)	2.46 mBGL (81.33 mAHD)
Average Water Level	8.00 mBGL (83.29 mAHD)	2.53 mBGL (82.86 mAHD)	2.24 mBGL (81.55 mAHD)
Median Water Level	7.99 mBGL (83.30 mAHD)	2.51 mBGL (82.88 mAHD)	2.24 mBGL (81.55 mAHD)

Average groundwater levels at the three piezometers fall within the following lithologies;

- BH1 - Unit 6 Class II Sandstone;
- BH2 - Unit 3 Class V Sandstone; and
- BH5 - Unit 3 Class V Sandstone.

Water levels within the borehole BH1 and BH5 were moderately responsive to rainfall events during the monitoring period. This is inferred to result from surface water infiltration following rainfall recharging the groundwater.

The results of the water level monitoring show a stable hydraulic gradient across the site between RL 81.55 mAHD and RL 83.29 mAHD. On the basis of ongoing groundwater monitoring at the site it is recommended that a design groundwater level for site is taken at the following depths;

- BH1 – RL 85.00 mAHD;
- BH2 - RL 83.80 mAHD; and
- BH5 - RL 82.50 mAHD.

3.2 Hydraulic Conductivity Testing

Permeability tests were carried out on BH1, BH2 & BH5 to give an indication of in-situ permeability of the material at the site. Permeability values were calculated on the basis of the testing in accordance with the formulas provided in British Standard BS5930-1999 Code of Practice for Site Investigations, Section 21.4.6. Calculation sheets for permeability testing are provided as an attachment to this letter as **Appendix C**. Permeability tests were repeated three times to ensure reliability of results.

Permeability values which were adopted from the testing for the assessment of groundwater seepage volumes are shown in **Table 8** below.

Table 8 Borehole Permeability Values

Borehole	Permeability Based on In-situ Measurement	
	(m/s)	(m/day)
BH1 Test 1	2.75×10^{-8}	2.37×10^{-3}
BH1 Test 2	2.00×10^{-8}	1.72×10^{-3}
BH1 Test 3	2.50×10^{-8}	2.16×10^{-3}
BH1 Test 4	3.90×10^{-8}	3.36×10^{-3}
BH2 Test 1	4.70×10^{-7}	0.0406
BH2 Test 2	6.59×10^{-7}	0.0569
BH2 Test 3	7.12×10^{-7}	0.0615
BH2 Test 4	1.93×10^{-7}	0.0166
BH5 Test 1	2.00×10^{-7}	0.0172
BH5 Test 2	1.94×10^{-7}	0.0167
BH5 Test 3	2.15×10^{-7}	0.0185

On the basis of the testing results presented above, the following permeability values may be adopted for design and analysis of the excavation:

- Class V to Class IV Sandstone – 3.8×10^{-7} m/s - interpreted from BH2 and BH5 testing; and
- Class III to Class II Sandstone – 2.8×10^{-8} m/s - interpreted from BH1 testing.

3.3 Local Groundwater Regime

On the basis of ongoing groundwater monitoring at the site it is recommended that a design groundwater level for the water table is taken at the following depths;

- BH1 – RL 85.00 mAHD;
- BH2 - RL 83.80 mAHD; and
- BH5 - RL 82.50 mAHD.

Based on the geotechnical investigation and ongoing monitoring it is possible to conclude that the hydrogeological conditions at the site are typical of a generally low to moderate permeability rock mass.

3.4 Water Quality Observations

Field testing of the groundwater was carried out on 2 April 2025. The results of which are presented in **Table 9** below.

Table 9 Field Testing Results

Measured Concentration in Water Sample							
BH	Test Number	Date & Time	Redox (mV)	pH	Dissolved Oxygen	Conductivity (µS/cm.)	Appearance (Colour, Turbidity, Odour etc)
BH1	1	02/4/2025 9:45am	79	6.24	3.58	2047	Slightly Cloudy
	2	02/4/2025 10:00am	78.9	6.25	3.52	2190	Slightly Cloudy
	3	02/4/2025 10:10am	72.9	6.36	3.54	2270	Slightly Cloudy
BH2	1	02/4/2025 10:50am	44.8	6.86	4.08	554	Natural gas odour, slightly cloudy
	2	02/4/2025 11:05am	99.5	5.88	3.76	1019	Natural gas odour, slightly cloudy
	3	02/4/2025 11:15am	101.1	5.86	3.54	1148	Natural gas odour, slightly cloudy
BH5	1	02/4/2025 11:30am	141.6	5.15	3.67	1580	Sulphur odour, cloudy
	2	02/4/2025 11:45am	148.7	5.01	3.58	1652	Sulphur odour, cloudy
	3	02/4/2025 11:55am	144.0	5.10	3.54	1540	Sulphur odour, cloudy

A sample of the water to be discharged was taken on 2 April 2025 and sent to a NATA accredited laboratory for testing against the ANZG (2018), Australia and New Zealand Environment Conservation Council ANZECC (2000), National Environment Protection (Assessment of Site Contamination) Measure (NEPM, 2013) and the National Health and Medical Research Council Australian Drinking Water Guidelines (NHMRC 2011). Relevant water quality results are presented in **Table 10** to **Table 14** below, lab results are attached in **Appendix B**.

The groundwater samples were taken from BH1, BH2 and BH5 using a disposable eco-bailer. The groundwater samples were collected from the outflow tube and stored in containers proved by SGS laboratory. The containers were immediately placed in an esky with ice packs to maintain a cool temperature and delivered to SGS laboratory same day. Disposable nitrile gloves were used for sample collection to minimize potential contamination.

Table 10 Water Quality Results - Physical Parameters

Analytes	Measured Concentration in Water Sample			NHMRC (2011)	ANZECC (2000) Fresh Water Threshold	ANZECC (2000) Marine Water Threshold	ANZG (2018) Fresh Water (95%/99% ² Species Protection)	ANZG (2018) Marine (95%/99% ² Species Protection)
	BH1	BH2	BH5					
Bicarbonate Alkalinity as CaCO ₃ (mg/L)	69	86	<5	-	-	-	-	-
Carbonate Alkalinity as CaCO ₃ (mg/L)	<1	<1	<1	-	-	-	-	-
Hydroxide Alkalinity as CaCO ₃ (mg/L)	<5	<5	<5	-	-	-	-	-
Total Alkalinity as CaCO ₃ (mg/L)	69	86	<5	-	-	-	-	-
pH	5.9	6.3	4.7	-	-	-	-	-
Electrical Conductivity (µS/cm)	1300	440	1200	-	-	-	-	-
Redox Potential (Eh) (mV)	282	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (mg/L)	800	270	750	-	-	-	-	-
Total Hardness (mg/L)	170	-	-	-	-	-	-	-
Dissolved Oxygen (DO) (mg/L)	4.3	-	-	-	-	-	-	-
Turbidity (NTU)	150	-	-	-	10	-	-	-
Total Suspended Solids (TSS) (mg/L)	280	240	950	-	-	-	-	-
Total Organic Carbon (TOC) (mg/L)	4.0	-	-	-	-	-	-	-
Sodium Absorption Ratio (SAR)	8.4	-	-	-	-	-	-	-

Notes:

- 1 95% protection level
- 2 99% protection level
- 3 Level of species (%) protection unknown
- 4 Discharge water criteria are set at one order of magnitude higher than the drinking water health-based value, or in the absence of a drinking value 10x the aesthetic-based value

Table 11 Water Quality Results - Major Anions & Major Cations

Analytes	Measured Concentration in Water Sample			NHMRC (2011)	ANZECC (2000) Fresh Water Threshold	ANZECC (2000) Marine Water Threshold	ANZG (2018) Fresh Water (95%/99% ² Species Protection)	ANZG (2018) Marine (95%/99% ² Species Protection)
	BH1	BH2	BH5					
Major Anions	Sulfate (SO ₄) (mg/L)	200	72	94	-	-	-	-
	Chloride (mg/L)	380	110	470	-	-	-	-
	Bromide (Br) (mg/L)	1.9	-	-	-	-	-	-
	Fluoride (F) (mg/L)	0.48	-	-	-	-	1.7 ¹ /0.29 ²	-
	Calcium (Ca) (mg/L)	19	23	7.8	-	-	-	-
Major Cations	Magnesium (Mg) (mg/L)	30	3.7	27	-	-	-	-
	Sodium (Na) (mg/L)	250	72	230	-	-	-	-
	Potassium (K) (mg/L)	7.7	3.3	4.5	-	-	-	-
	Cation/Anion Balance (%)	<0	-	-	-	-	-	-

Notes:

- 1 95% protection level
- 2 99% protection level
- 3 Level of species (%) protection unknown
- 4 Discharge water criteria are set at one order of magnitude higher than the drinking water health-based value, or in the absence of a drinking value 10x the aesthetic-based value

Table 12 Water Quality Results - Dissolved Inorganics and Dissolved Heavy Metals

Analytes	Measured Concentration in Water Sample			NHMRC (2011)	ANZECC (2000) Fresh Water Threshold	ANZECC (2000) Marine Water Threshold	ANZG (2018) Fresh Water (95%/99% ² Species Protection)	ANZG (2018) Marine (95%/99% ² Species Protection)
	BH1	BH2	BH5					
Aluminium (Al) (µg/L)	67	-	-	-	-	-	0.8 (pH<6.5) ³ 55 (pH>6.5) ³	37/9 ²
Antimony (Sb) (µg/L)	<1	-	-	-	-	-	9 ³	-
Arsenic (As) (µg/L)	<1	<1	3	-	24	-	13/0.8 ²	-
Barium (Ba) (µg/L)	29	-	-	20000 ⁴	-	-	-	-
Beryllium (Be) (µg/L)	1	-	-	600 ⁴	-	-	-	-
Boron (B) (µg/L)	120	-	-	-	-	-	940/340 ²	-
Cadmium (Cd) (µg/L)	0.2	<0.1	<0.1	-	0.2	0.7	0.2/0.06 ²	5.5/0.7 ²
Chromium (Cr) (µg/L)	<1	<1	<1	-	1	4.4	-	-
Cobalt (Co) (µg/L)	34	-	-	-	-	-	1.4 ³	1/0.005 ²
Copper (Cu) (µg/L)	4	<1	2	-	1.4	1.3	1.4/1 ²	1.3/0.3 ²
Iron (Fe) (µg/L)	6	-	-	-	-	-	280/140 ²	540/410 ²
Lead (Pb) (µg/L)	<1	<1	<1	-	3.4	4.4	3.4/10 ²	4.4/2.2 ²
Lithium (Li) (mg/L)	0.042	-	-	-	-	-	-	-
Manganese (Mn) (µg/L)	2600	-	-	-	-	-	1900/1200 ²	80 ³
Mercury (Hg) (mg/L)	<0.0001	<0.0001	<0.0001	-	0.06	0.1	0.6/0.06 ²	0.4/0.1 ²
Molybdenum (Mo) (µg/L)	<1	-	-	-	-	-	34 ³	-
Nickel (Ni) (µg/L)	28	2	71	-	11	7	11/8 ²	70/7 ²
Selenium (Se) (µg/L)	<1	-	-	-	-	-	11/5 ²	-
Silica (dissolved SiO ₂) (mg/L)	51	-	-	2100 ⁴	-	-	-	-
Silver (Ag) (µg/L)	<1	-	-	-	-	-	0.05/0.02 ²	1.4/0.8 ²
Strontium (Sr) (µg/L)	130	-	-	-	-	-	-	-
Uranium (U) (µg/L)	<1	-	-	-	-	-	0.5 ³	-
Vanadium (V) (µg/L)	<1	-	-	-	-	-	6 ³	100/50 ²
Zinc (Zn) (µg/L)	180	17	240	-	8	15	8/2.4 ²	8/3.3 ²

Notes:

- 1 95% protection level
- 2 99% protection level
- 3 Level of species (%) protection unknown
- 4 Discharge water criteria are set at one order of magnitude higher than the drinking water health-based value, or in the absence of a drinking value 10x the aesthetic-based value

Table 13 Water Quality Results – Nutrients & Microbiological Organisms

Analytes	Measured Concentration in Water Sample			NHMRC (2011)	ANZECC (2000) Fresh Water Threshold	ANZECC (2000) Marine Water Threshold	ANZG (2018) Fresh Water (95%/99% ² Species Protection)	ANZG (2018) Marine (95%/99% ² Species Protection)
	BH1	BH2	BH5					
Nutrients	Ammonia (NH ₃) (mg/L)	0.17	-	-	-	-	900 ¹ /320 ²	910 ¹ /500 ²
	Nitrate (NO ₃) (mg/L)	<0.005	-	-	-	-	1.1 ¹ /0.64 ² (<30 mg/L CaCO ₃) 2.6 ¹ /1 ² (30-150 mg/L CaCO ₃) 29 ¹ /18 ² (>150 mg/L CaCO ₃)	-
	Total Nitrogen (N) (mg/L)	0.53	-	-	-	-	-	-
	Oxidised Nitrogen (N) (mg/L)	<0.005	-	-	-	-	-	-
	Total Phosphorus (P) (mg/L)	0.10	-	-	-	-	-	-
	Reactive Phosphorus (P) (mg/L)	<0.005	-	-	-	-	-	-
Microbiological Organisms	Faecal Coliforms (MPN/100mL)	5	-	-	-	-	-	-
	Faecal Streptococci (CFU/100mL)	130	-	-	-	-	-	-
	Escherichia Coli (CFU/100mL)	10	-	-	No detection in 100 mL	-	-	-

Notes:

- 1 95% protection level
- 2 99% protection level
- 3 Level of species (%) protection unknown
- 4 Discharge water criteria are set at one order of magnitude higher than the drinking water health-based value, or in the absence of a drinking value 10x the aesthetic-based value

Table 14 Water Quality Results – Organics

Analytes	Measured Concentration in Water Sample			NHMRC (2011)	ANZECC (2000) Fresh Water Threshold	ANZECC (2000) Marine Water Threshold	ANZG (2018) Fresh Water (95%/99% ² Species Protection)	ANZG (2018) Marine (95%/99% ² Species Protection)
	BH1	BH2	BH5					
Benzene (µg/L)	<0.5	<0.5	<0.5	-	950	500	950 ¹ /600 ²	700 ¹ /500 ²
Toluene (µg/L)	<0.5	0.5	<0.5	-	-	-	180 ¹ /110 ²	180 ¹ /110 ²
Ethylbenzene (µg/L)	<0.5	<0.5	<0.5	-	-	-	80 ¹ /50 ²	80 ¹ /50 ²
O-Xylene (µg/L)	<0.5	<0.5	<0.5	-	350	-	350 ¹ /200 ²	-
M/P-Xylene (µg/L)	<1	<1	<1	-	200	-	-	-
Naphthalene (VOC) (µg/L)	<0.5	<0.5	<0.5	-	16	50	15 ¹ /2.5 ²	70 ¹ /50 ²
Benzo(a)pyrene (µg/L)	<0.1	<0.1	<0.1	-	-	-	0.2 ¹ /0.1 ²	0.2 ¹ /0.1 ²
Benzene Toluene Ethylbenzene Xylene (BTEX) (µg/L)	<3	<3	<3	-	-	-	-	-
Total Recoverable Hydrocarbons (TRHs) C6-C10 (µg/L)	<50	<50	<50	-	-	-	-	-
Total Recoverable Hydrocarbons (TRHs) C6-C9 (µg/L)	<40	<40	<40	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)	<1	<1	<1	-	-	-	-	-

Notes:

- 1 95% protection level
- 2 99% protection level
- 3 Level of species (%) protection unknown
- 4 Discharge water criteria are set at one order of magnitude higher than the drinking water health-based value, or in the absence of a drinking value 10x the aesthetic-based value

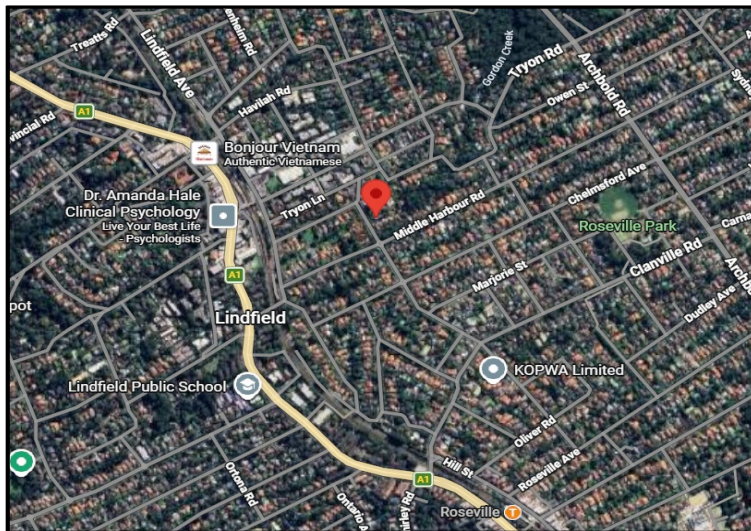
Concentrations of **Aluminium, Arsenic, Cobalt, Copper, Manganese, Nickel** and **Zinc** exceed the threshold guideline values. **Escherichia Coli** concentrations 150 CFU/100 mL exceeds the criteria (no detection in 100 mL). The **Turbidity** value of 370 NTU exceeds the ANZECC (2000) guideline value (10 NTU).

4. Statement of Limitations

The advice and parameters presented in this Groundwater Management Plan are for assessment of the expected groundwater seepage based upon the proposed development and encountered site conditions at the investigation locations.

We draw your attention to the document “Important Information”, which is attached to this letter. 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 Morrow Geotechnics, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.





NOTE:

1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from "SIX Maps", accessed 16/09/2025.

2. Regional Geology spatial data obtained from MinView, accessed on 17/04/2026

0

50

100

150

200 m

morrow

Morrow Geotechnics Pty Ltd ABN 42 605 892 126
2/5-7 Malta Street, Fairfield East NSW 2165
79/6 Bellambi Lane, Bellambi NSW 2518
E: info@morrowgeo.com.au
P: 02 8599 7579

DRAWN BY:

AON

Approved:

AB

Date:

17/04/2026

Landmark Group Construction Australia Pty Ltd

Site Hydrogeology Report

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield
NSW

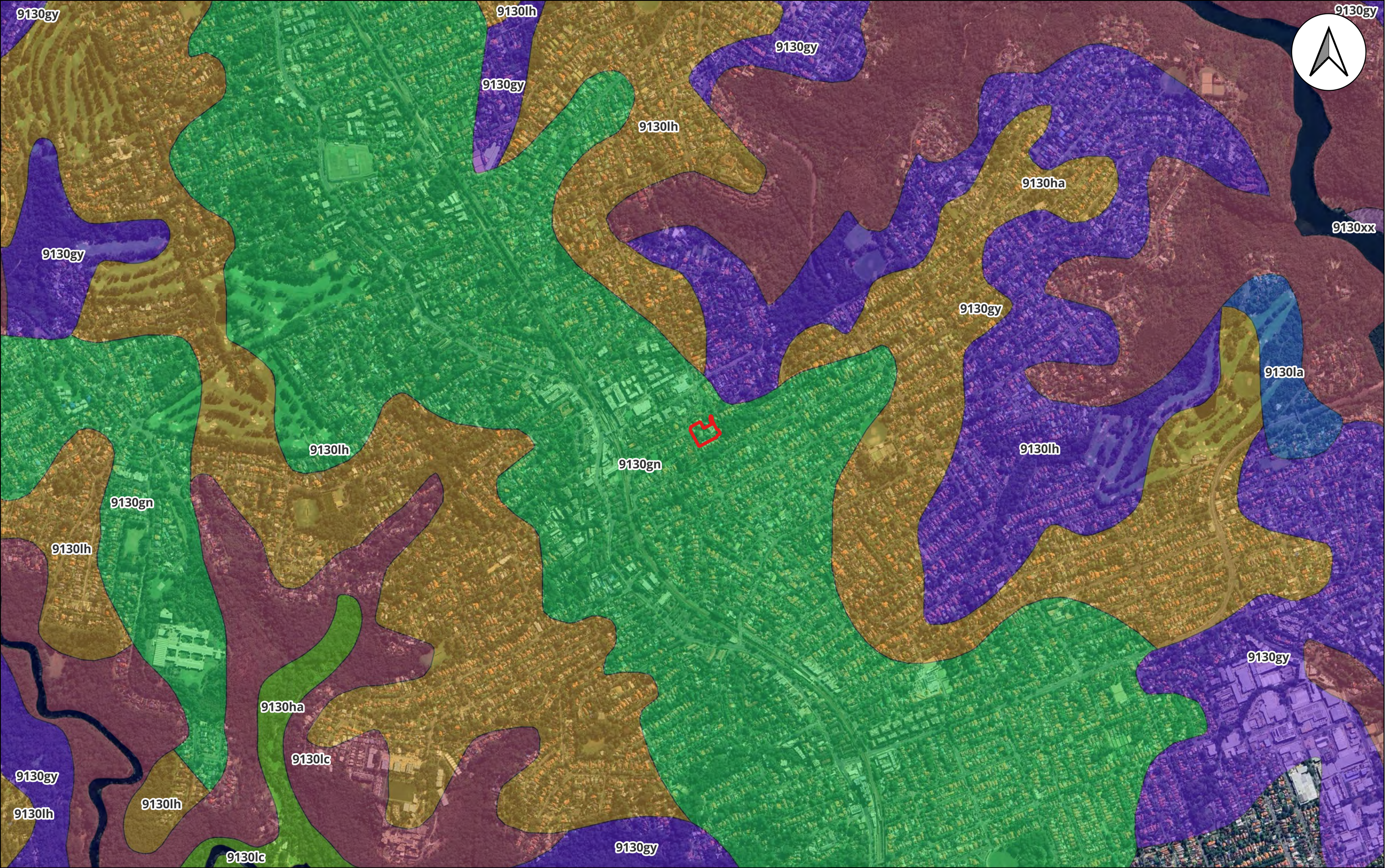
Regional Geology

Drawing:

1

Project: P3444

Revision: 0



NOTE:

1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from "SIX Maps", accessed 16/09/2025.

2. Soil Landscapes data obtained from MinView, accessed on 17/04/2026

0

500

1,000

1,500

2,000 m

morrow

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E: info@morrowgeo.com.au

P: 02 8599 7579

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17/04/2026

Landmark Group Construction Australia Pty Ltd

Site Hydrogeology Report

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield

NSW

Soil Landscapes

Drawing:

3

Project: P3444

Revision: 0



NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from "SIX Maps", accessed 16/09/2025.
2. Acid Sulfate Soils data obtained from Ku-ring-gai Council, accessed on 17/04/2026

0 500 1,000 1,500 2,000 m

Morrow Geotechnics Pty Ltd ABN 42 605 892 126
2/5-7 Malta Street, Fairfield East NSW 2165
79/6 Bellambi Lane, Bellambi NSW 2518
E: info@morrowgeo.com.au
P: 02 8599 7579

DRAWN BY:	AON	Landmark Group Construction Australia Pty Ltd Site Hydrogeology Report 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW Acid Sulfate Soils	Drawing: 4
Approved:	AB		Project: P3444
Date:	17/04/2026		Revision: 0



NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from "SIX Maps", accessed 16/09/2025.
2. GDE data obtained from eSPADE, accessed on 17/04/2026

0

750

1,500

2,250

3,000 m

morrow

Morrow Geotechnics Pty Ltd ABN 42 605 892 126
2/5-7 Malta Street, Fairfield East NSW 2165
79/6 Bellambi Lane, Bellambi NSW 2518
E: info@morrowgeo.com.au
P: 02 8599 7579

DRAWN BY:	AON
Approved:	AB
Date:	17/04/2026

Landmark Group Construction Australia Pty Ltd

Site Hydrogeology Report

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield
NSW

Groundwater Dependant Ecosystems

Drawing:	5
Project:	P3444
Revision:	0

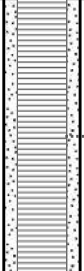
APPENDIX A

**BOREHOLE LOGS, EXPLANATORY NOTES AND SITE
PHOTOS**

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330797,48	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261245,34	Logged By : Ozzie Baskan	Project : Lindfield
RL : 91.30(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 35.75 m	Date : 26/02/2025	Loc Comment : Driveway of 63 Trafalgar Avenue , near the gate.

Drilling Method	Water	Well Diagram	Testing	Elevation	Graphic Log	Material Type	Classification Code	Material Description	Depth (m)	Consistency	Weathering	Moisture
				Depth (m)								
				91.1		Non-Soil	PAV	Non-Soil - Pavers	0.15			
				0.15				Residual Silty CLAY stiff to very stiff, medium to high plasticity, pale brown brown pale grey, trace fine to medium sized gravel, w < pl.				
				90.3		Residual	CI-CH			St-VSt		w < PL
				1				Extremely weathered Sandstone, Silty CLAY hard, low to medium plasticity, pale grey mottled brown, with ironstone and sandstone bands.	1			
				89.3		Rock	SLT			H	XW	
				2				Rock SANDSTONE: highly weathered, very low to low strength, pale brown pale grey mottled red, fine to medium grained, with ironstone bands.	2			
						Rock	SST			VLS-LS	HW	
									3			

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
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Drilling Method	Water	Well Diagram	Testing	Elevation	Graphic Log	Material Type	Classification Code	Material Description	Depth (m)	Consistency	Weathering	Moisture
				Depth (m)								
						Rock	SST	Rock SANDSTONE: highly weathered, very low to low strength, pale brown pale grey mottled red, fine to medium grained, with ironstone bands.		VLS-LS	HW	
				86.6 4.7					4.7			
								Commenced Coring at 4.7m				

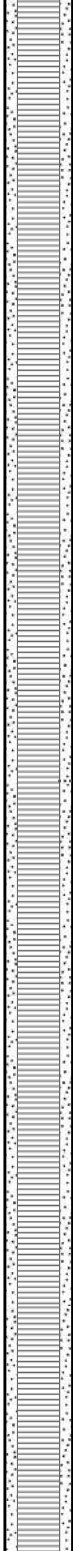
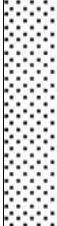
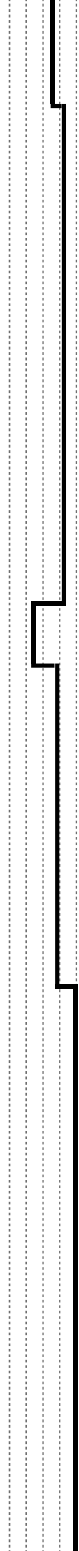
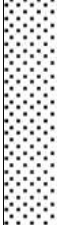
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Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
						Commenced Coring at 4.7m							
			86.2	X	SST	Rock SANDSTONE: highly to moderately weathered, medium strength, red pale grey, fine grained, ..	5	HW-MW	d:0.10 ; a:0.40		RQD = 27.78% TCR = 100%		4.73, P, 5°, UN, RO, STN, OP, 4.75, P, 10°, UN, RO, STN, C, 4.79, P, 5°, IR, RO, CL, OP, (X2), 4.87, P, 5°, UN, RO, STN, OP, (X2), 4.95, P, 5°, PL, RO, STN, OP, (X2),
			5.06		CRL	Coreloss	5.06						5.05, P, 5°, UN, RO, CL, OP, (X2), 5.06-5.24, CORELOSS,
			86.1	X	SST	Rock SANDSTONE: highly to moderately weathered, low strength, pale grey pale brown, fine to medium grained, with ironstone beddings.	5.24	HW-MW					5.24-5.45, CRF, 5°, IR, RO, STN, OP,
			5.24										5.43-5.52, XWS,
			85.8	X	SST	Rock SANDSTONE: moderately weathered, medium strength, pale grey, fine to medium grained, carbonaceous beddings.	5.53	MW	d:0.24 ; a:0.98		RQD = 63.16% TCR = 100%		5.61, P, 5°, IR, RO, CL, OP, 5.64, P, 5°, IR, RO, CL, OP,
			5.53										5.81, XWS, 5mm, 5.83-5.84, XWS, 10mm,
			85.5	X	SST	As above, but pale grey pale brown.	5.85	MW					6.03, P, 5°, UN, RO, CL, OP, (X2),
			5.85										6.2-6.37, CORELOSS,
			85.1	X	CRL	Coreloss	6.2						6.46, P, 5°, UN, RO, CL, OP,
			6.2										6.61, P, 5°, UN, RO, CL, OP,
			84.9	X	SST	Rock SANDSTONE: moderately to slightly weathered, medium to high strength, pale grey, fine to medium grained, ..	6.37	MW-SW	d:0.25 ; a:1.36				6.81, P, 5°, PL, RO, CL, OP, (X2),
			6.37										7.02, P, 5°, UN, RO, CL, OP, (X2),
			84.5	X	SST	As above, but moderately weathered, low to medium strength, pale grey, with siltstone bands.	6.8	MW	d:0.09 ; a:0.38				7.16, P, 5°, PL, RO, CL, OP,
			6.8										7.25, P, PL, RO, CL, OP, (X2),
			84.3	X	SST	Rock SANDSTONE: slightly weathered, high strength, pale grey, fine grained, ..	7.2	SW	d:0.142 ; a:1.30		RQD = 94.38% TCR = 100%		7.43, P, 5°, UN, RO, CL, OP, (2X),
			7										7.61-7.67, CRF, 5°, 7.7, P, 5°, PL, RO, CL, OP,

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Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted	83.3		SST	Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to medium grained, with siltstone bands.	8	SW			RQD = 94.38% TCR = 100%		8.27, P, 5°, PL, RO, CL, OP, 8.61, P, 10°, UN, RO, CL, OP,
			82.3				9		d:1.07 ; a:1.68				
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted	80.1		SST	As above, but pale grey.	9	SW	d:1.46 ; a:2.17		RQD = 100% TCR = 100%		9.81, P, 5°, UN, RO, CL, OP, 10.64, P, 30°, PL, RO, CL, OP,
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted	80.1		SST	As above, but moderately weathered, medium to high strength.	11.2	MW	d:1.69 ; a:2.03		RQD = 100% TCR = 100%		11.64, P, 5°, PL, RO, CL, OP,
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted	80.1		SST	As above, but moderately weathered, medium to high strength.	11.2	MW	d:0.79 ; a:1.75		RQD = 100% TCR = 100%		11.64, P, 5°, PL, RO, CL, OP,

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RL : 91.30(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 35.75 m	Date : 26/02/2025	Loc Comment : Driveway of 63 Trafalgar Avenue , near the gate.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
NMLC Coring	Loss - 0% Water Loss		78.7		SST	As above, but moderately weathered, medium to high strength.	12.6	MW	d:1.44 ; a:1.71		RQD = 100% TCR = 100%		12.27, P, 10°, PL, RO, CL, OP,
			12.6		SST	As above, but slightly weathered, high strength.	13	SW	d:1.07 ; a:1.26				
			77.6		SST	As above, but fine to coarse grained.	13.7	SW	d:1.23 ; a:1.45		RQD = 100% TCR = 100%		13.54, P, 5°, PL, RO, CL, OP, (X2), 13.7, P, 5°, UN, RO, CL, OP,
			13.7		SST		14	SW	d:1.47 ; a:1.49				
	Loss - 0% Water Loss						15				RQD = 100% TCR = 100%		14.52, P, 5°, PL, RO, VN, OP,

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Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted		SST		As above, but fine to coarse grained.							
									d:1.23 ; a:1.31				
							17	SW					
									d:1.36 ; a:1.23				
							18						
			72.6	CRL			18.7						
			18.7			Coreloss							
			72.5				18.8						
			18.8			Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to coarse grained.			d:1.28 ; a:1.09				
							19	SW					
	Loss - 0% Water Loss			SST									
									d:1.18 ; a:1.10				

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Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
						Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to coarse grained.	21 22 23	SW		VLS 0.1 LS 0.3 MS 1.0 HS 3 EPS 10	RQD = 96.67% TCR = 96.67%	30 100 300 1000 3000	20.03, J, 30°, PL, RO, CT, OP, (X2), 20.35, P, 5°, PL, RO, CT, OP, 20.68, P, 5°, PL, RO, CL, OP, (X2), 21.62, P, 20°, PL, RO, VN, OP, 22.75, J, 70°, UN, RO, CL, OP, 23.13, P, 5°, PL, RO, CL, OP, (X2), 23.45, P, 5°, PL, RO, CT, OP,
									d:1.68 ; a:1.03				
									d:1.23 ; a:1.28				
									d:0.75 ; a:1.53				
									d:1.03 ; a:1.09				

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330797.48	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261245.34	Logged By : Ozzie Baskan	Project : Lindfield
RL : 91.30(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 35.75 m	Date : 26/02/2025	Loc Comment : Driveway of 63 Trafalgar Avenue , near the gate.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted		SST	SST	Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to coarse grained.		SW			RQD = 100% TCR = 100%		24.6, P, 5°, UN, RO, CL, OP,
							25		d:1.28 ; a:1.50				
							26		d:1.45 ; a:1.30				
							26.6		d:0.72 ; a:1.15		RQD = 100% TCR = 100%		
			64.7 26.6			Rock SANDSTONE: slightly weathered, high strength, grey mottled dark grey, fine to coarse grained, laminations at 0° to 5°.	26.6						
				SST	SST		27	SW	d:0.71 ; a:1.82				27.33, P, 5°, PL, RO, CL, OP,
	Loss - 0% Water Loss								d:0.43 ; a:1.32		RQD = 100% TCR = 100%		
													27.98, P, 5°, PL, RO, CL, OP,

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330797.48	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261245.34	Logged By : Ozzie Baskan	Project : Lindfield
RL : 91.30(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 35.75 m	Date : 26/02/2025	Loc Comment : Driveway of 63 Trafalgar Avenue , near the gate.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)					
NMLC Coring	Loss - 0% Water Loss		63.3		SST	Rock SANDSTONE: slightly weathered, high strength, grey dark grey, fine to coarse grained, laminations at 5° to 10°.	28	SW		VLS 0.1 LS 0.3 MS 1.0 HS 3 EPS 10	RQD = 100% TCR = 100%	30 100 300 1000 3000	28.62, P, 5°, UN, RO, VN, OP,	
			28				d:0.90 ; a:1.05							
			62.7			As above, but pale grey.	28.64							
			28.64		SST			29		d:0.72 ; a:1.30				
							30	SW	d:1.19 ; a:1.37					
							31		d:1.13 ; a:1.22					
	Loss - 0% Water								d:1.90 ; a:2.39		RQD = 100% TCR = 100%			

Loss

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330797.48	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261245.34	Logged By : Ozzie Baskan	Project : Lindfield
RL : 91.30(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 35.75 m	Date : 26/02/2025	Loc Comment : Driveway of 63 Trafalgar Avenue , near the gate.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description																						
			Depth (m)						Is(50)																											
↑ NMLC Coring ↓	▲ Loss - 0% Water Loss	50mm PVC Slotted			SST	As above, but pale grey.	33	SW	d:1.14 ; a:1.87	VS 0.1 LS 0.3 MS 1.0 HS 3 EHS 10	RQD = 100% TCR = 100%	30 100 300 1000 3000																								
														34	d:0.82 ; a:1.17																					
																34.65	d:0.97 ; a:0.89																			
																		SHA	Rock SHALE: moderately weathered, medium strength, dark grey, fine grained.	35	MW	d:0.50 ; a:0.37														
																							35.43	d:0.45 ; a:0.31												
																									SST	Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to coarse grained.	35.75	SW	d:2.06 ; a:1.92							
																														56.6 34.65	55.9 35.43					
																																34.29-34.32, CRF, 5°	34.91, J, 40°, UN, SO, CL, OP			
																																		35.2, P, 30°, PL, SO, CL, OP	35.43, P, 10°, PL, RO, CL, OP	
																																				35.49, P, 20°, PL, RO, CL, OP

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

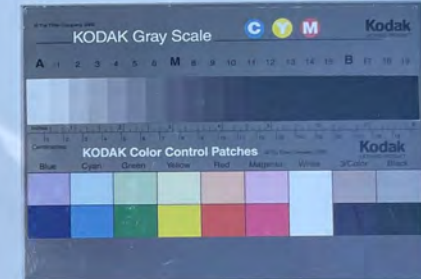
LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 4.7m to 9.0m

CORE TRAY NO: 1 of 7

DATE: 26/02/2025



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02 8599 7579



Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 1 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

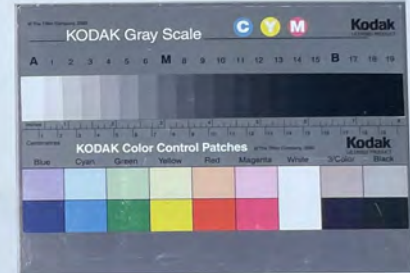
LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 3.0m to 14.0m

CORE TRAY NO: 2 of 7

DATE: 27/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 2 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

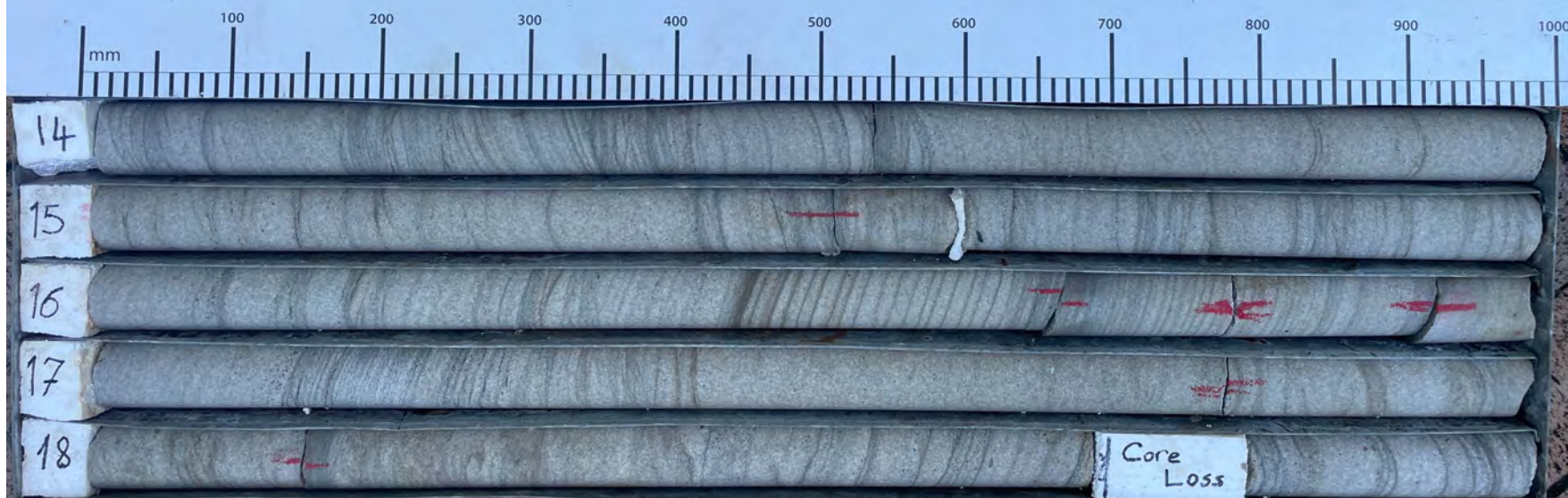
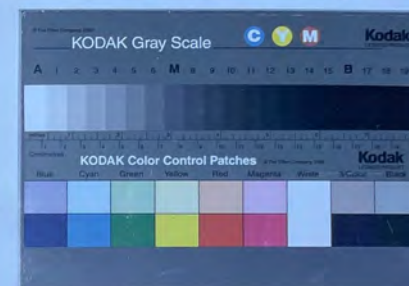
LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 14.0m to 19.0m

CORE TRAY N: 3 of 7

DATE: 27/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 3 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 13m to 24m

CORE TRAY N 4 of 7

DATE: 27/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 4 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

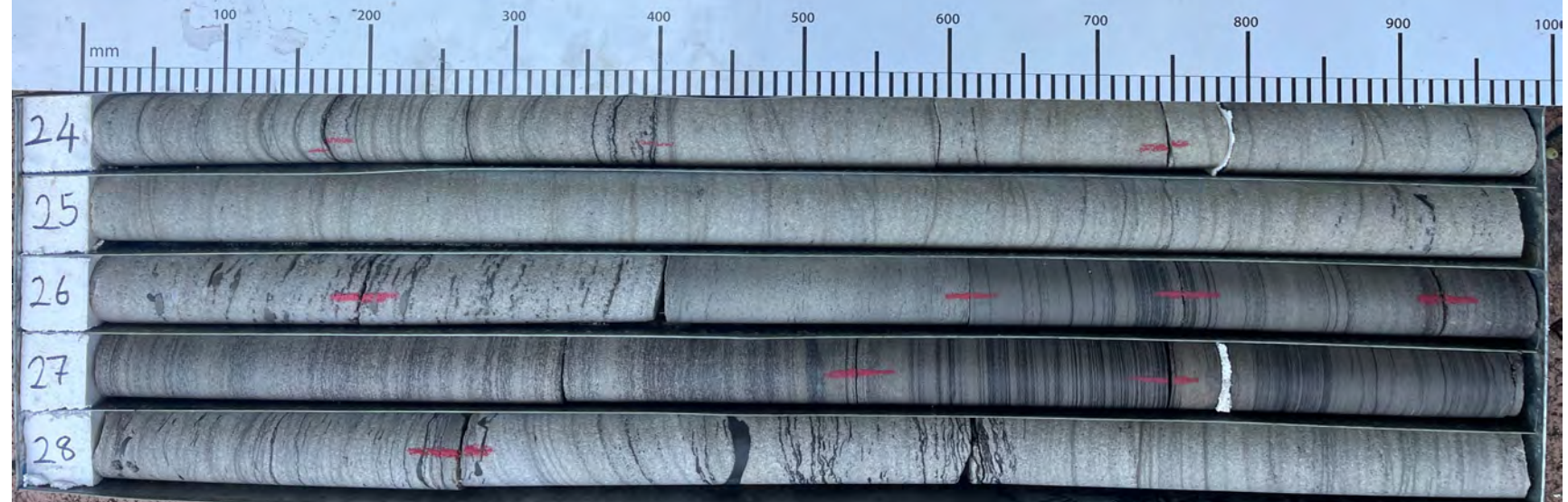
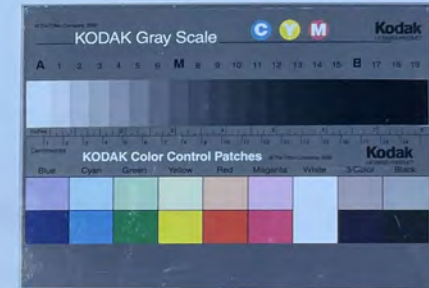
LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 24m to 29m

CORE TRAY N° 5 of 7

DATE: 27/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 5 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

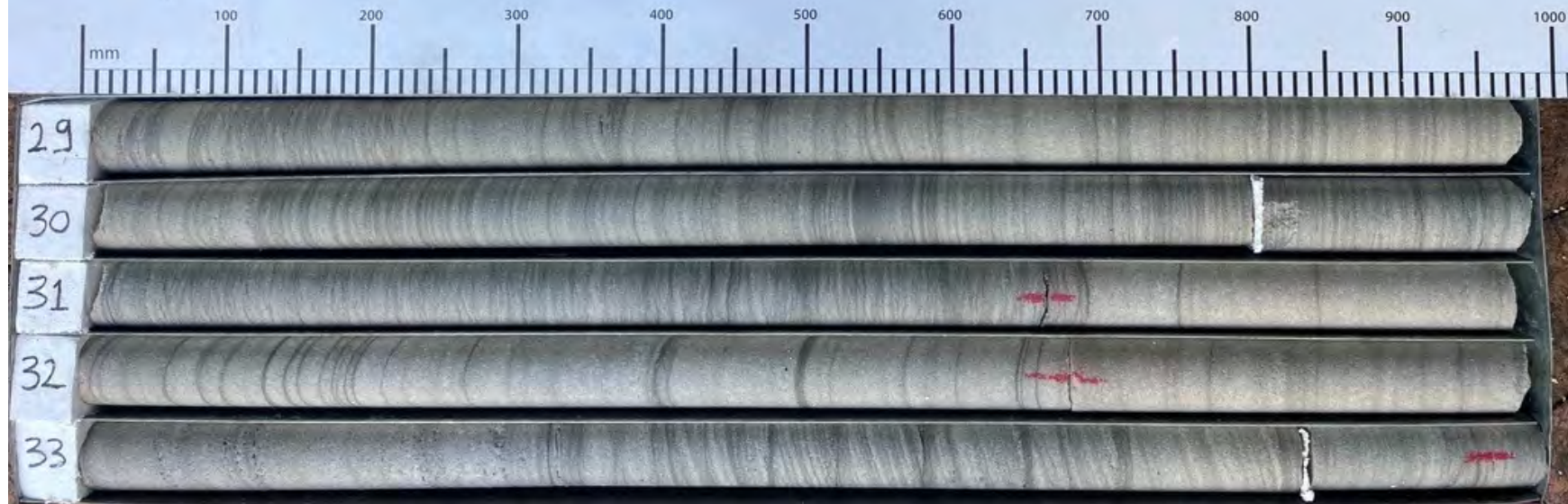
LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 29m to 34m

CORE TRAY NO: 6 of 7

DATE: 27/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 6 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

LOGGED BY: Ozzie B.

BOREHOLE ID: BH1

DEPTH: 34m to 35.75m

CORE TRAY N 7 of 7

DATE: 27/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 7 of 7

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH1

BH Depth

CorePhoto

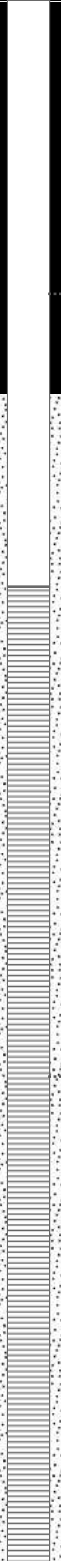
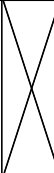
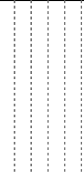
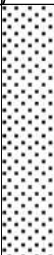
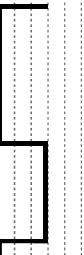
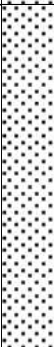
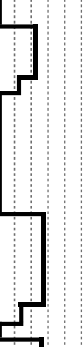
UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330881,21	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261255,66	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 85,40(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20,5 m	Date : 14/02/2025	Loc Comment : Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Testing	Elevation	Graphic Log	Material Type	Classification Code	Material Description	Depth (m)	Consistency	Weathering	Moisture
			SPT									
Diatube ↑ ADT ↓	1, GWNE			85.3		Non-Soil	CCT	Concrete	0.13			
				0.13		FILL	SP	FILL Gravelly SAND loose, dark grey, fine grained, fine to medium sized gravel, moist.		L		M
			3,3,3 (N=6)	84.7		Residual	CI	Residual Gravelly to sandy CLAY firm to stiff, medium plasticity, fine sized gravel, inorganic, ironstone gravels.	0.7	F-St		
				0.7		Rock	SST	Extremely weathered Sandstone, Gravelly SAND very dense, pale grey with orange, fine grained, fine to medium sized gravel, trace low plasticity clay, trace low plasticity silt.	1	VD-WC	XW	D
			0mm,0/mm (N=23)	84.4					1			
				83.7				Commenced Coring at 1.75m	1.75			
				1.75								

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330881.21	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261255.66	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 85.40(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.5 m	Date : 14/02/2025	Loc Comment : Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
		A								VLS 0.03 LS 0.1 MS 0.3 HS 0.5 FHS 1 FHS 3			
						Commenced Coring at 1.75m	1						
						Coreloss	2						1.75-2.38, CORELOSS,
					CRL		2.4						2.38-3.1, XWS,
			83.0 2.4			Rock SANDSTONE: highly weathered, very low strength, pale grey orange red, fine grained, ironstone bands.	3				RQD = 0% TCR = 53.33%		
					SST				d:0.04; a:0.06				3.13, P, 5°, PL, RO, 3.16, P, 5°, PL, RO, 3.24, P, 5°, PL, RO, 3.42, P, 5°, PL, SO, 3.51, P, 25°, PL, SO,
			81.6 3.77				3.77			d:0.02; a:0.01	RQD = 15% TCR = 59.17%		3.77-4.45, CORELOSS,
					CRL	Coreloss							

UTM	: 56S	Driller Rig	: GEO205 - Comacchio	Job Number	: P3444
Easting	: 330881,21	Driller Supplier	: GEOSENSE	Client	: Landmark Group Construction Australia Pty Ltd
Northing	: 6261255,66	Logged By	: Mahmoud Jangidaryan	Project	: Lindfield
RL	: 85.40(m)	Reviewed By	: Ozzie Baskan	Location	: 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth	: 20.5 m	Date	: 14/02/2025	Loc Comment	: Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description	
			Depth (m)						Is(50)						
NMLC Coring	Loss - 20% Water Loss		81.0		CRL	Coreloss	4.45					RQD = 15% TCR = 59.17%		4.45-4.8, XWS,	
			4.45		SST	Rock SANDSTONE: highly weathered, very low strength, pale grey orange red, fine grained.									HW
			80.3		SST	Rock SANDSTONE: highly weathered, very low to low strength, pale grey with red, very fine grained.	HW	5.1			d:0.27 ; a:1.12	RQD = 74% TCR = 100%		5.05-5.15, J, 80°, PL, RO, 5.28, P, 10°, CV, RO, 5.32-5.63, CRF, RO,	
			5.1												d:0.04 ; a:0.47
			79.4		SST	Rock SANDSTONE: moderately to slightly weathered, medium strength, pale grey with grey and brown, very fine grained, carbonaceous beddings.	MW-SW	6			d:0.64 ; a:1.41	RQD = 74% TCR = 100%		6.15, P, 15°, IR, VR, 6.26, P, 20°, PL, RO, CL, , 6.3, P, 20°, PL, RO, CL, ,	
			6												d:0.81 ; a:0.93
						SST			7			d:1.39 ; a:1.09			7.72, P, 20°, IR, RO, CL, , 7.77, P, 5°, PL, RO, 7.93, P, 5°, PL, RO,

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330881.21	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261255.66	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 85.40(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.5 m	Date : 14/02/2025	Loc Comment : Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
			76.4		SST	Rock SANDSTONE: moderately to slightly weathered, medium strength, pale grey with grey and brown, very fine grained, carbonaceous beddings.	9.9	MW-SW	d:0.60 ; a:0.85	VLS 0.03 LS 0.1 MS 0.3 HS 0.3 EPS 1 EPS 3	RQD = 74% TCR = 100% RQD = 100% TCR = 100%	30 100 300 1000 3000	
			9		SST	Rock SANDSTONE: fresh weathered, high strength, pale grey grey, fine grained, with carbonaceous beddings..	9.9						
							10		d:1.26 ; a:1.47				9.53, P, 10°, PL, RO,
													9.76, P, 10°, PL, RO,
													9.89, P, 10°, PL, RO,
							11		d:1.12 ; a:0.90				
									d:1.10 ; a:1.04				
											RQD = 100% TCR = 100%		11.07, P, 10°, PL, RO,

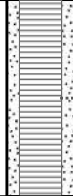
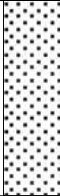
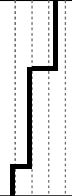
UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330881.21	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261255.66	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 85.40(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.5 m	Date : 14/02/2025	Loc Comment : Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Elevation Depth (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
									Is(50)				
NMLC Coring	Loss - 10% Water Loss	50mm PVC Slotted			SST	Rock SANDSTONE: fresh weathered, high strength, pale grey grey, fine grained, with carbonaceous beddings..	13	F	d:0.92; a:1.60	VLS 0.03 LS 0.1 MS 0.1 HS 0.3 EPS 1 EPS 3	RQD = 100% TCR = 100%	30 100 300 1000 3000	12.63, P, 20°, PL, RO,
									d:1.47 ; a:1.50				
							14		d:1.99 ; a:1.72				
									d:1.54 ; a:1.80				
							15		d:1.93 ; a:2.38				15.62, P, 10°, UN, RO, 15.67, P, 5°, PL, RO, 15.71, P, 5°, PL, RO, 15.81, P, 5°, PL, RO,

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330881.21	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261255.66	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 85.40(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.5 m	Date : 14/02/2025	Loc Comment : Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Elevation Depth (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
									Is(50)					
NMLC Coring	Loss - 10% Water Loss	50mm PVC Slotted			SST	Rock SANDSTONE: fresh weathered, high strength, pale grey grey, fine grained, with carbonaceous beddings..	17	F	d:2.10 ; a:2.36	VLS 0.03 LS 0.1 MS 0.3 HS 0.3 EPS 1 EPS 3				16.9, J, 30°, PL, RO,
									d:1.88 ; a:1.61					
							18		d:2.13 ; a:1.78					17.9, P, PL, VR,
									d:1.61 ; a:1.35					
							19							18.52, P, 5°, PL, VR, 18.61, P, 10°, PL, VR,

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330881.21	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261255.66	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 85.40(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.5 m	Date : 14/02/2025	Loc Comment : Driveway of 1A Valley Road, across from the pool.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)					
NMLC Coring					SST	Rock SANDSTONE: fresh weathered, high strength, pale grey grey, fine grained, with carbonaceous beddings..		F						20.17, P, 10°, UN, VR, 20.42, P, 5°, PL, RO,
			d:1.34 ; a:1.71											
						BH2 Reached Target Depth at 20.5m								

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CLIENT NAME: Landmark Group

PROJECT: Lindfield

LOCATION: 1A Valley Road

JOB NUMBER: P3444

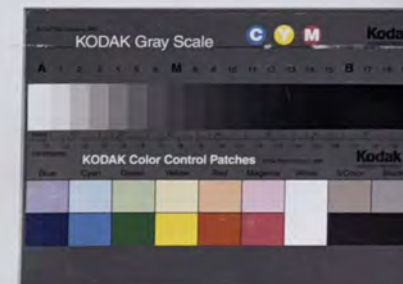
LOGGED BY: MJ

BOREHOLE ID: BH2

DEPTH: 1.75 to 6.0 m

CORE TRAY NO: Box 1 of 4

DATE: 14,2,2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

Box 1 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH2

BH Depth

CorePhoto

morrow

CLIENT NAME: Landmark Group

PROJECT: Lindfield

LOCATION: 1A Valley Road

JOB NUMBER: P3444

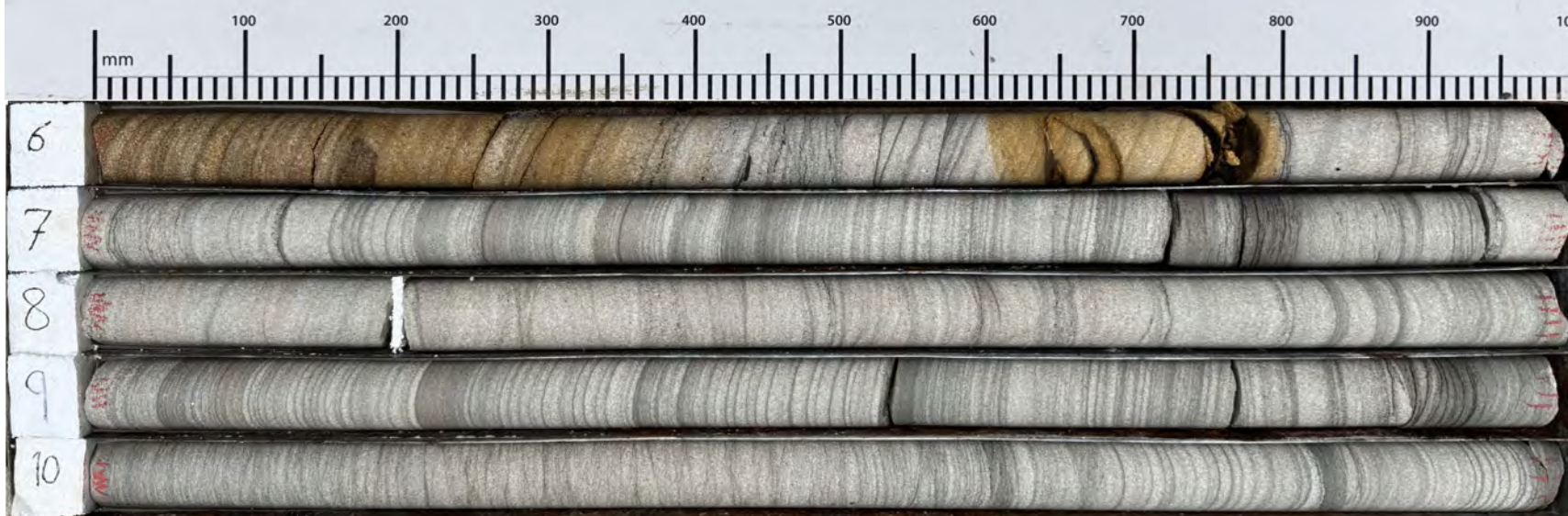
LOGGED BY: MJ

BOREHOLE ID: BH2

DEPTH: 6.0 to 11.0 m

CORE TRAY NO: Box 2 of 4

DATE: 14, 2, 2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



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Photo description

Box 2 of 4

Client	Landmark Group Construction Australia Pty Ltd		
Location	59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW		
Project name	Lindfield		
Project No	P3444	Scale	Not to Scale
BH No	BH2	BH Depth	CorePhoto

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CLIENT NAME: Landmark Group

PROJECT: Lindfield

LOCATION: 1A Valley Road

JOB NUMBER: P3444

LOGGED BY: MJ

BOREHOLE ID: BH2

DEPTH: 11.0 to 16.0 m

CORE TRAY NO: Box 3 of 4

DATE: 14,2,2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



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Photo description

Box 3 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH2

BH Depth

CorePhoto



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



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Photo description

Box 4 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH2

BH Depth

CorePhoto

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840,02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235,97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Testing	Elevation Depth (m)	Material Type	Graphic Log	Classification Code	Material Description	Depth (m)	Consistency	Weathering	Moisture
Hand Auger			87.4 0.08	Non-Soil		CCT	Concrete	0.08			
			87.2 0.3	FILL		CL	FILL Gravelly to sandy CLAY low plasticity, stiff, orange pale grey, fine to medium sized gravel, fine grained sand, trace low plasticity silt, inorganic, w < pl.	0.3	St		w < PL
			87.0 0.45	Residual		CH	Residual Silty CLAY stiff to very stiff, high plasticity, pale grey with red, inorganic, trace of ironstone gravels.	0.45	St-VSt		
			86.9 0.6	Rock		SST	Extremely weathered Sandstone, Gravelly SAND very dense, pale grey orange red, fine to medium grained, fine sized gravel, trace low plasticity clay, trace low plasticity silt.	0.50 0.6	VD-PC-MC	XW	M
							Commenced Coring at 0.6m				

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840.02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235.97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness	
									Is(50)					
			88							VLS LS MS HS VHS EHS				
		0.50	87			Commenced Coring at 0.6m	0.50							
NMLC Coring	No Water Loss	1		SST	Rock SANDSTONE: highly weathered, very low strength, pale grey dark grey pale brown, very fine grained, with siltstone laminations and iron staining.	1	HW	d:1.67 ; a:1.93		RQD = 0% TCR = 100%			0.6-0.85, CRF,	
		1.50	86			1.50								
		2				2								
		2.35		CRL SST	Coreloss Rock SANDSTONE: highly weathered, medium strength, pale grey dark grey pale brown, fine grained, with siltstone lamination and iron staining.	2.35		d:0.02 ; a:0.85				0.98, P, 10°, PL, RO, CL, , 1-1.02, J, 85°, PL, RO, , 1.06-1.09, XWS, , 1.19, P, 5°, PL, RO, , 1.52, P, 5°, PL, RO, , 1.87, P, 20°, PL, RO, , 1.9, P, 10°, PL, RO, , 2.04, P, 10°, PL, RO, CL, , 2.15, P, 10°, PL, RO, CL, , 2.24, P, 5°, PL, RO, CL, , 2.26, P, 5°, PL, RO, CL, , 2.3, P, 5°, PL, RO, CL, , 2.35-2.36, CORELOSS, , 2.42, P, 5°, PL, SO, CL, , 2.64, P, 5°, PL, RO, CL, , (X2), 2.9, P, 10°, PL, RO, CL, , 3.26, P, 10°, PL, RO, CL, , 3.32, P, 10°, PL, RO, , 3.36-3.45, J, 60°, PL, RO, , 3.48, P, 5°, PL, RO, , 3.56, P, 5°, PL, RO, , 3.65, P, 10°, PL, RO, (X2), 3.72, P, 10°, PL, RO, , 3.82, P, 10°, PL, RO, (X2), 3.92, P, 10°, PL, RO, (X2),		

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840.02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235.97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)	Estimated Strength			
	No Water Loss		84		SST	Rock SANDSTONE: highly weathered, medium strength, pale grey dark grey pale brown, fine grained, with siltstone lamination and iron staining.	4.31	HW			RQD = 0% TCR = 88.73%		4.07-4.17, J, 75°, PL, RO, STN, OP,
					CRL	Coreloss	4.39						4.19, P, 10°, PL, RO,
		4.50	83		SST	Rock SANDSTONE: highly weathered, high strength, pale grey dark grey pale brown, fine grained, with siltstone lamination and iron staining.	4.50	HW	d:0.78 ; a:1.12				4.25-4.3, CS,
							4.7						4.31-4.39, CORELOSS,
													4.41, P, 10°, PL, RO, CL, ,
													4.57, P, 10°, PL, RO,
													4.63-4.67, J, 40°, PL, RO, (X2),
													4.73-4.79, J, 40°, PL, RO,
		5											4.9, P, 10°, PL, RO, CL, OP,
													5.18, P, 10°, PL, RO, CL, OP,
		5.50	82				5.50		d:0.72 ; a:1.04		RQD = 98.74% TCR = 100%		5.58, P, 10°, UN, VR, CL, OP,
													5.92, P, 5°, PL, RO, CL, OP,
		6					6						6.02, P, 5°, CV, RO, CL, OP,
													6.1, P, 15°, PL, RO, CL, OP,
													6.14, P, 15°, PL, RO, CL, OP,
													6.19, P, 20°, IR, VR, CL, OP,
													6.27, 10°, CV, RO, CL, OP,
													6.33, P, 20°, PL, RO, CL, OP,
													6.34, P, 20°, PL, RO, CL, OP,
		6.50	81				6.50		d:1.23 ; a:1.50		RQD = 77.22% TCR = 100%		7.04, P, PL, SO, CL, OP,
													7.23, P, PL, SO, CL, OP,
		7					7						7.44, P, UN, RO, CL, OP,
													7.69, P, 5°, PL, RO,
													7.78, P, 5°, PL, RO,
		7.50	80				7.50		d:1.30 ; a:1.70		RQD = 71.95% TCR = 100%		7.83, P, 5°, PL, RO,

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840.02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235.97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)				
NMLC Coring	No Water Loss		80		SST	Rock SANDSTONE: moderately weathered, high strength, pale grey with pale brown, fine grained.		MW		V.S 0.1 L.S 0.3 M.S 1.0 H.S 3 V.H.S 10 E.H.S	RQD = 71.95% TCR = 100%		8.19, P, 5°, PL, RO,
			8.3		d:0.32 ; a:0.83			8.31, P, 10°, PL, VR, 8.36, P, 10°, PL, VR,					
		8.50	79				8.5, P, 2°, PL, SO,						
							8.66-8.73, CORELOSS,						
		9					9, P, 20°, PL, RO, CL, OP, 9.02-9.06, J, 40°, PL, RO, 9.06, P, 10°, PL, RO,						
		9.50	78		d:1.16 ; a:1.32								
		10				SW-F			RQD = 100% TCR = 100%				
		10.50	77		d:0.89 ; a:0.86			10.4, P, 5°, PL, RO, CL, OP,					
		11											11.24, J, 45°, PL, RO, CL, OP, 11.27, P, 30°, PL, RO, CL, OP,
		11.50	76		d:1.34 ; a:1.43			11.51, P, 3°, PL, SO, CL, OP,					

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840.02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235.97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)	Estimated Strength			
	No Water Loss		76		SST	Rock SANDSTONE: slightly to fresh weathered, medium to high strength, pale grey, fine grained, with carbonaceous beddings..				VLS 0.1 LS 0.3 MS 1.0 HS 3 VHS 10 EPS	RQD = 96.86% TCR = 100%		
		12.50	75				12.50		d:0.97 ; a:0.82				
		13					13	SW-F					
		13.50	74				13.50		d:0.63 ; a:0.94				
		14					14						
		14.50	73			Rock SANDSTONE: fresh weathered, high strength, pale grey, fine grained, with carbonaceous beddings.	14.50		d:0.78 ; a:0.1.05				
		15					15	F					
		15.50	72				15.50		d:0.57 ; a:1.68				

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840.02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235.97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)	Estimated Strength MLS 0.1 LS 0.3 MS 1.0 HS 3 VHS 10 EHS			
	No Water Loss		72		SST	Rock SANDSTONE: fresh weathered, high strength, pale grey, fine grained, with carbonaceous beddings.		F			RQD = 100% TCR = 100%		16.13, P, PL, VR, CL, OP, 16.8, P, 5°, PL, RO, CL, OP, 17.08, P, 5°, PL, VR, CL, OP, 17.19, P, 20°, PL, RO, CL, OP, 17.98, P, 30°, PL, VR, CL, OP, 18.38, P, PL, RO, CL, OP, 18.91, P, 10°, PL, RO, CL, OP,
		16.50	71				16.50		d:1.39 ; a:2.12				
		17					17						
		17.50	70				17.50		d:0.84 ; a:1.22				
		18					18						
		18.50	69				18.50		d:1.68 ; a:1.64				
		19					19						
		19.50	68				19.50		d:1.56 ; a:2.21				

UTM : 56S	Driller Rig : Man Portable	Job Number : P3444
Easting : 330840.02	Driller Supplier : TIGHT Site	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261235.97	Logged By : Mahmoud Jangidaryan	Project : Lindfield
RL : 87.50(m)	Reviewed By : Ozzie Baskan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 20.4 m	Date : 11/02/2025	Loc Comment : North-eastern corner of the tennis court at 63 Trafalgar Avenue.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)	Estimated Strength MLS 0.1 LS 0.3 MS 1.0 HS 3 VHS 10 EHS			
↑ NMLC Coring ↓			68		SST	Rock SANDSTONE: fresh weathered, high strength, pale grey, fine grained, with carbonaceous beddings.		F			RQD = 100% TCR = 100%		
									d:2.27 ; a:0.88				
						BH3 Reached Target Depth at 20.4m							

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CLIENT NAME: Landmark Group

PROJECT: Lindfield

LOCATION: 63 Trafalgar Ave

JOB NUMBER: P3444

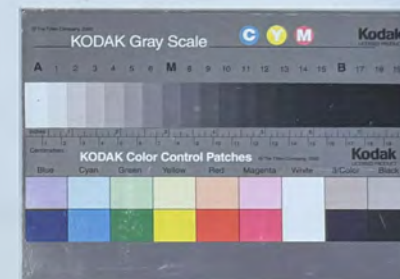
LOGGED BY: MS

BOREHOLE ID: BH3

DEPTH: 0.6 to 5.0m

CORE TRAY NO: Box 1 of 4

DATE: 11, 2, 25



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH3 - Box 1 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH3

BH Depth

CorePhoto

morrow

CLIENT NAME: Landmark Group

PROJECT: Lindfield

LOCATION: 63 Trafalgar Ave

JOB NUMBER: P3444

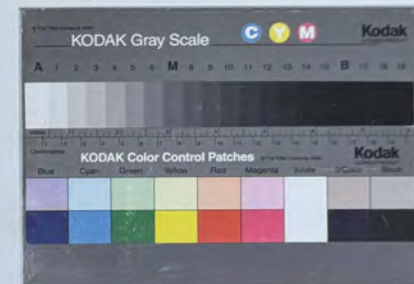
LOGGED BY: MJ

BOREHOLE ID: BH3

DEPTH: 5.0 to 10.0m

CORE TRAY N: Box 2 of 4

DATE: 11, 2, 25



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH3 - Box 2 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH3

BH Depth

CorePhoto

morrow

CLIENT NAME: Landmark Group

PROJECT: Lindfield

LOCATION: 63 Trafalgar Ave

JOB NUMBER: P3444

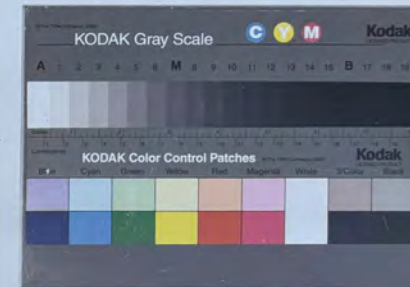
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BOREHOLE ID: BH3

DEPTH: 10.0 to 15.0m

CORE TRAY N: Box 3 of 4

DATE: 11, 2, 25



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2/5-7 Malta Street, Fairfield
East NSW 2155



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Photo description

BH3 - Box 3 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

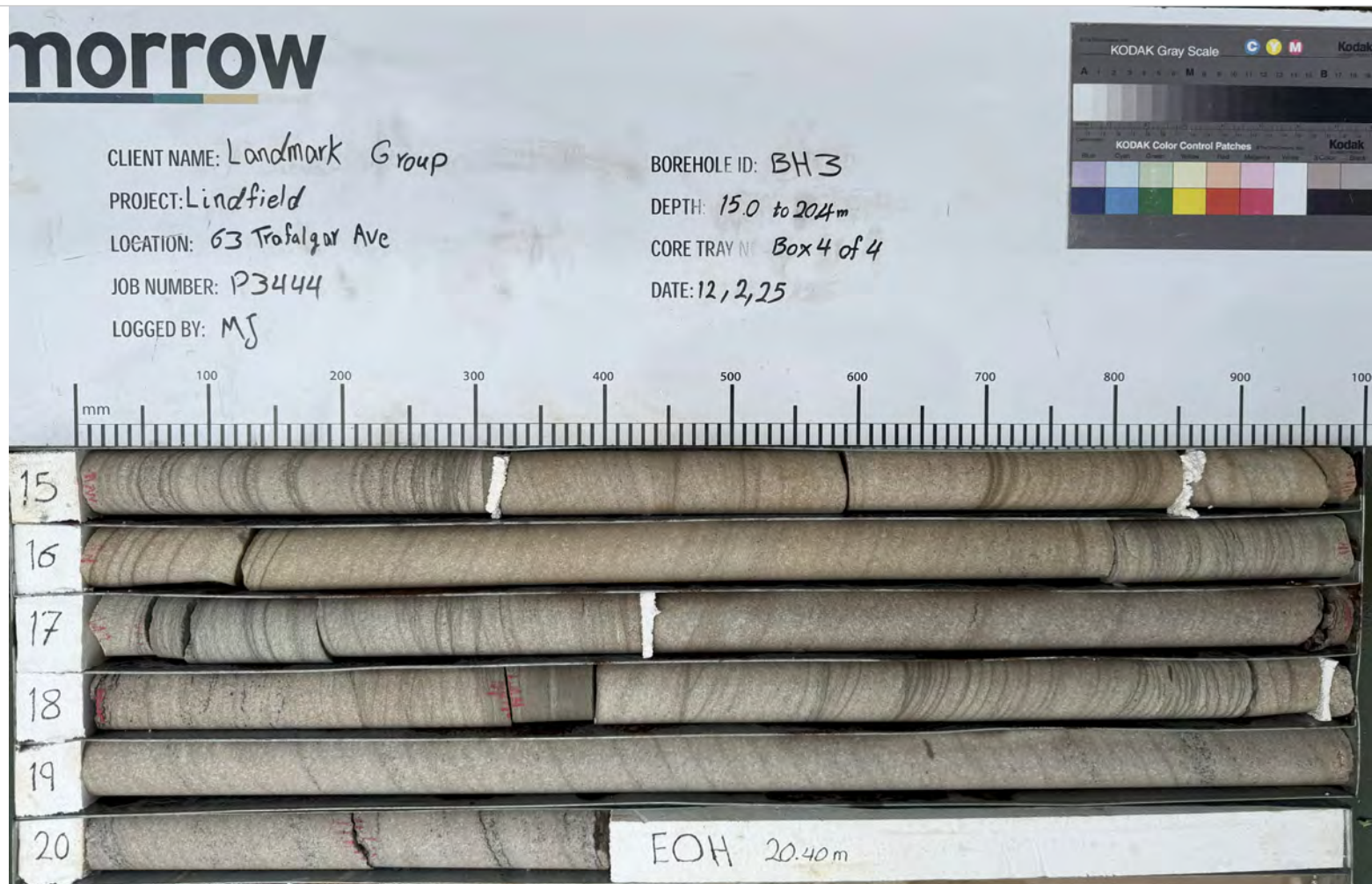
Not to Scale

BH No

BH3

BH Depth

CorePhoto



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Sydney Gadigal Land
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH3 - Box 4 of 4

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH3

BH Depth

CorePhoto

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330887,16	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261205,27	Logged By : Ozzie Baskan	Project : Lindfield
RL : 81.70(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 03/03/2025	Loc Comment : End of the driveway of 1B Valley Road.

Drilling Method	Water	Testing	Depth (m)	Elevation (m)	Material Type	Graphic Log	Classification Code	Material Description	Elevation	Consistency/Density	Moisture
		SPT							Depth (m)		
	2. GWNE			82	TOPSOIL		SM	Topsoil Silty SAND very loose to loose, dark grey, fine grained, dry.		VL-L	D
					FILL		CL	FILL Silty CLAY low plasticity, soft to firm, dark grey, w < pl.	81.5 0.2	S-F	w < PL
		2,2,3 (N=5)			Residual		CI-CH	Residual Silty CLAY firm to stiff, medium to high plasticity, pale brown, w > pl, with organic matter (roots).	81.2 0.5	F-St	w > PL
			1	81							
		8,5,3 (N=8)			Residual		CI-CH	Residual Silty CLAY firm to stiff, medium to high plasticity, grey white mottled red, w > pl, with organic matter (roots).	80.2 1.5	F-St	w > PL
			2	80							
					Rock		SST	Extremely weathered Sandstone, Silty CLAY hard, low to medium plasticity, pale grey mottled brown, with ironstone and sandstone bands.	79.2 2.5	VLS	
			3	79	Rock		SST	Rock SANDSTONE: highly weathered, very low to low strength, white grey red, fine to medium grained.	78.7 3	VLS-LS	
								Commenced Coring at 3.62m	78.1 3.62		

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330887.16	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261205.27	Logged By : Ozzie Baskan	Project : Lindfield
RL : 81.70(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 03/03/2025	Loc Comment : End of the driveway of 1B Valley Road.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness											
									Is(50)																
			82																						
		0.50	81				0.50								1	1.50	80	2	2.50	79	3	3.50	78		
NMLC Coring				SST	Rock SANDSTONE: moderately weathered, high strength, red grey pale brown, fine to medium grained, with iron staining.		MW				RQD = 100% TCR = 100%		3.62, P, PL, RO, CL, OP,												
								d:0.86; a:1.82																	

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330887.16	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261205.27	Logged By : Ozzie Baskan	Project : Lindfield
RL : 81.70(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 03/03/2025	Loc Comment : End of the driveway of 1B Valley Road.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness		
									Is(50)						
NMLC Coring	Loss 10% Water Loss		78		SST	Rock SANDSTONE: moderately weathered, high strength, red grey pale brown, fine to medium grained, with iron staining.		MW		VLS 0.1 LS 0.3 MS 1.0 HS 3 VHS 10 EHS	RQD = 100% TCR = 100%	30 100 300 1000 3000	4.06, P, 30°, PL, RO, CL, OP,		
		4.50	77				4.50								
					4.68		d:0.38, a:0.46		4.67, J, 5°, PL, RO, CT, OP,						
		5			5	MW								5.2, 5°, PL, RO, CL, OP,	
					5.4										
		5.50	76			SST	Rock SANDSTONE: moderately weathered, medium strength, orange pale grey, fine to medium grained, with ironstone staining.	5.50	MW	d:0.87, a:0.68					
		6			6										
					6.16										
		6.50	75			SST	As above, but pale grey.	6.50	MW	d:0.59, a:0.88					6.68, P, 30°, PL, RO, VN, OP,
		7			7				6.88, J, 5°, PL, RO, STN, OP, (X2),						
											7.05, P, 5°, PL, RO, STN, OP, (X2),				
						</									

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330887,16	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261205,27	Logged By : Ozzie Baskan	Project : Lindfield
RL : 81.70(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 03/03/2025	Loc Comment : End of the driveway of 1B Valley Road.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)				
NMLC Coring			74		SST	Rock SANDSTONE: slightly weathered, medium to high strength, pale grey, fine to medium grained.				VLS 0.1 LS 0.3 MS 1.0 HS 3 VHS 10 EHS	RQD = 100% TCR = 100%		8.46, P, 30°, PL, RO, CL, OP, 8.95, P, 5°, PL, RO, CL, OP, 10.55, P, 5°, PL, RO, VN, OP, 11.46, P, 5°, IR, RO, CL, OP,
	8.50	73	8.50				d:0.56, a:1.09						
			9										
			9.50				72						
			10					d:0.52, a:1.44					
			10.50				71		d:0.73, a:1.31				
			11										
			11.50				70		d:0.62, a:1.61				
		Loss 0% Water Loss											

Job Number : P3444
Client : Landmark Group Construction Australia Pty Ltd
Project : Lindfield
Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Loc Comment : End of the driveway of 1B Valley Road.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness	
									Is(50)						
NMLC Coring			70		SST	Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to medium grained, ..	12								
		12.50	69	12.50											
	Loss 0% Water Loss		13	13											
			13.50	68			13.50								
			14	14			SW								
		14.50	67	14.50											
		15	15												
		15.50	66	15.50											
	Loss 0% Water Loss														

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330887,16	Driller Supplier : GEONSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261205,27	Logged By : Ozzie Baskan	Project : Lindfield
RL : 81.70(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 03/03/2025	Loc Comment : End of the driveway of 1B Valley Road.

Drilling Method	Water	Depth (m)	Elevation (m)	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description type, inclination, planarity, roughness, coating, thickness
									Is(50)				
NMLC Coring	0% Water Loss	66			SST	Rock SANDSTONE: slightly weathered, high strength, pale grey, fine to medium grained, .,		SW			RQD = 100% TCR = 100%		16.5, P, 10°, IR, RO, STN, ,
		16.50	65				16.50		d:0.76, a:1.85				
		17					17						
		17.50	64				17.50		d:0.89, a 1.08				
						BH4 Reached Target Depth at 18m							

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave., Lindfield

JOB NUMBER: P3444

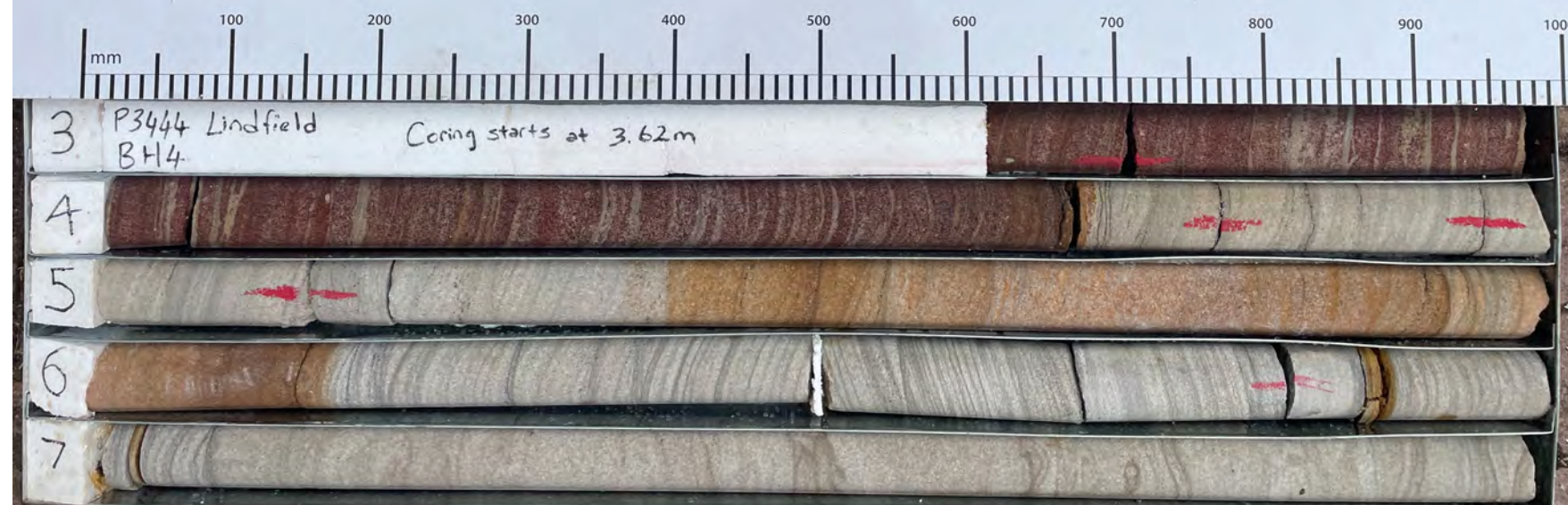
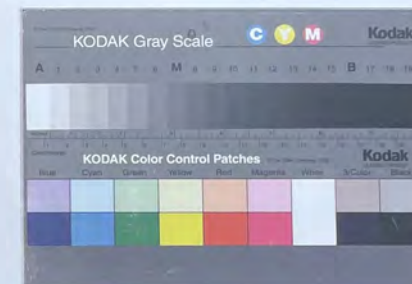
LOGGED BY: Ozzie B.

BOREHOLE ID: BH4

DEPTH: 3.62m to 8.0m

CORE TRAY: 1 of 3

DATE: 3/13/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH4 - Box 1 of 3

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH4

BH Depth

CorePhoto

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CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

LOGGED BY: Ozzie B.

BOREHOLE ID: BH4

DEPTH: 80m to 130m

CORE TRAY: 2 of 3

DATE: 3/3/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH4 - Box 2 of 3

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH4

BH Depth

CorePhoto

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CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

LOGGED BY: Ozzie B.

BOREHOLE ID: BH4

DEPTH: 13.0m to 18.0m

CORE TRAY: 3 of 3

DATE: 3/13/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH4 - Box 3 of 3

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH4

BH Depth

CorePhoto

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330828,69	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261173,80	Logged By : Ozzie Baskan	Project : Lindfield
RL : 83.80(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 28/02/2025	Loc Comment : Driveway of 1B Valley road.

Drilling Method	Water	Well Diagram	Testing	Elevation	Graphic Log	Material Type	Classification Code	Material Description	Depth (m)	Consistency	Weathering	Moisture
				Depth (m)								
				83.4		TOPSOIL	CL-CI	Topsoil Silty CLAY low to medium plasticity, dark grey, with fine to medium sized gravel, with fine grained sand, w < pl.	0.4			w < PL
				0.4				Residual Sandy CLAY stiff to very stiff, low to medium plasticity, pale brown white, with fine sized gravel, with low plasticity silt, w < pl.	1	St-VSt		w < PL
				82.3		Rock	SST	Extremely weathered Sandstone, Silty CLAY hard, low to medium plasticity, pale grey mottled brown, with ironstone and sandstone bands.	1.5	VLS	XW	
				1.5				Rock SANDSTONE: highly weathered, very low strength, pale brown white pale grey red, fine grained, with ironstone bands.	2.5	VLS	HW	
				81.3					3			
				2.5				Commenced Coring at 3.3m	3.3			

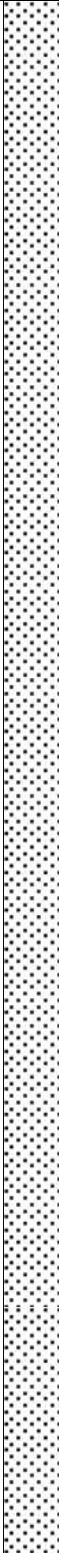
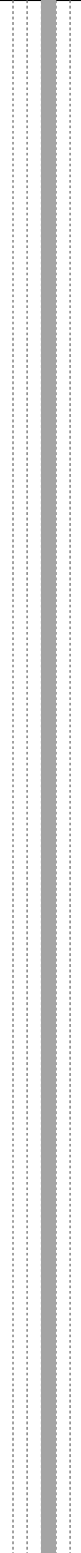
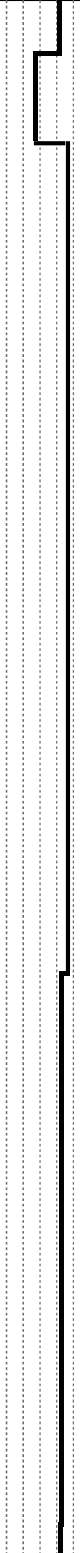
UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330828,69	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261173,80	Logged By : Ozzie Baskan	Project : Lindfield
RL : 83.80(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 28/02/2025	Loc Comment : Driveway of 1B Valley road.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
		C								VLS 0.1 LS 0.3 MS 1.0 HS 3 EPS 10		30 100 300 1000 3000	
							1						
							2						
							3						
						Commenced Coring at 3.3m							
NMLC Coring Loss - 20% Water Loss			80.3		SST	Rock SANDSTONE: highly weathered, very low strength, pale brown white pale grey red, fine grained, with ironstone bands.	3.55	MW	d:0.02 ; a:0.02		RQD = 84.52% TCR = 95%		3.3-3.5, XWS, 5°,
			3.55		SST	Rock SANDSTONE: moderately weathered, medium strength, red mottled white, fine to medium grained, iron staining.			d:0.73 ; a:0.77				3.7-3.78, XWS, 3.92, J, 30°, PL, RO, STN, OP,

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330828,69	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261173,80	Logged By : Ozzie Baskan	Project : Lindfield
RL : 83.80(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 28/02/2025	Loc Comment : Driveway of 1B Valley road.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
			78.7		SST	Rock SANDSTONE: moderately weathered, medium strength, red mottled white, fine to medium grained, iron staining.	5	MW			RQD = 84.52% TCR = 95%		4.09, P, 5°, IR, RO, STN, OP,
			5.06			Rock SANDSTONE: moderately weathered, medium strength, pale grey mottled red, fine to medium grained, iron staining.	5.06	MW	d:0.44 ; a:0.38				4.18-4.23, XWS,
			78.4			Rock SANDSTONE: moderately weathered, medium strength, pale red mottled white, fine to medium grained, iron staining.	5.4	MW					4.85, P, 5°, UN, RO, STN, OP,
			77.8			Rock SANDSTONE: moderately weathered, medium strength, pale grey, fine to medium grained, ..	6.03	MW	d:0.41 ; a:0.88				5.02-5.05, XWS,
			77.4			Core loss	6.4		d:0.76 ; a:0.76				5.77-5.79, XWS,
			77.3		SST	Rock SANDSTONE: slightly to fresh weathered, high strength, pale grey, fine to medium grained, with carbonaceous laminations.	6.55	SW-F			RQD = 95% TCR = 95%		6.02, J, 10°, IR, RO, STN, OP,
							7		d:0.71 ; a:1.04				7.08, P, 5°, PL, RO, CL, OP,

UTM	: 56S	Driller Rig	: GEO205 - Comacchio	Job Number	: P3444
Easting	: 330828,69	Driller Supplier	: GEOSENSE	Client	: Landmark Group Construction Australia Pty Ltd
Northing	: 6261173,80	Logged By	: Ozzie Baskan	Project	: Lindfield
RL	: 83.80(m)	Reviewed By	: Mahmoud Jangidaryan	Location	: 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth	: 18 m	Date	: 28/02/2025	Loc Comment	: Driveway of 1B Valley road.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)					
NMLC Coring	Loss - 0% Water Loss				SST	Rock SANDSTONE: slightly to fresh weathered, high strength, pale grey, fine to medium grained, with carbonaceous laminations.		SW-F				RQD = 95% TCR = 95%		8.13, P, 10°, PL, RO, CL, OP, (X2), 8.36, P, 5°, PL, RO, CT, OP, 10.48, J, 30°, PL, SO, VN, OP, 11.89, P, 5°, IR, RO, CT, OP,
							d:1.52 ; a:1.74							
							d:1.43 ; a:1.60							
							d:1.38 ; a:1.38							
	Loss - 0% Water Loss						9					RQD = 100% TCR = 100%		
							10		d:1.38 ; a:1.38					
							11		d:1.5 ; a:1.67					

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330828,69	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261173,80	Logged By : Ozzie Baskan	Project : Lindfield
RL : 83.80(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 28/02/2025	Loc Comment : Driveway of 1B Valley road.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing		Estimated Strength LS 0.1 LS 0.3 MS 1.0 VHS 3 EHS 10	RQD% and TCR%	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description
			Depth (m)						Is(50)					
NMLC Coring	Loss - 0% Water Loss	50mm PVC Slotted		SST	Rock SANDSTONE: slightly to fresh weathered, high strength, pale grey, fine to medium grained, with carbonaceous laminations.		SW-F			LS 0.1 LS 0.3 MS 1.0 VHS 3 EHS 10	RQD = 100% TCR = 100%	30 100 300 1000 3000	13.11, J, 10°, PL, RO, VN, OP, 13.65, J, 5°, IR, RO, CT, OP, (X2), 14.17, P, 30°, PL, RO, CT, OP,	
			13			d:1.39 ; a:2.30								
			14			d:1.51 ; a:1.63								
			15			d:1.58 ; a:2.09								
	d:1.69 ; a:1.93		RQD = 100% TCR = 100%											

UTM : 56S	Driller Rig : GEO205 - Comacchio	Job Number : P3444
Easting : 330828,69	Driller Supplier : GEOSENSE	Client : Landmark Group Construction Australia Pty Ltd
Northing : 6261173,80	Logged By : Ozzie Baskan	Project : Lindfield
RL : 83.80(m)	Reviewed By : Mahmoud Jangidaryan	Location : 59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW
Total Depth : 18 m	Date : 28/02/2025	Loc Comment : Driveway of 1B Valley road.

Drilling Method	Water	Well Diagram	Elevation	Graphic Log	Classification Code	Material Description	Depth (m)	Weathering	Testing	Estimated Strength	RQD% and TCR%	Defect Spacing (mm)	Defect Description
			Depth (m)						Is(50)				
						Rock SANDSTONE: slightly to fresh weathered, high strength, pale grey, fine to medium grained, with carbonaceous laminations.	17	SW-F	d:1.70 ; a:1.73	VLS 0.1 LS 0.3 MS 1.0 HS 3 EPS 10	RQD = 100% TCR = 100%	30 100 300 1000 3000	
									d:2.17 ; a:2.32				
						BH5 Reached Target Depth at 18m							

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

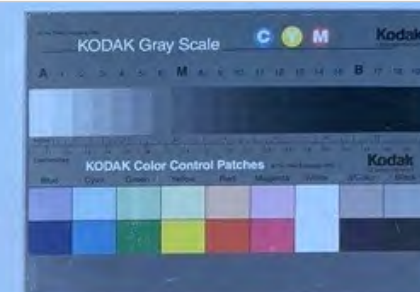
LOGGED BY: Ozzie B.

BOREHOLE ID: BH5

DEPTH: 3.3m to 8.0m

CORE TRAY: 1 of 3

DATE: 28/03/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH5 - Box 1 of 3

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH5

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

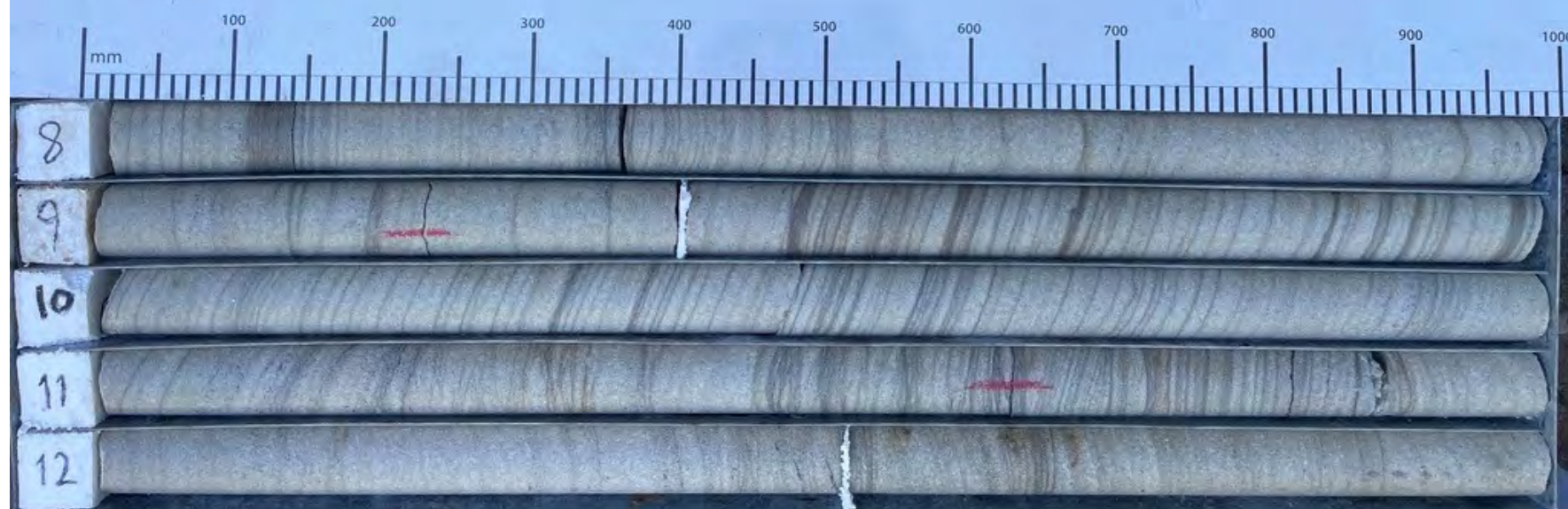
LOGGED BY: Ozzie B.

BOREHOLE ID: BH5

DEPTH: 8m to 13m

CORE TRAY: 2 of 3

DATE: 28/02/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH5 - Box 2 of 3

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH5

BH Depth

CorePhoto

morrow

CLIENT NAME: LANDMARK

PROJECT:

LOCATION: 63 Trafalgar Ave, Lindfield

JOB NUMBER: P3444

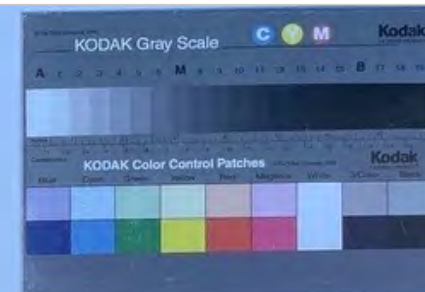
LOGGED BY: Ozzie B.

BOREHOLE ID: BH5

DEPTH: 13m to 18m

CORE TRAY: 3 of 3

DATE: 28/03/2025



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Sydney Gadigal Land,
2/5-7 Malta Street, Fairfield
East NSW 2155



info@morrowgeo.com.au

Photo description

BH5 - Box 3 of 3

Client

Landmark Group Construction Australia Pty Ltd

Location

59-63 Trafalgar Avenue & 1A/B Valley Road, Lindfield NSW

Project name

Lindfield

Project No

P3444

Scale

Not to Scale

BH No

BH5

BH Depth

CorePhoto

GENERAL

Information obtained from site investigations is recorded on log sheets. The "Cored Drill Hole Log" presents data from an operation where a core barrel has been used to recover material - commonly rock. The "Non-Core Drill Hole - Geological Log" presents data from an operation where coring has not been used and information is based on a combination of regular sampling and insitu testing. The material penetrated in non-core drilling is commonly soil but may include rock. The "Excavation - Geological Log" presents data and drawings from exposures of soil and rock resulting from excavation of pits, trenches, etc.

The heading of the log sheets contains information on Project Identification, Hole or Pit Identification, Location and Elevation. The main section of the logs contains information on methods and conditions, material substance description and structure presented as a series of columns in relation to depth below the ground surface which is plotted on the left side of the log sheet. The common depth scale is 8m per drill log sheet and about 3-5m for excavation logs sheets.

As far as is practicable the data contained on the log sheets is factual. Some interpretation is inevitable in the identification of material boundaries in areas of partial sampling, the location of areas of core loss, description and classification of material, estimation of strength and identification of drilling induced fractures. Material description and classifications are based on SAA Site Investigation Code AS 1726 - 1993 with some modifications as defined below.

These notes contain an explanation of the terms and abbreviations commonly used on the log sheets.

DRILLING

Drilling & Casing

ADV	Auger Drilling with V-Bit
ADT	Auger Drilling with TC Bit
WB	Wash-bore drilling
RR	Rock Roller
NMLC	NMLC core barrel
NQ	NQ core barrel
HMLC	HMLC core barrel
HQ	HQ core barrel

Drilling Fluid/Water

The drilling fluid used is identified and loss of return to the surface estimated as a percentage.

Drilling Penetration/Drill Depth

Core lifts are identified by a line and depth with core loss per run as a percentage. Ease of penetration in non-core drilling is abbreviated as follows:

VE	Very Easy
E	Easy
M	Medium
H	High
VH	Very High

Groundwater Levels

Date of measurement is shown.

Standing water level measured in completed boreholeLevel taken during or immediately after drilling

D	Disturbed
B	Bulk
U	Undisturbed
SPT	Standard Penetration Test
N	Result of SPT (sample taken)
PBT	Plate Bearing Test
PZ	Piezometer Installation
HP	Hand Penetrometer Test

EXCAVATION LOGS

Explanatory notes are provided at the bottom of drill log sheets. Information about the origin, geology and pedology may be entered in the "Structure and other Observations" column. The depth of the base of excavation (for the logged section) at the appropriate depth in the "Material Description" column. Refusal of excavation plant is noted should it occur. A sketch of the exposure may be added.

MATERIAL DESCRIPTION – SOIL

Classification Symbol - In accordance with the Unified Classification System (AS 1726-1993, Appendix A, Table A1)

Material Description - In accordance with AS 1726-1993, Appendix A2.3

Moisture Condition

D	Dry, looks and feels dry
M	Moist, No free water on remoulding
W	Wet, free water on remoulding

Consistency - In accordance with AS 1726-1993, Appendix A2.5

VS	Very Soft	< 12.5 kPa
S	Soft	12.5 – 25 kPa
F	Firm	25 – 50 kPa
St	Stiff	50 – 100 kPa
VSt	Very Stiff	100 – 200 kPa
H	Hard	> 200 kPa

Strength figures quoted are the approximate range of undrained shear strength for each class.

Density Index. (%) is estimated or is based on SPT results.

VL	Very Loose	< 15 %
L	Loose	15 – 35 %
MD	Medium Dense	35 – 65 %
D	Dense	65 – 85 %
VD	Very Dense	> 85 %

MATERIAL DESCRIPTION -ROCK

Material Description

Identification of rock type, composition and texture based on visual features in accordance with AS 1726-1993, Appendix A3.1-A3.3 and Tables A6a, A6b and A7.

Core Loss

Is shown at the bottom of the run unless otherwise indicated.

Bedding

Thinly Laminated	< 6 mm
Laminated	6 - 20
Very Thinly Bedded	20 - 60
Thinly Bedded	60 - 200
Medium Bedded	200 - 600
Thickly Bedded	600 - 2000
Very Thickly Bedded	> 2000

Weathering - No distinction is made between weathering and alteration. Weathering classification assists in identification but does not imply engineering properties.

Fresh (F)	Rock substance unaffected by weathering
Slightly Weathered (SW)	Rock substance partly stained or discoloured. Colour and texture of fresh rock recognisable.
Moderately Weathered (MW)	Staining or discolouration extends throughout rock substance. Fresh rock colour not recognisable.
Highly Weathered (HW)	Stained or discoloured throughout. Signs of chemical or physical alteration. Rock texture retained.
Extremely Weathered (EW)	Rock texture evident but material has soil properties and can be remoulded.

Strength - The following terms are used to described rock strength:

Rock Strength Class	Abbreviation	Point Load Strength Index, Is(50) (MPa)
Extremely Low	EL	< 0.03
Very Low	VL	0.03 to 0.1
Low	L	0.1 to 0.3
Medium	M	0.3 to 1
High	H	1 to 3
Very High	VH	3 to 10
Extremely High	EH	≥ 10

Strengths are estimated and where possible supported by Point Load Index Testing of representative samples. Test results are plotted on the graphical estimated strength by using Diametral Point Load Tests and Axial Point Load Tests.

Where the estimated strength log covers more than one range it indicates the rock strength varies between the limits shown.

MATERIALS STRUCTURE/FRACTURES

ROCK

Natural Fracture Spacing - A plot of average fracture spacing excluding defects known or suspected to be due to drilling, core boxing or testing. Closed or cemented joints, drilling breaks and handling breaks are not included in the Natural Fracture Spacing.

Visual Log - A diagrammatic plot of defects showing type, spacing and orientation in relation to core axis.

Defects		
	—————	Defects open in-situ or clay sealed
	-----	Defects closed in-situ
		Breaks through rock substance

Additional Data - Description of individual defects by type, orientation, in-filling, shape and roughness in accordance with AS 1726-1993, Appendix A Table A10, notes and Figure A2.

Orientation - angle relative to the plane normal to the core axis.

Type		
	BP JT SM FZ SZ VN FL CL DL HB DB	Bedding Parting Joint Seam Fracture Zone Shear Zone Vein Foliation Cleavage Drill Lift Handling Break Drilling Break
Infilling	CN X Clay KT CA Fe Qz MS MU	Clean Carbonaceous Clay Chlorite Calcite Iron Oxide Quartz Secondary Mineral Unidentified Mineral
Shape	PR CU UN ST IR DIS	Planar Curved Undulose Stepped Irregular Discontinuous
Roughness	POL SL S RF VR	Polished Slickensided Smooth Rough Very Rough

SOIL

Structures - Fissuring and other defects are described in accordance with AS 1726-1993, Appendix A2.6, using the terminology for rock defects.

Origin - Where practicable an assessment is provided of the probable origin of the soil, eg fill, topsoil, alluvium, colluvium, residual soil

APPENDIX B

WATER QUALITY LABORATORY TESTING CERTIFICATES

CLIENT DETAILS

Contact Andrew Butel
Client MORROW GEOTECHNICS PTY LTD
Address 79/6 Bellambi Lane
 Bellambi
 NSW 2518

Telephone (Not specified)
Facsimile (Not specified)
Email andy@morrowgeo.com.au

Project **P3444 Lindfield**
Order Number **P3444**
Samples 3

LABORATORY DETAILS

Manager Shane McDermott
Laboratory SGS Alexandria Environmental
Address Unit 16, 33 Maddox St
 Alexandria NSW 2015

Telephone +61 2 8594 0400
Facsimile +61 2 8594 0499
Email au.environmental.sydney@sgs.com

SGS Reference **SE280753 R0**
Date Received 2/4/2025
Date Reported 9/4/2025

COMMENTS

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

SIGNATORIES



Akheeqar BENIAMREEN
Chemist



Dong LIANG
Metals/Inorganics Team Leader



Ly Kim HA
Organic Section Head



Shane MCDERMOTT
Laboratory Manager

VOCs in Water [AN433] Tested: 7/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER - 2/4/25 11:00 SE280753.001	WATER - 2/4/25 11:00 SE280753.002	WATER - 2/4/25 11:00 SE280753.003
Benzene	µg/L	0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3
Naphthalene (VOC)*	µg/L	0.5	<0.5	<0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 7/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER - 2/4/25 11:00 SE280753.001	WATER - 2/4/25 11:00 SE280753.002	WATER - 2/4/25 11:00 SE280753.003
TRH C6-C9	µg/L	40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 7/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER - 2/4/25 11:00 SE280753.001	WATER - 2/4/25 11:00 SE280753.002	WATER - 2/4/25 11:00 SE280753.003
TRH C10-C14	µg/L	50	57	<50	<50
TRH C15-C28	µg/L	200	<200	470	<200
TRH C29-C36	µg/L	200	<200	470	<200
TRH C37-C40	µg/L	200	<200	<200	<200
TRH >C10-C16	µg/L	60	67	<60	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	67	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	790	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500
TRH C10-C40	µg/L	320	<320	1100	<320

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 7/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER - 2/4/25 11:00 SE280753.001	WATER - 2/4/25 11:00 SE280753.002	WATER - 2/4/25 11:00 SE280753.003
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1	<1



ANALYTICAL RESULTS

SE280753 R0

Anions by Ion Chromatography in Water [AN245] Tested: 4/4/2025

			BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00	2/4/25 11:00	2/4/25 11:00
			SE280753.001	SE280753.002	SE280753.003
PARAMETER	UOM	LOR			
Chloride	mg/L	1	380	110	470
Sulfate, SO4	mg/L	1	200	72	94
Nitrate Nitrogen, NO3-N	mg/L	0.005	<0.005	-	-
Fluoride	mg/L	0.1	0.48	-	-
Bromide	mg/L	0.05	1.9	-	-



ANALYTICAL RESULTS

SE280753 R0

pH in water [AN101] Tested: 2/4/2025

			BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00	2/4/25 11:00	2/4/25 11:00
			SE280753.001	SE280753.002	SE280753.003
PARAMETER	UOM	LOR			
pH**	No unit	-	5.9	6.3	4.7



ANALYTICAL RESULTS

SE280753 R0

Conductivity and TDS by Calculation - Water [AN106] Tested: 2/4/2025

			BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00	2/4/25 11:00	2/4/25 11:00
			SE280753.001	SE280753.002	SE280753.003
PARAMETER	UOM	LOR			
Conductivity @ 25 C	µS/cm	2	1300	440	1200
Total Dissolved Solids (by calculation)	mg/L	2	800	270	750

Alkalinity [AN135] Tested: 7/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER - 2/4/25 11:00 SE280753.001	WATER - 2/4/25 11:00 SE280753.002	WATER - 2/4/25 11:00 SE280753.003
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	69	86	<5
Carbonate Alkalinity as CaCO ₃	mg/L	1	<1	<1	<1
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5	<5	<5
Phenolphthalein Alkalinity as CaCO ₃ *	mg/L	5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	69	86	<5
Hydroxide Alkalinity as OH (meq/L)	meq/L	0.06	<0.06	<0.06	<0.06
Bicarbonate Alkalinity as HCO ₃ (meq/L)	meq/L	0.03	1.4	1.7	<0.03
Carbonate Alkalinity as CO ₃ (meq/L)	meq/L	0.03	<0.03	<0.03	<0.03



ANALYTICAL RESULTS

SE280753 R0

Acidity and Free CO2 [AN140] Tested: 8/4/2025

			BH2	BH5
			WATER	WATER
			-	-
			2/4/25 11:00	2/4/25 11:00
			SE280753.002	SE280753.003
PARAMETER	UOM	LOR		
Acidity to pH 8.3	mg CaCO3/L	5	91	110



ANALYTICAL RESULTS

SE280753 R0

Nitrite in Water [AN277] Tested: 2/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
PARAMETER	UOM	LOR	SE280753.001
Nitrite Nitrogen, NO2 as N	mg/L	0.005	<0.005
Total Oxidised Nitrogen, NOx-N	mg/L	0.005	<0.005



ANALYTICAL RESULTS

SE280753 R0

TKN Kjeldahl Digestion by Discrete Analyser [AN292] Tested: 8/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Total Kjeldahl Nitrogen	mg/L	0.05	0.52
Total Nitrogen (calc)	mg/L	0.05	0.53



ANALYTICAL RESULTS

SE280753 R0

Ammonia Nitrogen by Discrete Analyser [AN291] Tested: 2/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	0.17

Calculation of Anion-Cation Balance (SAR Calc) [AN121] Tested: 9/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Sum of Cation Milliequivalents*	meq/L	-	14
Sum of Anion Milliequivalents*	meq/L	-	16
Sum of Ions*	mg/L	-	958
Anion-Cation Balance	%	-	<0



ANALYTICAL RESULTS

SE280753 R0

Total Phosphorus by Kjeldahl Digestion DA in Water [AN279/AN293(Sydney only)] Tested: 8/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
PARAMETER	UOM	LOR	SE280753.001
Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	0.10



ANALYTICAL RESULTS

SE280753 R0

Filterable Reactive Phosphorus (FRP) [AN278] Tested: 2/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Filterable Reactive Phosphorus as P	mg/L	0.005	<0.005



ANALYTICAL RESULTS

SE280753 R0

Total Dissolved Solids (TDS) in water [AN113] Tested: 3/4/2025

			BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00	2/4/25 11:00	2/4/25 11:00
			SE280753.001	SE280753.002	SE280753.003
PARAMETER	UOM	LOR			
Total Dissolved Solids Dried at 175-185°C	mg/L	10	990	390	960



ANALYTICAL RESULTS

SE280753 R0

Turbidity [AN119] Tested: 2/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
PARAMETER	UOM	LOR	SE280753.001
Turbidity	NTU	0.5	150



ANALYTICAL RESULTS

SE280753 R0

Dissolved Oxygen by Membrane Electrode [AN176] Tested: 2/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
PARAMETER	UOM	LOR	SE280753.001
Temperature*	°C	-	18.3
Dissolved Oxygen**	mg/L	0.5	4.3
Dissolved Oxygen (percent saturation)**	%	1	45.6



ANALYTICAL RESULTS

SE280753 R0

Total and Volatile Suspended Solids (TSS / VSS) [AN114] Tested: 4/4/2025

			BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00	2/4/25 11:00	2/4/25 11:00
			SE280753.001	SE280753.002	SE280753.003
PARAMETER	UOM	LOR			
Total Suspended Solids Dried at 103-105°C	mg/L	5	280	240	950



ANALYTICAL RESULTS

SE280753 R0

Forms of Carbon [AN190] Tested: 3/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Total Organic Carbon as NPOC	mg/L	0.2	4.0



ANALYTICAL RESULTS

SE280753 R0

Redox Potential (Eh) in water [AN240] Tested: 2/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
PARAMETER	UOM	LOR	SE280753.001
Eh of Sample Relative to Standard H+ Electrode***	mV	-500	282
Temperature of Sample*	°C	0.1	22.6



ANALYTICAL RESULTS

SE280753 R0

Enterococci in Water [AN705] Tested: 3/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Date & Time Processed*	No unit	-	2025-04-02 20:32
Intestinal Enterococci*	CFU/100mL	1	5
Notes*	No unit	-	-



ANALYTICAL RESULTS

SE280753 R0

E. coli and Thermotolerant coliforms in Water (CFU) [AN703] Tested: 3/4/2025

			BH1
			WATER
			-
			2/4/25 11:00
			SE280753.001
PARAMETER	UOM	LOR	
Date & Time Processed*	No unit	-	2025-04-02 20:32
E. coli	CFU/100mL	1	10
Thermotolerant Coliforms	CFU/100mL	1	130

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 8/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER - 2/4/25 11:00 SE280753.001	WATER - 2/4/25 11:00 SE280753.002	WATER - 2/4/25 11:00 SE280753.003
Arsenic	µg/L	1	<1	<1	3
Cadmium	µg/L	0.1	0.2	<0.1	<0.1
Chromium	µg/L	1	<1	<1	<1
Copper	µg/L	1	4	<1	2
Lead	µg/L	1	<1	<1	<1
Nickel	µg/L	1	28	2	71
Zinc	µg/L	5	180	17	240
Silver	µg/L	1	<1	-	-
Aluminium	µg/L	5	67	-	-
Antimony	µg/L	1	<1	-	-
Barium	µg/L	1	29	-	-
Beryllium	µg/L	1	1	-	-
Boron	µg/L	5	120	-	-
Cobalt	µg/L	1	34	-	-
Iron	µg/L	5	6	-	-
Manganese	µg/L	1	2600	-	-
Molybdenum	µg/L	1	<1	-	-
Selenium	µg/L	1	<1	-	-
Strontium	µg/L	1	130	-	-
Uranium	µg/L	1	<1	-	-
Vanadium	µg/L	1	<1	-	-

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 8/4/2025

PARAMETER	UOM	LOR	BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00 SE280753.001	2/4/25 11:00 SE280753.002	2/4/25 11:00 SE280753.003
Calcium, Ca	mg/L	0.1	19	23	7.8
Magnesium, Mg	mg/L	0.1	30	3.7	27
Sodium, Na	mg/L	0.1	250	72	230
Potassium, K	mg/L	0.2	7.7	3.3	4.5
Iron, Fe	mg/L	0.02	<0.02	-	-
Total Hardness by Calculation	mg CaCO3/L	1	170	-	-
Sodium Adsorption Ratio	No unit	0.2	8.4	-	-
Lithium, Li	mg/L	0.005	0.042	-	-
Silicon, Si*	mg/L	0.05	24	-	-
Soluble Silicon as Silica, SiO2*	mg/L	0.1	51	-	-



ANALYTICAL RESULTS

SE280753 R0

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 3/4/2025

			BH1	BH2	BH5
			WATER	WATER	WATER
			-	-	-
			2/4/25 11:00	2/4/25 11:00	2/4/25 11:00
PARAMETER	UOM	LOR	SE280753.001	SE280753.002	SE280753.003
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001

METHOD

METHODOLOGY SUMMARY

- AN020** Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
- AN101** pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water 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 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. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
- AN106** Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present, measured by the conductivity, are present as NaCl.
- AN113** Total Dissolved Solids: A well-mixed filtered sample of known volume is evaporated to dryness at 180°C and the residue weighed. Approximate methods for correlating chemical analysis with dissolved solids are available. Reference APHA 2540 C.
- AN113** The Total Dissolved Solids residue may also be ignited at 550 C and volatile TDS (Organic TDS) and non-volatile TDS (Inorganic) can be determined.
- AN114** Total Suspended and Volatile Suspended Solids: The sample is homogenised by shaking and a known volume is filtered through a pre-weighed GF/C filter paper and washed well with deionised water. The filter paper is dried and reweighed. The TSS is the residue retained by the filter per unit volume of sample. Reference APHA 2540 D. Internal Reference AN114
- AN119** Turbidity by Nephelometry: Small particles in a light beam scatter light at a range of angles. A turbidimeter measures this scatter and reports results compared to turbidity standards, in NTU. This procedure is not suitable for very dark coloured liquids or samples with high solids because light absorption causes artificially low light scatter and low turbidity. Reference APHA 2130B.
- AN121** This method is used to calculate the balance of major Anions and Cations in water samples and converts major ion concentration to milliequivalents and then summed. Anions sum and Cation sum is calculated as a difference and expressed as a percentage.
- AN135** Alkalinity (and forms of) by Titration: The sample is titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
- AN140** Acidity by Titration: The water sample is titrated with sodium hydroxide to designated pH end point. In a sample containing only carbon dioxide, bicarbonates and carbonates, titration to pH 8.3 at 25°C corresponds to stoichiometric neutralisation of carbonic acid to bicarbonate. Method reference APHA 2310 B.
- AN176** Dissolved Oxygen: DO can also be measured directly using an oxygen permeable membrane electrode and meter. Under steady state conditions the current is directly proportional to the DO conc. DO can also be measured via Luminescent dissolved oxygen probes (LDO) which also operates using an oxygen permeable membrane with an oxygen sensitive luminescent dye making up the second probe layer. The presence of oxygen causes changes in the lifetime and intensity of luminescence, which are then quantified. Zero headspace is required for sample analysis, if headspace is observed report comment will be recorded. Reference APHA 4500-C, G & O.
- AN190** TOC and DOC in Water: A homogenised micro portion of sample is injected into a heated reaction chamber packed with an oxidative catalyst that converts organic carbon to carbon dioxide. The CO₂ is measured using a non-dispersive infrared detector. The process is fully automated in a commercially available analyser. If required a sugar value can be calculated from the TOC result. Reference APHA 5310 B.
- AN190** Chemical oxygen demand can be calculated/estimated based on the O₂/C relation as 2.67*NPOC (TOC). This is an estimate only and the factor will vary with sample matrix so results should be interpreted with caution.
- AN240** Oxidation-Reduction Potential (Eh): Electrometric measurements are made by potentiometric determination of electron activity (or intensity) with an inert indicator electrode and a suitable reference electrode. At redox equilibrium, the potential difference between the two electrodes equals the redox potential of the system. This measurement is then corrected for the difference between the potential of the reference electrode and that of the standard hydrogen electrode.
- 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
- AN277** Nitrite ions, when reacted with a reagent containing sulphanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride produce a highly coloured azo dye that is measured photometrically at 540nm.

AN278	Filterable Reactive Phosphorus by DA (determined on filtered sample): Orthophosphate reacts with ammonium molybdate (Mo VI) and potassium antimonyl tartrate (Sb III) in acid medium to form an antimony-phosphomolybdate complex. This complex is subsequently reduced with ascorbic acid to form a blue colour and the absorbance is read at 880 nm. The sensitivity of the automated method is 10-20 times that of the macro method. Reference APHA 4500-P F
AN279/AN293(Sydney)	The sample is digested with Sulphuric acid, K ₂ SO ₄ and CuSO ₄ . All forms of phosphorus are converted into orthophosphate. The digest is cooled and placed on the discrete analyser for colorimetric analysis.
AN281	An unfiltered water or soil sample is first digested in a block digester with sulfuric acid, K ₂ SO ₄ and CuSO ₄ . The ammonia produced following digestion is then measured colourimetrically using the Discrete Analyser. A portion of the digested sample is buffered to an alkaline pH, and interfering cations are complexed. The ammonia then reacts with salicylate and hypochlorite to give a blue colour whose absorbance is measured at 660nm and compared with calibration standards. This is proportional to the concentration of Total Kjeldahl Nitrogen in the original sample.
AN291	Ammonia in solution reacts with hypochlorite ions from Sodium Dichloroisocyanate, and salicylate in the presence of Sodium Nitroprusside to form indophenol blue and measured at 660 nm by Discrete Analyser.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D). Total PAH calculated from individual analyte detections at or above the limit of reporting .
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN703	A known volume of water is passed through a membrane of known pore size. The membrane is placed on a selective agar plate and incubated. The volume of sample filtered depends upon the expected count. Referenced to AS4276.5.
AN705	A known volume of water is passed through a membrane of known pore size. The membrane is placed on a selective agar plate and incubated. The volume of sample filtered depends upon the expected count. Referenced to AS/NZS4276.9 (ISO 7899-2:2000 MOD).
Calculation	Free and Total Carbon Dioxide may be calculated using alkalinity forms only when the samples TDS is <500mg/L. If TDS is >500mg/L free or total carbon dioxide cannot be reported . APHA4500CO2 D.

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.
		LNR	Sample listed, but not received.		

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:

- 1 Bq is equivalent to 27 pCi
- 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: www.sgs.com.au/en-gb/environment-health-and-safety.

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APPENDIX C

BOREHOLE PERMEABILITY TESTING

Rising Head Permeability Results

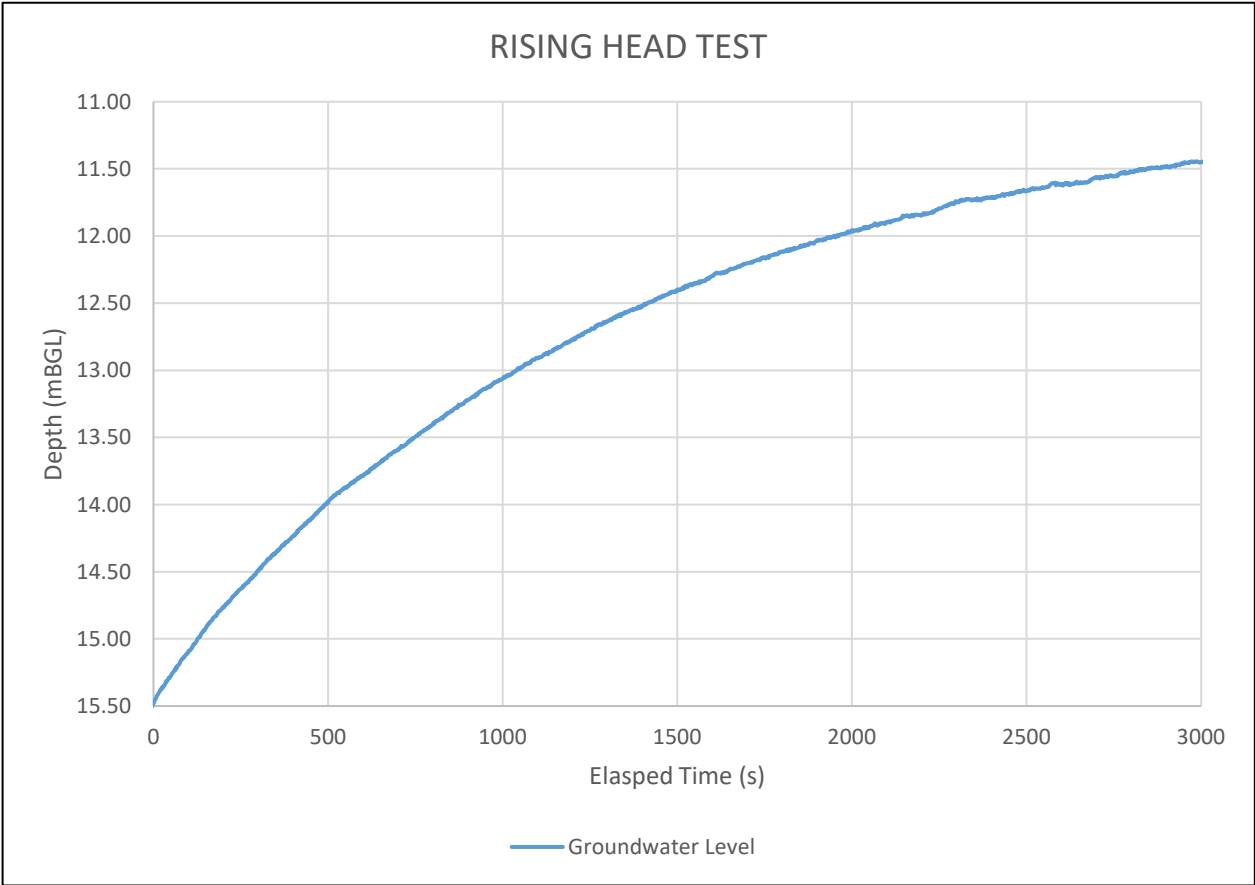
morrow

79/6 Bellambi Lane, Bellambi NSW 2518
P: 0405 843 933 | E: info@morrowgeo.com.au

Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH1 Test 3
Monitoring Date	28/02/2025

Static water level (mBGL)	8.55	Time (t1) (s)	26
Internal Diameter (D) (m)	0.07	Time (t2) (s)	1074
Length of Standpipe below Ground Level (m)	35.00		
Height of Water above Ground Level (m)	0.00	Initial Head (H1) at (t1)	15.37
Length of Standpipe above Ground Level (m)	0.00	Final Head (H2) at (t2)	12.95
Water level at start of test (mBGL)	8.55	Length of Response Zone (L)	26.45
Top of Response Zone (mBGL)	8.55	Cross Sectional Area (A)	0.0038
Bottom of Response Zone (mBGL)	35.00		

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D
$$\frac{2pL}{\log_e [(L/D) + \sqrt{1 + (L/D)^2}]} = \frac{166.19}{6.63} = 25.08$$

Permeability (k)
$$\frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 2.50E-08 \text{ m/s}$$

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

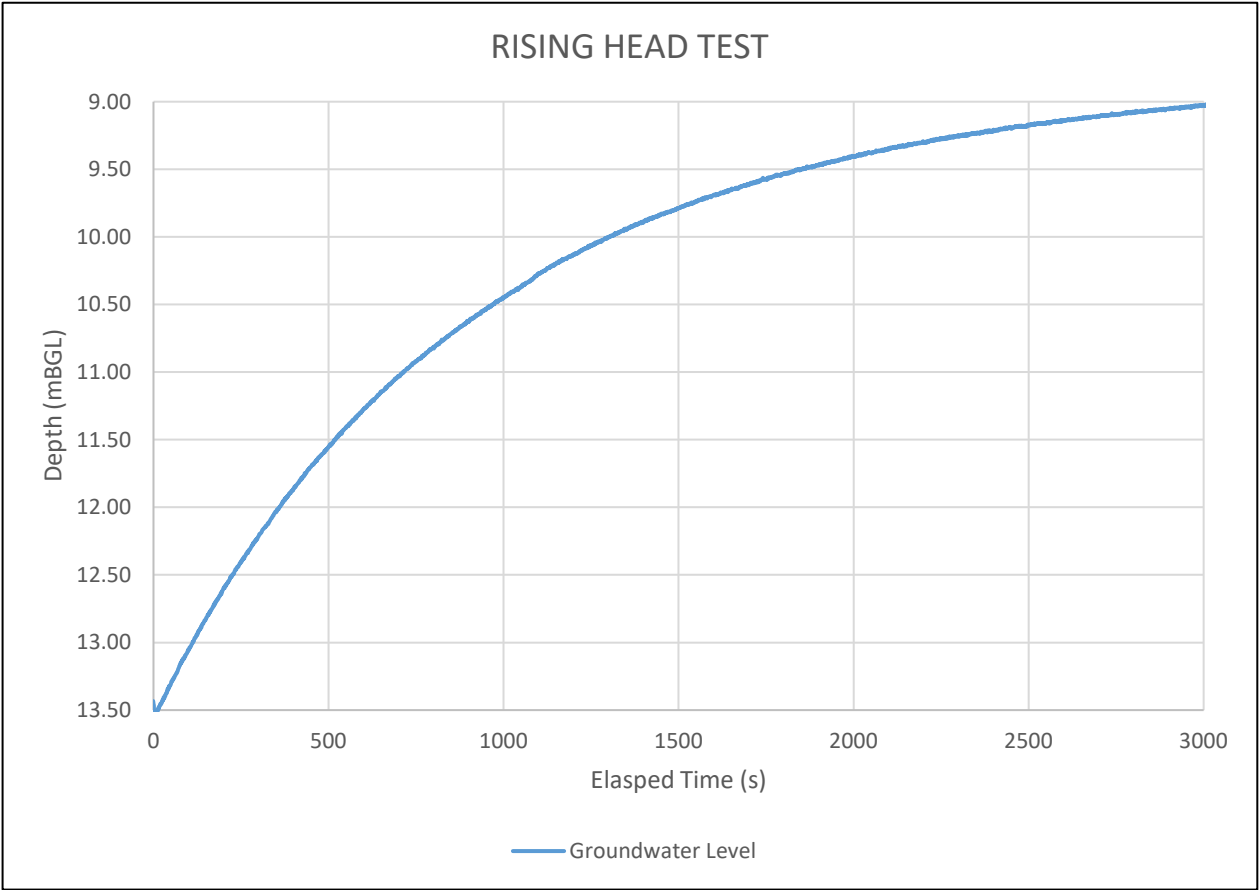
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Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH1 Test 4
Monitoring Date	2/04/2025

Static water level (mBGL)	8.55	Time (t1) (s)	13
Internal Diameter (D) (m)	0.07	Time (t2) (s)	1042
Length of Standpipe below Ground Level (m)	35.00		
Height of Water above Ground Level (m)	0.00	Initial Head (H1) at (t1)	13.50
Length of Standpipe above Ground Level (m)	0.00	Final Head (H2) at (t2)	10.39
Water level at start of test (mBGL)	8.55	Length of Response Zone (L)	26.45
Top of Response Zone (mBGL)	8.55	Cross Sectional Area (A)	0.0038
Bottom of Response Zone (mBGL)	35.00		

Stratigraphy Description: Fill and residual clay over sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \sqrt{1 + (L/D)^2}]}$ = $\frac{166.19}{6.63}$ = 25.08

Permeability (k) $\frac{A}{F (t_2 - t_1)} \log_e \frac{H_1}{H_2}$ = 3.90E-08 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

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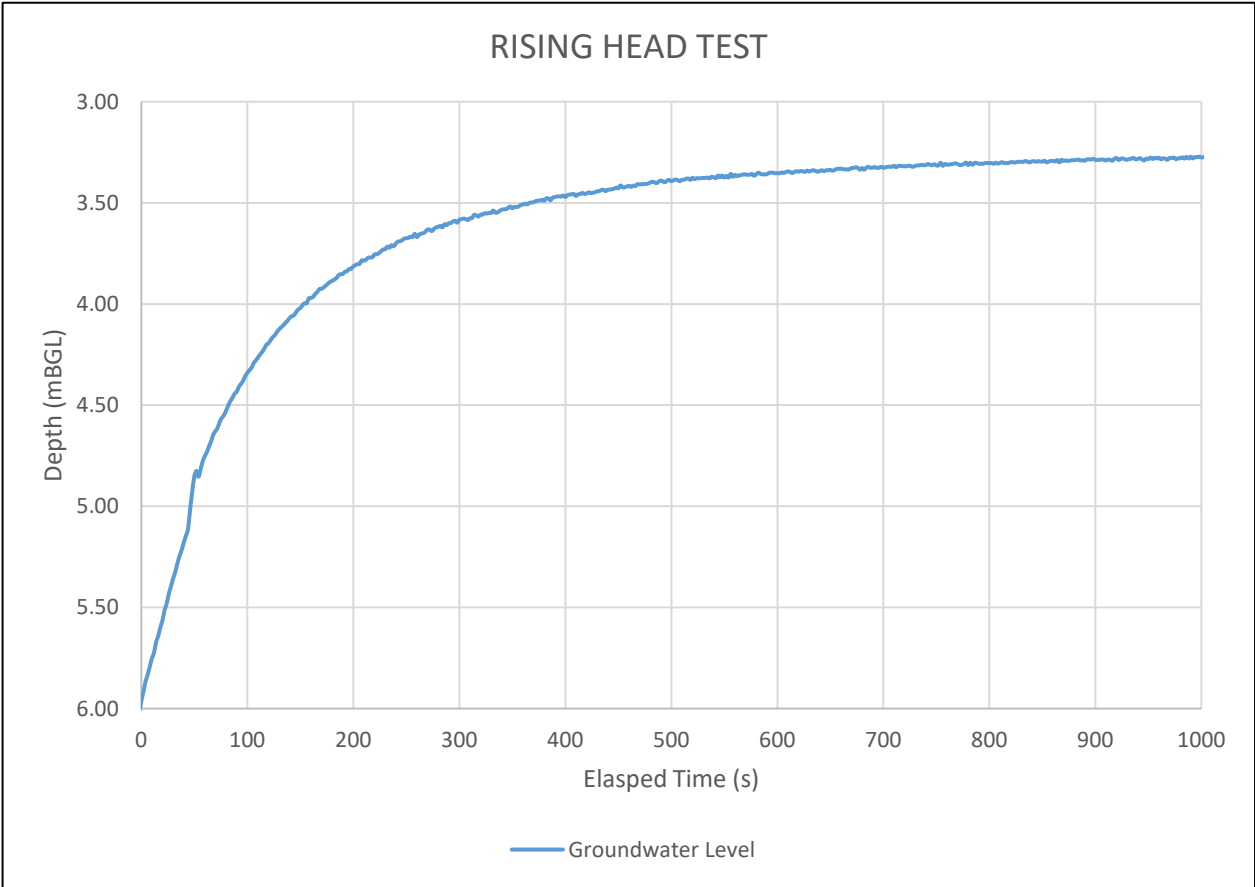
Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH2 Test 1
Monitoring Date	28/02/2025

Static water level (mBGL)	3.13
Internal Diameter (D) (m)	0.07
Length of Standpipe below Ground Level (m)	19.92
Height of Water above Ground Level (m)	0.00
Length of Standpipe above Ground Level (m)	0.00
Water level at start of test (mBGL)	3.13
Top of Response Zone (mBGL)	3.13
Bottom of Response Zone (mBGL)	19.92

Time (t1) (s)	2
Time (t2) (s)	218

Initial Head (H1) at (t1)	5.92
Final Head (H2) at (t2)	3.77
Length of Response Zone (L)	16.79
Cross Sectional Area (A)	0.0038

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \ddot{O}(1 + (L/D)^2)]}$ = $\frac{105.49}{6.17}$ = 17.09

Permeability (k) $\frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2}$ = 4.70E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

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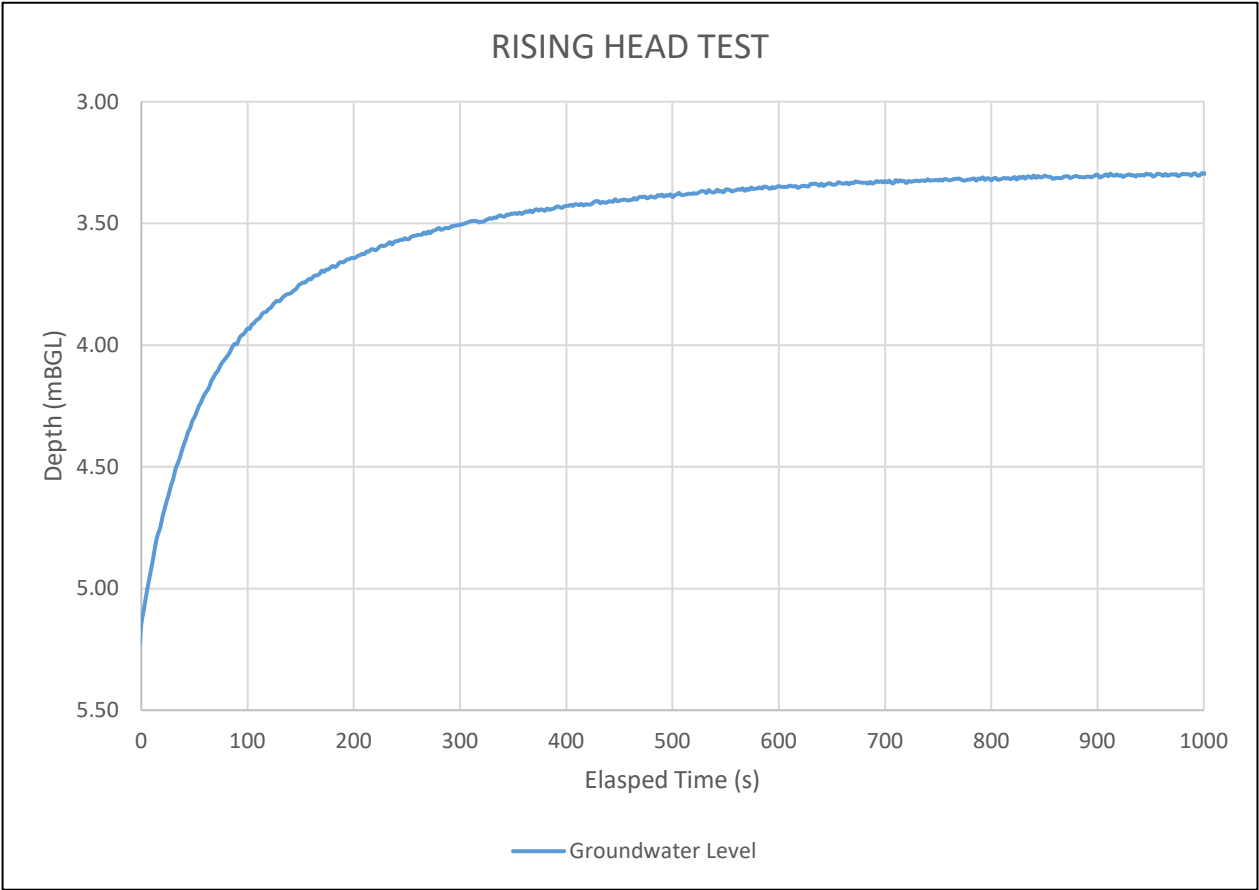
Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH2 Test 2
Monitoring Date	28/02/2025

Static water level (mBGL)	3.13
Internal Diameter (D) (m)	0.07
Length of Standpipe below Ground Level (m)	19.92
Height of Water above Ground Level (m)	0.00
Length of Standpipe above Ground Level (m)	0.00
Water level at start of test (mBGL)	3.13
Top of Response Zone (mBGL)	3.13
Bottom of Response Zone (mBGL)	19.92

Time (t1) (s)	4
Time (t2) (s)	78

Initial Head (H1) at (t1)	5.04
Final Head (H2) at (t2)	4.06
Length of Response Zone (L)	16.79
Cross Sectional Area (A)	0.0038

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \ddot{O}(1 + (L/D)^2)]}$ = $\frac{105.49}{6.17}$ = 17.09

Permeability (k) $\frac{A}{F(t_2-t_1)} \log_e \frac{H_1}{H_2}$ = 6.59E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

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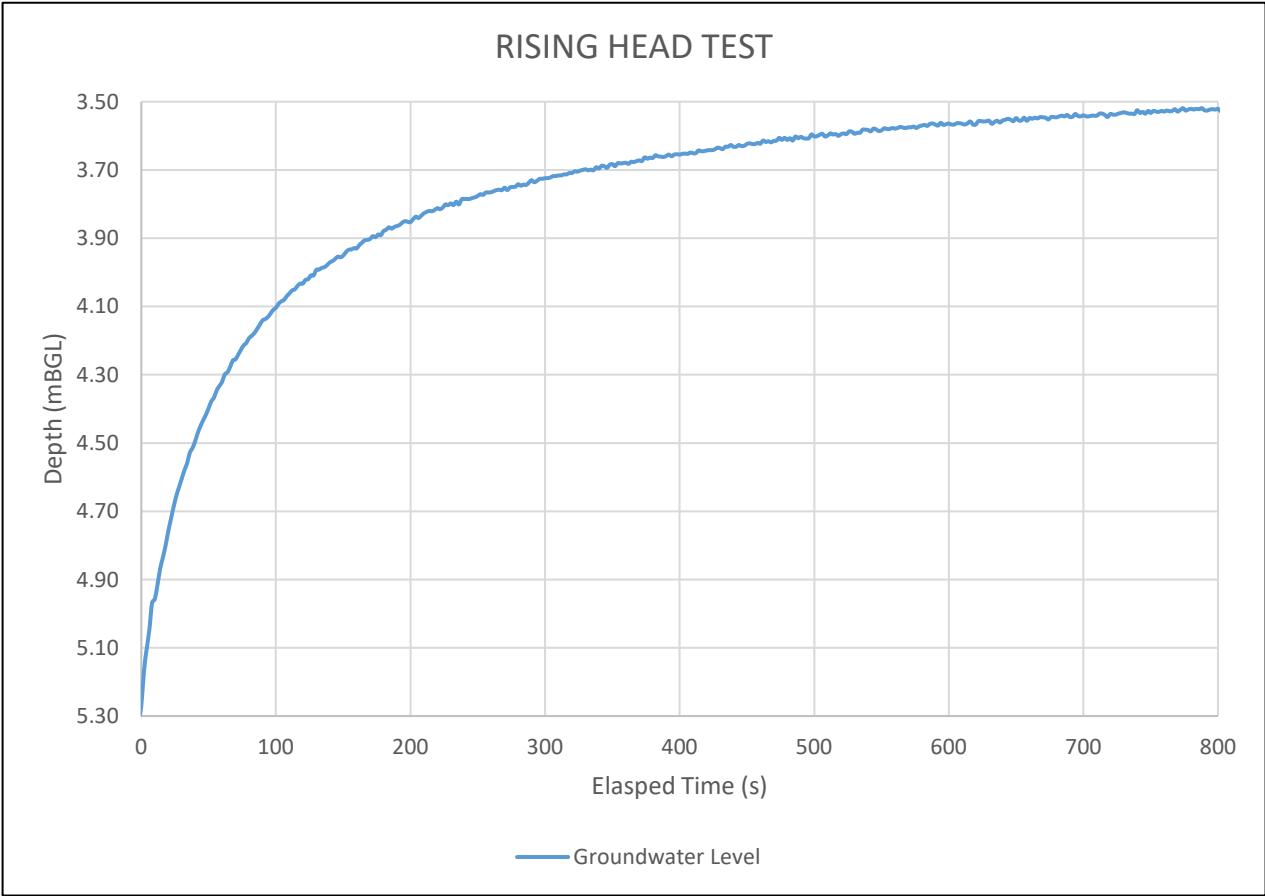
Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH2 Test 3
Monitoring Date	28/02/2025

Static water level (mBGL)	3.13
Internal Diameter (D) (m)	0.07
Length of Standpipe below Ground Level (m)	19.92
Height of Water above Ground Level (m)	0.00
Length of Standpipe above Ground Level (m)	0.00
Water level at start of test (mBGL)	3.13
Top of Response Zone (mBGL)	3.13
Bottom of Response Zone (mBGL)	19.92

Time (t1) (s)	0
Time (t2) (s)	66

Initial Head (H1) at (t1)	5.27
Final Head (H2) at (t2)	4.28
Length of Response Zone (L)	16.79
Cross Sectional Area (A)	0.0038

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \ddot{O}(1 + (L/D)^2)]}$ = $\frac{105.49}{6.17}$ = 17.09

Permeability (k) $\frac{A}{F(t_2-t_1)} \log_e \frac{H_1}{H_2}$ = 7.12E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

morrow

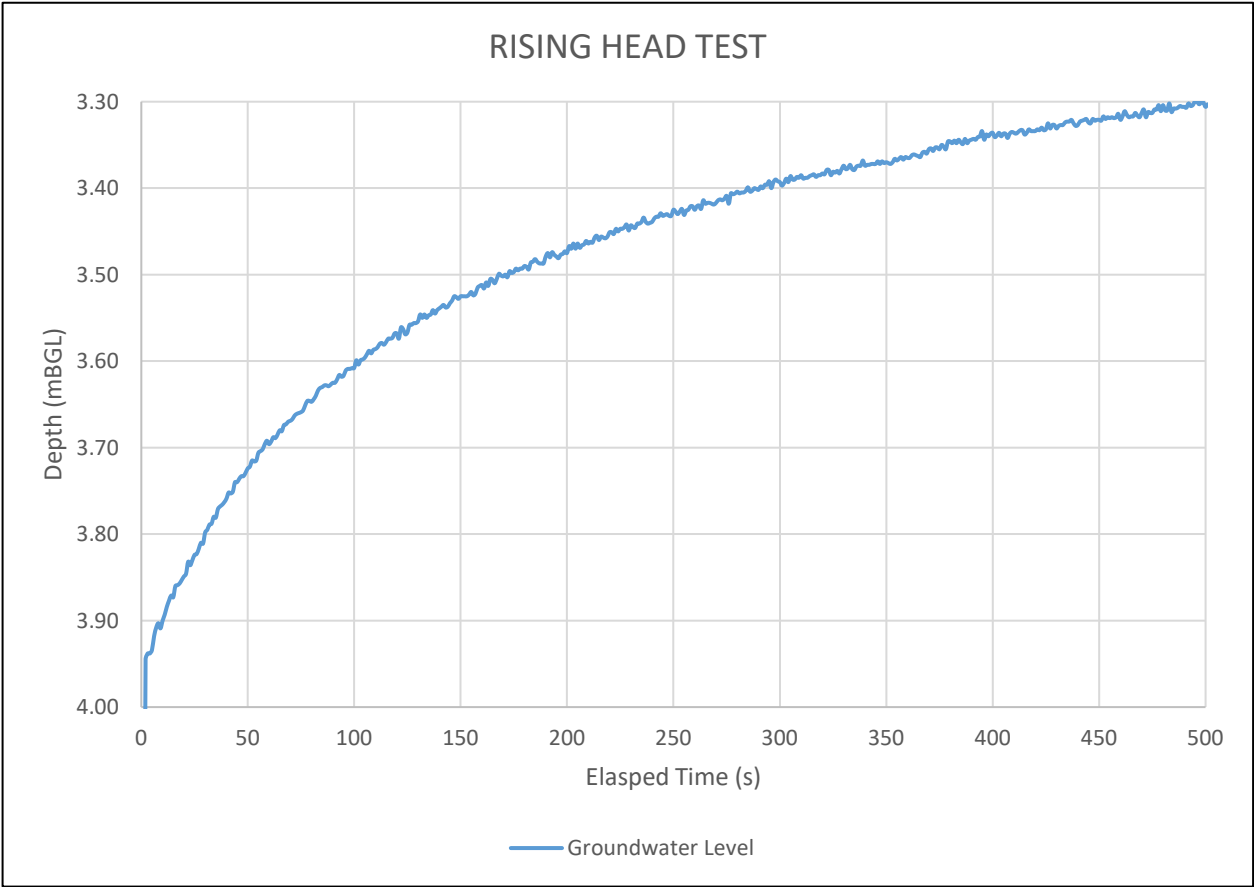
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Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH2 Test 4
Monitoring Date	2/04/2025

Static water level (mBGL)	2.60
Internal Diameter (D) (m)	0.07
Length of Standpipe below Ground Level (m)	19.92
Height of Water above Ground Level (m)	0.00
Length of Standpipe above Ground Level (m)	0.00
Water level at start of test (mBGL)	2.60
Top of Response Zone (mBGL)	2.60
Bottom of Response Zone (mBGL)	19.92

Time (t1) (s)	2
Time (t2) (s)	111
Initial Head (H1) at (t1)	3.95
Final Head (H2) at (t2)	3.58
Length of Response Zone (L)	17.32
Cross Sectional Area (A)	0.0038

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \ddot{O}(1 + (L/D)^2)]}$ = $\frac{108.82}{6.20}$ = 17.54

Permeability (k) $\frac{A}{F(t_2-t_1)} \log_e \frac{H_1}{H_2}$ = 1.93E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

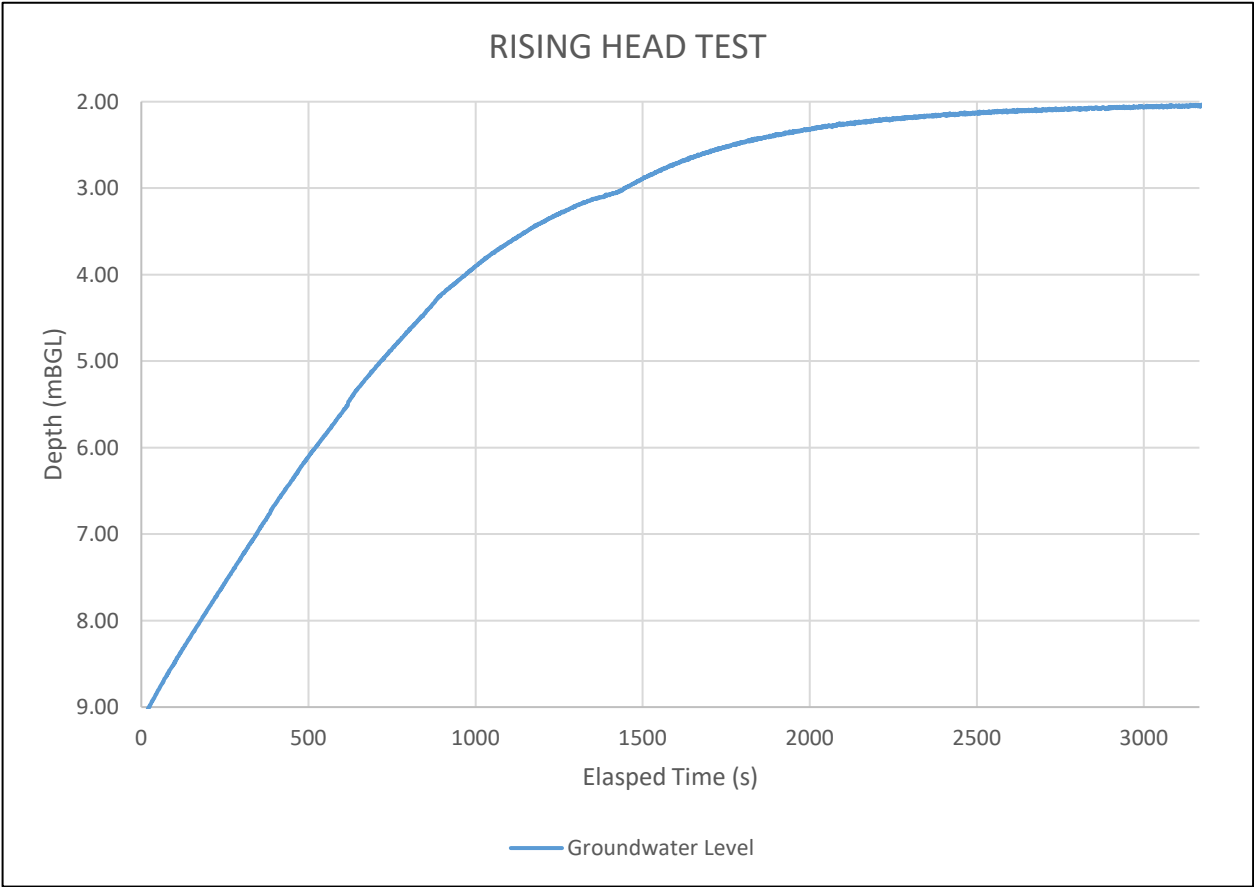
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Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH5 Test 1
Monitoring Date	2/04/2025

Static water level (mBGL)	1.95	Time (t1) (s)	53
Internal Diameter (D) (m)	0.07	Time (t2) (s)	993
Length of Standpipe below Ground Level (m)	18.00		
Height of Water above Ground Level (m)	0.00	Initial Head (H1) at (t1)	8.79
Length of Standpipe above Ground Level (m)	0.00	Final Head (H2) at (t2)	3.93
Water level at start of test (mBGL)	1.95	Length of Response Zone (L)	16.05
Top of Response Zone (mBGL)	1.95	Cross Sectional Area (A)	0.0038
Bottom of Response Zone (mBGL)	18.00		

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \sqrt{1 + (L/D)^2}]}$ = $\frac{100.85}{6.13}$ = 16.46

Permeability (k) $\frac{A}{F (t_2 - t_1)} \log_e \frac{H_1}{H_2}$ = 2.00E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

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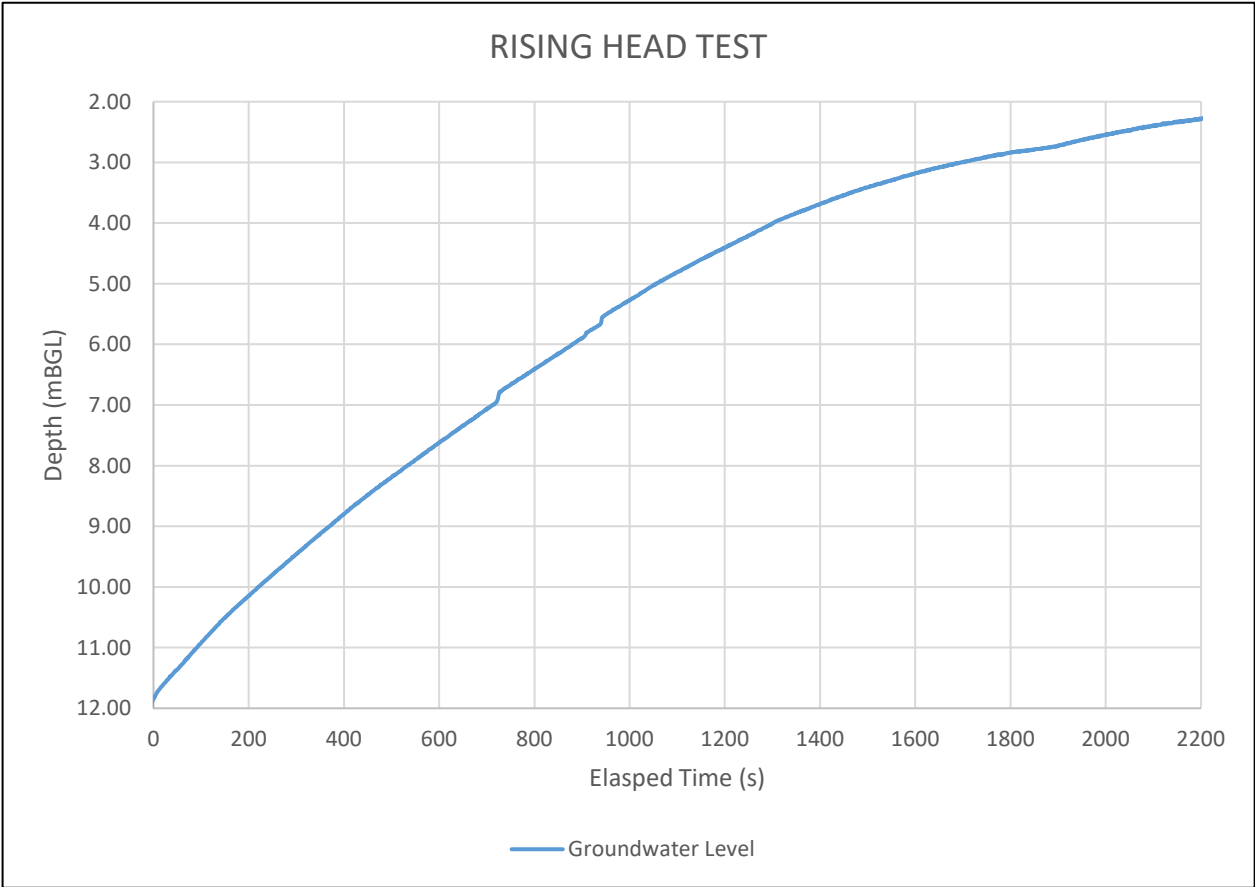
Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH5 Test 2
Monitoring Date	2/04/2025

Static water level (mBGL)	1.95
Internal Diameter (D) (m)	0.07
Length of Standpipe below Ground Level (m)	18.00
Height of Water above Ground Level (m)	0.00
Length of Standpipe above Ground Level (m)	0.00
Water level at start of test (mBGL)	1.95
Top of Response Zone (mBGL)	1.95
Bottom of Response Zone (mBGL)	18.00

Time (t1) (s)	37
Time (t2) (s)	1336

Initial Head (H1) at (t1)	11.46
Final Head (H2) at (t2)	3.91
Length of Response Zone (L)	16.05
Cross Sectional Area (A)	0.0038

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \ddot{O}(1 + (L/D)^2)]}$ = $\frac{100.85}{6.13}$ = 16.46

Permeability (k) $\frac{A}{F(t_2-t_1)} \log_e \frac{H_1}{H_2}$ = 1.94E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

Rising Head Permeability Results

morrow

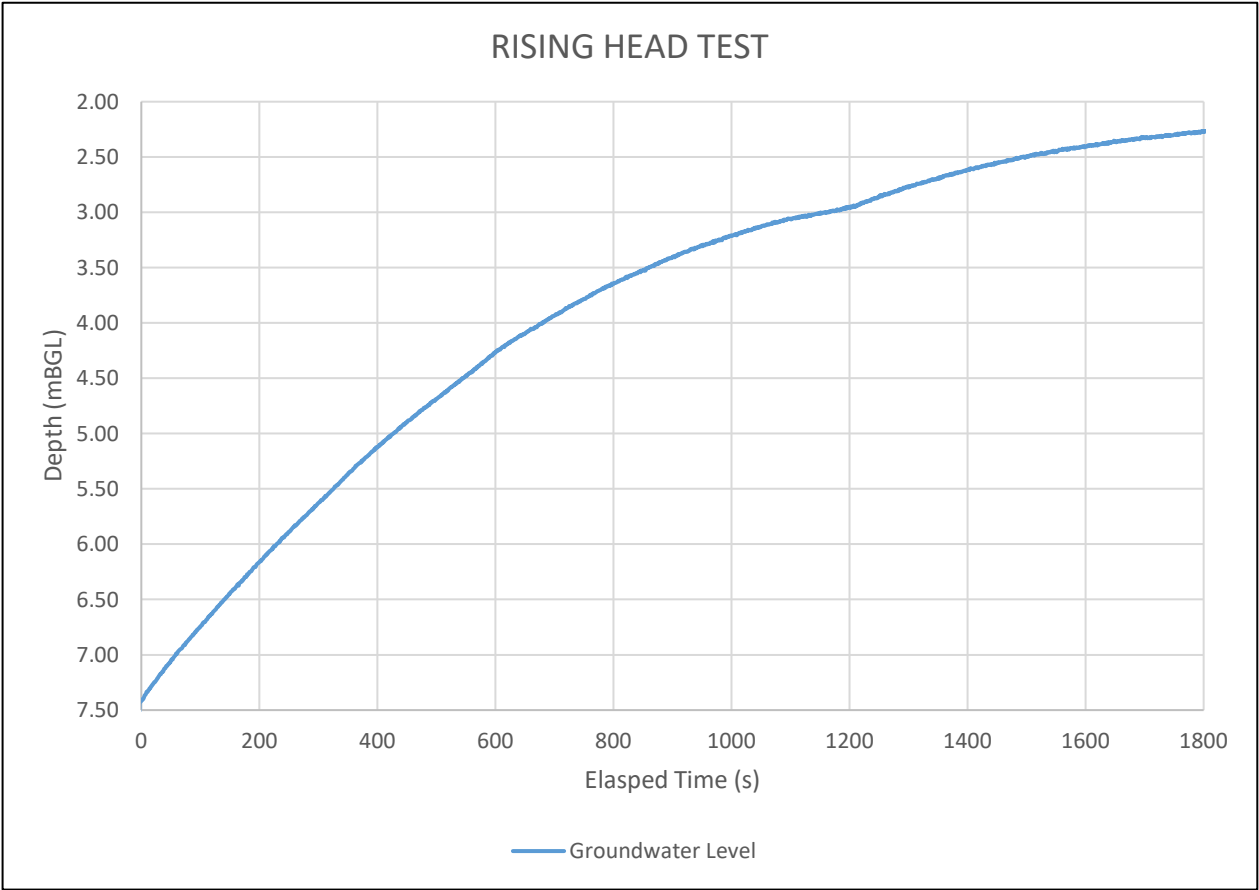
79/6 Bellambi Lane, Bellambi NSW 2518
P: 0405 843 933 | E: info@morrowgeo.com.au

Project Number	P3444 - Lindfield
Address	59-63 Trafalgar Ave & 1A/B Valley Road
Borehole	BH5 Test 3
Monitoring Date	2/04/2025

Static water level (mBGL)	1.95
Internal Diameter (D) (m)	0.07
Length of Standpipe below Ground Level (m)	18.00
Height of Water above Ground Level (m)	0.00
Length of Standpipe above Ground Level (m)	0.00
Water level at start of test (mBGL)	1.95
Top of Response Zone (mBGL)	1.95
Bottom of Response Zone (mBGL)	18.00

Time (t1) (s)	1
Time (t2) (s)	613
Initial Head (H1) at (t1)	7.40
Final Head (H2) at (t2)	4.22
Length of Response Zone (L)	16.05
Cross Sectional Area (A)	0.0038

Stratigraphy Description: Fill overlying residual clay and sandstone bedrock



Intake Factor (F) Case D $\frac{2pL}{\log_e [(L/D) + \ddot{O}(1 + (L/D)^2)]}$ = $\frac{100.85}{6.13}$ = 16.46

Permeability (k) $\frac{A}{F(t_2-t_1)} \log_e \frac{H_1}{H_2}$ = 2.15E-07 m/s

Rising Head Test Method 1 (after Hvorslev)
Formulae for borehole permeability tests(21.4.6) BS5930 : 1981

Calculation by: AB Checked by: AM Date: 14/04/2025

APPENDIX D

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