AQUALAND PRESTIGE 2 PTY LTD

Hydrogeological Report including Dewatering Management Plan, Groundwater Modelling & Seepage Assessment

2-16 Pockley Avenue, Roseville, NSW

E26491.E16_Rev1
17April 2025

Document Control

Report Title:	Hydrogeological Report including Dewatering Management Plan, Groundwater Modelling & Seepage Assessment, 2-16 Pockley Avenue, Roseville, NSW
Report No:	E26491.E16_Rev1

Copies		Recipient
1	Soft Copy (PDF – Secured, issued by email)	Wayne Xiong AL Prestige P/L Level 37, Australia Square, 264 George Street, **SYDNEY** NSW 2000
1	Original (Saved to Digital Archives)	EI Australia Suite 6.01, 55 Miller Street, **PYRMONT NSW 2009**

Author	Technical Reviewer
Amy Nyiri Environmental Engineer	**Nik Kontos** Principal Environmental Hydrogeologist

Revision	Details	Date	Amended By
0	Original	9 April 2025	-
1	Revised architectural plans	17 April 2025	AN

*The SEARs Requirement Declaration forms are shown in Appendix E within the GSA Report and in **Appendix J** of the Hydrogeological Report.*

Table of Contents

Page Number

Schedule of Figures (in-text)

Schedule of Tables (in-text)

Appendices

1. INTRODUCTION

1.1 Background and Purpose

EI Australia (EI) was engaged by Aqualand Prestige 2 Pty Ltd ('the client') to prepare a Hydrogeological Report including Dewatering Management Plan, Groundwater Modelling & Seepage Assessment for 2-16 Pockley Avenue, Roseville, NSW ('the site').

The site is located approximately 10 kilometres north-west of the Sydney central business district, within the Local Government area (LGA) of Ku-ring-gai Council (**Figure A1**, **Appendix A**). It is further identified as Lots 11-18 DP8261 and covers a total area of 6,600m^2 (**Figure A2**).

Proposed redevelopment will involve the construction of three, multi-storey residential towers overlying a stepped (one to four levels) shared basement. Basement construction will require bulk excavation that intersects the local groundwater system, thus triggering the need for site dewatering.

A drained basement design is proposed for basement construction, which warrants long-term dewatering over the occupational phase of the development. Post-construction groundwater seepage will be managed onsite for landscape garden irrigation and amenity water demands, to the maximum extent practicable. This will minimise the volume of water discharged to the municipal storm water network, Re-use of seepage inflows is further described in **Section 4.4**.

The purpose of this report is twofold, as follows:

1) To address the Secretary's Environmental Assessment Requirements (SEARs), which are listed in **Table 1-1**, in support of the SSDA; and
2) To provide a dewatering management plan, which describes baseline groundwater conditions, quantifies construction groundwater take volumes and provides strategies for the mitigation of potentially adverse impacts on neighbouring properties and infrastructure, local groundwater users and the environment.

Table 1-1 Secretary's Environmental Assessment Requirements

SEARS Requirement	Relevant Section of Report
13.0 Ground and Water Conditions	
1. *Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site, including soil erosion, salinity and acid sulfate soils.* 2. *Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on:* a. *surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses.* b. *groundwater resources in accordance with the Groundwater Guidelines.*	Groundwater resource use – **Section 2.4** Downstream surface water receptors – **Section 2.6** Groundwater dependent ecosystems – **Section 2.7** Soil salinity – **Section 2.8** Acid sulfate soils (See SEARS 17.0) – **Section 2.9** Soil erosion – **Section 2.10** Construction dewatering groundwater take in ML/year – **Section 4.2** Potential impact to any surrounding properties via drawdown induced ground settlement – **Section 4.6** Discharge water quality for temporary disposal to municipal storm water system during construction dewatering phase – **Section 5.2** Consideration of the Aquifer Interference Policy and minimal harm assessment – **Section 7.1**

1.2 Proposed Development

A number of architectural drawings (Ref. Woods Bagot, 2025) and a preliminary survey plan (Rygate & Co., 2024) were used to summarise the proposed development as follows.

Based on the provided documents, EI understands that the proposed development involves the demolition of the existing site structures and the construction of three, multi-storey residential towers overlying a stepped shared basement. The lowest basement level is proposed to have a Finished Floor Level (FFL) of RL 78.0m at the north-eastern site boundary and RL 69.0m at the south-western site boundary. A Bulk Excavation Level (BEL) ranging between RL 68.7m and 77.7m is assumed, which includes allowance for the construction of the basement slab. To achieve the BEL, excavation depths from 10.0m to 20.0m Below existing Ground Level (BGL) have been estimated. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches.

The dewatering method will utilise sub-soil drainage and a sump-and-pump seepage collection system, which is described in more detail in **Section 4.4**.

1.3 Report Objectives

As the proposed basement will intercept the groundwater system, site groundwater dewatering is required to enable basement construction for the occupational phase of the development. In view of this, the objectives of this report are to:

- Describe the conceptual hydrogeological model for the site and summarise baseline groundwater conditions, including pre-dewatering groundwater depth and groundwater quality;
- Describe the dewatering methodology, groundwater treatment requirements, monitoring and reporting procedures to be employed during construction and operational dewatering activities;
- Provide effective management and contingency procedures for ensuring that the discharge of extracted groundwater does not pose unacceptable risks to the receiving environment, in compliance with the *Protection of the Environment Operations Act 1997*;
- Describe post-construction monitoring and dewatering management procedures; and
- Provide relevant information on anticipated groundwater impacts, with reference to the NSW Aquifer Interference policy to properly inform the regulatory approval process.

This DMP will also form the basis for Council approval for connection and discharge to the municipal stormwater system and water supply works (dewatering licence) approval by WaterNSW.

It is also noted that WaterNSW may not fully assess the dewatering license application until Council issues a stormwater discharge permit. To facilitate the approval process however, this DMP is issued concurrently to WaterNSW, Department of Climate Change, Energy, the Environment and Water (DCCEEW), Department of Planning, Housing and Infrastructure (DPHI) and Council.

1.4 Scope of Work

With reference to the above report objectives, the following works were undertaken:

- A desktop study including:
    - Review of the development proposal and proposed shoring/dewatering designs;
    - Review of geological, landscape and acid sulfate soils (ASS) risk maps for the area;
    - Review Council DA consent and WaterNSW requirements to determine the generic and site specific conditions placed on the development relevant to the dewatering process;

  - A search of government records for previously installed registered bores located within a 500m radius of the site to review local groundwater usage;
  - Review of previous environmental and geotechnical investigation reports to identify potential onsite and offsite sources of contamination that may impact on dewatering discharge water quality;
  - Review of existing reports and laboratory analytical data obtained during previous groundwater monitoring events (GME) to characterise baseline groundwater quality;
  - Review of Groundwater Seepage Analysis (GSA) findings based on computer modelling for the assessment of groundwater inflow volumes, predicted drawdown effects and drawdown-induced ground settlement in response to construction and operational dewatering; and
- Data analysis and report preparation.

1.5 Regulatory Framework

The following regulatory framework and guidelines were considered during the preparation of this report:

Table 1-2 Regulatory Framework

NSW Legislation and Regulatory Instruments	Requirements
Contaminated Land Management Act 1997 (CLM Act)	Promotes the effective management of contaminated land in NSW by setting out the roles and responsibilities of the NSW Environment Protection Agency (EPA) and its rules.
Environmental Planning and Assessment Act 1979 (EP&A Act)	The EP&A Act stipulates the regulations and gives rise to state environmental planning policy (SEPP) to assist regulators with the protection of human and environmental health.
Protection of the Environment Operations Act 1997 (POEO Act)	The objective of the *POEO Act* is to achieve the protection, restoration and enhancement of the quality of the environment.
Water Management Act 2000 and *Water Act 1912* (WM Act)	Protects the health of rivers, streams and groundwater systems and gives rise to Water Sharing Plans and quality objectives for catchments within the state of NSW. Manages aquifer interference activities which involve: ▪ The penetration of an aquifer; ▪ The interference of water in an aquifer; ▪ The obstruction of water flow or taking of water from an aquifer when carrying out prescribed activities; and ▪ The disposal of water taken from an aquifer.
NSW Aquifer Interference Policy (2012)	Details the scope of aquifer interference activities, minimal impact assessment and provides specific guidance on the licensing and approval requirements for activities that interfere with aquifers.
Ku-ring-gai Council plans and policies 2021	Provide controls and guidelines for development in the area. Relevant to this site are: ▪ *Ku-ring-gai Development Control Plan 2024*; and ▪ *Ku-ring-gai Local Environmental Plan 2015*. Note: For projects involving site dewatering, Council typically requires details for the proposed water disposal connection to the stormwater system, preferably in the form of engineering drawings and plans.

NSW Legislation and Regulatory Instruments	Requirements
Guidelines	▪ ANZG (2018) *Guidelines for Fresh and Marine Water Quality;* ▪ ANZECC & ARMCANZ (2000) *Guidelines for Fresh and Marine Water Quality*, Vol. 1, Chapter 3, Aquatic Ecosystems; ▪ DPE (2022) *Minimum requirements for building site groundwater investigations and reporting;* ▪ NHMRC (2008) *Guidelines for Managing Risks in Recreational Water;* and ▪ NSW DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination.*

2. SITE DESCRIPTION

2.1 Property Identification, Location and Physical Setting

Site identification details and associated information are summarised in **Table 2-1**. Site locality and assessment area are provided in **Figures A1 and A2, Appendix A**.

Table 2-1 Site Identification, Location, Zoning and Soil Profile

Attribute	Description
Street Address	2-16 Pockley Ave, Roseville
Location Description	10 kilometres north-west of Sydney central business district. The site is bound by Pockley Avenue (north), Maclaurin Parade (south) residential properties followed by Larkin Street (east), and residential properties followed by Pockley Street (west).
Lot and DP	Lots 11-18 DP8261
Site Area	6,600m^2
Site Coordinates	Northern-eastern corner of site (GDA2020-MGA56): ▪ Easting: 331176.555; ▪ Northing: 6260076.341. (Source: http://maps.six.nsw.gov.au)
Local Government Authority	Ku-ring-gai Council
Current Zoning	R2 Low Density Residential (*Ku-ring-gai Local Environmental Plan 2015*)
Current Land Use	Residential property.
Typical Soil Profile	Subsurface conditions generally comprised a layer of clay fill (to approximately 1 mBGL), followed by natural clays (from 2-4 mBGL), which is underlain by extremely weathered shale and sandstone bedrock.

2.2 Surrounding Land Use

The site is situated within a residential area, as described in **Table 2-2**.

Table 2-2 Local Land Uses

Direction	Land Use Description
North	Pockley Avenue
South	Maclaurin Parade
East	Residential properties followed by Larkin Street
West	Residential properties followed by Pockley Street

2.3 Regional Setting

A description of the regional setting, including ground surface topography, hydrogeology, acid sulphate soil conditions and soil landscape, is summarised in **Table 2-3**.

Table 2-3 Regional Setting Information

Attribute	Description
Topography	The site is located on a slope which generally falls west. The site itself is varied in elevation, with relative levels ranging from 88m to 100m AHD.
Site Drainage	Expected to be consistent with the slope, collected in pits and drained to the municipal collection system, which drains into a tributary of Blue Gum Creek (0.10km southwest of the site) and ultimately to Sydney Harbour (9km southeast of the site).
Regional Geology	Information on regional sub-surface conditions, referenced from the DMR (1983) *Sydney 1:100,000 Geological Series Sheet 9130* indicates the site to be underlain by middle Triassic sedimentary rocks, specifically the Ashfield Shale Formation (map symbol *Rwa*) of the Wianamatta Group.
Soil Landscape	The Soil Conservation Service of NSW *Soil Landscapes of the Sydney 1:100,000 Sheet* (Chapman and Murphy, 1989) indicates that the site overlies a Glenorie (*gn*) erosional landscape. The Glenorie landscape is characterised by undulating to rolling low hills on Wianamatta Group shales (local relief to 50–80 m, slope gradients generally 5–20%, narrow ridges, hillcrests and valleys).
Acid Sulfate Soil (ASS) Risk	According to the *Ku-ring-gai Local Environmental Plan 2015 - Acid Sulfate Soils Map* (Sheet ASS_020) the subject land is characterized by Class 5 ASS. The *Prospect / Parramatta Acid Sulfate Soil Risk Map* (1:25,000 scale; Murphy, 1997) indicates the subject land lies within an area having ‘No Known Occurrence’. In such cases, ASSs are not known or expected to occur and “land management activities are not likely to be affected by ASS materials.” Given the land’s elevation, the map information and the proposed development, further site of ASS was considered unwarranted.
Nearest Water Feature	A tributary of Blue Gum Creek, located 100m southwest of the site, which joins Blue Gum Creek and feeds into Lane Cover River, which ultimately reaches Sydney Harbour (9km southeast of the site).
Groundwater depth and flow direction	Groundwater depths encountered during onsite investigations ranged between 3.17 and 13.75 mBGL. Groundwater flow was inferred to be towards the southwest. Flow direction and hydraulic gradient are addressed in more detail in **Section 3.3**.

2.4 Local Groundwater Use

An online search for groundwater bores registered with WaterNSW was conducted by EI on 16/04/2025 (Ref. https://realtimedata.waternsw.com.au/water.stm). The search identified 13 registered groundwater bores within 500m radius of the site (see **Appendix F**), all of which are identified as ‘license cancelled’, after previously being used for monitoring purposes. The five closest registered bores (prior to license cancellation), are summarised in **Table 2-4**.

Table 2-4 Summary of Registered Groundwater Bores within 500m of the site

Bore No.	Drilled Date (Bore Depth in mBGL)	SWL (m BGL)	Authorised Bore Purpose	Distance in relation to Site
GW113514	06/09/2004 (8.60)	-	Monitoring Bore	310 m southwest / up/ cross-gradient
GW113507	31/08/2004 (7.60)	-	Monitoring Bore	315 m southwest / up/ cross-gradient

Bore No.	Drilled Date (Bore Depth in mBGL)	SWL (m BGL)	Authorised Bore Purpose	Distance in relation to Site
GW113510	31/08/2004 (7.80)	-	Monitoring Bore	350 m southwest / up / cross-gradient
GW113505	31/08/2004 (8.00)	-	Monitoring Bore	350 m southwest / up/ cross-gradient
GW113506	31/08/2004 (3.10)	-	Monitoring Bore	355 m southwest / up/ cross-gradient

2.5 Potential Contamination Sources

Previous environmental investigations for the site (Ref. EI, 2025b and EI, 2025c) identified a petrol station (7-Eleven, Corner Pacific Hwy &, Boundary St, Roseville NSW) 330m southeast, cross gradient from the site, which may indicate a potential offsite sources of contamination.

Potential onsite contamination sources as noted from the PSI report (EI, 2025b) were as follows:

- Imported fill materials, placed under paved, garden and building footprints;
- Application of pesticides around building (footing) perimeters;
- Weathering of hazardous building materials (including asbestos-containing materials and lead-based paints) present with the fabrics of former and exisiting buildings; and
- Leakage from vehicles within the parking areas.

Potential contamination attributed to imported fill materials, application of pesticides, and shallow leakage of oil fluids from vehicles at ground level will be removed during bulk excavation for basement construction. Therefore, the potential for residual, onsite contamination that may be available to impact water quality is deemed to be low.

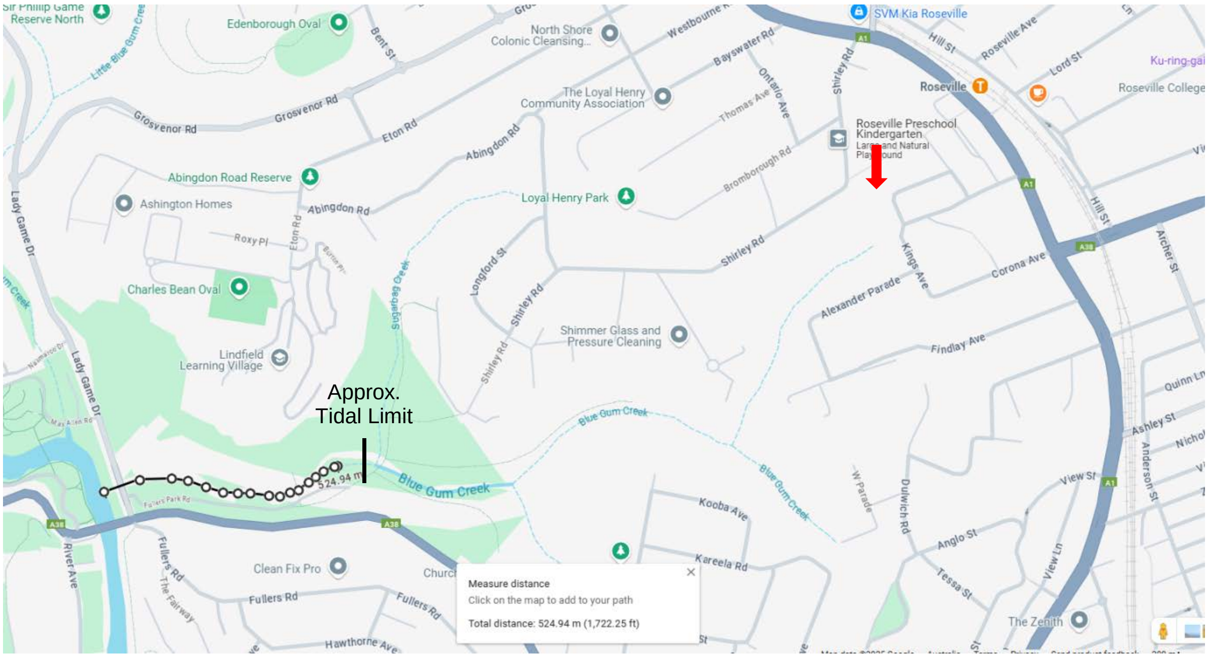
In regards to potential onsite migration of contaminants from offsite sources, considering the distance of the petrol station (250m) and the low hydraulic conductivity of the bedrock material (**Section 3.3**), it is unlikely any contamination plume (if present) at the petrol station would be drawn towards the dewatered site. Furthermore, the lack of active groundwater supply bores within the area (as described in **Section 2.4**), suggests that there are no local groundwater users at risk of suffering adverse impact to groundwater quality.

2.6 Potential Environmental Receptors

It is proposed that during construction, extracted groundwater will be pumped through a water treatment system (**Section 4.4**) and then discharged into the local municipal stormwater system, which is understood to drain into Blue Gum Creek (approximately 0.10 km) southwest of the site.

As described in **Section 2.3**, Blue Gum Creek feeds into Lane Cover River and eventually Sydney Harbour. Blue Gum Creek is a partially tidal influenced creek, its tidal limit being 585m upstream from Lane Cover River (Department Of Natural Resources, 2006). Highlighted by the red arrow on **Figure 2-1**, the discharge waters anticipated point of entry is not in the vicinity of Blue Gum Creek which is tidally influenced, and therefore deemed a freshwater aquatic ecosystem. As a result, freshwater discharge water quality criteria have been selected, as referenced in **Section 5.2**.

Figure 2-1 Extent of Tidal Influence in Blue Gum Creek



Measure distance
Click on the map to add to your path
Total distance: 524.94 m (1,722.25 ft)

Source: Google Maps

2.7 Groundwater Dependent Ecosystems (GDEs)

A search of the *NSW Water Sharing Plan for the Greater Metropolitan Region groundwater Sources 2011 – Schedule 4 (Table D)* was conducted on 28 February 2025. The search found no listed high priority groundwater dependent ecosystems in the vicinity of the site.

This information was used in the minimal harm assessment considerations under the NSW Aquifer Interference Policy, as described in **Section 7** of this report.

2.8 Soil Salinity

The site and its surrounding area have not been recorded within any salinity classification according to the Map of Salinity Potential in Western Sydney (DCCE, 2002). It was therefore assumed the potential for saline soils was low, and further assessment of saline soils was considered unwarranted for the subject site.

2.9 Acid Sulfate Soils

As documented in **Table 2-3**, both the Ku-ring-gai Local Environmental Plan 2015 (Sheet ASS_020) , and Prospect / Parramatta Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997) identified a low risk of acid sulphate soils. Given the land's elevation, the map information and the proposed development, further assessment of ASS was considered unwarranted for the subject site.

2.10 Soil Erosion

As the site will be largely covered by building structures and landscaping with underlying, constructed basement car parking facilities, pedestrian walkways and drainage control, erosive dispersion is not a significant risk for the proposed development.

The following measures are also considered relevant for minimising erosion in proposed landscaped areas with vegetation:

- Areas of established vegetation should be maintained (where possible). In areas of deep soil, mulch should be used or salt tolerant plants should be planted to use the groundwater source and reduce infiltration.
- Landscaping plans apply to ‘waterwise’ gardening principles. However, procedures designed to encourage excessive infiltration through the soil should be avoided. In certain landscaping situations, infiltration measures to be incorporated may include a sub-surface drain and liner when rapid infiltration to groundwater is likely to occur.
- Irrigation systems should be properly installed to avoid leakage and smart sprinkler systems should be considered.
- Watering of open space should be kept to a minimum.
- Over-watering must be avoided.

3. GROUNDWATER CONDITIONS

3.1 Previous Investigations

The following previous reports were used to gain an understanding of hydrogeological conditions at the site:

- EI (2025a) *Geotechnical Investigation; 2-16 Pockley Avenue, Roseville, NSW,* EI Australia Report E26491.G03, 16 April 2025;
- EI (2025b) *Preliminary Site Investigation; 2-16 Pockley Avenue, Roseville, NSW,* EI Australia Report E26491.E01_Rev2, 16 April 2025;
- EI (2025c) *Hazardous Materials Survey; 2-16 Pockley Avenue, Roseville, NSW,* EI Australia Report E26491.E10_Rev1, 4 April 2025; and
- EI (2025d) *Ground Seepage Analysis; 2-16 Pockley Avenue, Roseville, NSW,* EI Australia Report E26491.G12, 16 April 2025 (the 'GSA report').

The information documented in the above reports was used to inform the conceptual hydrogeological model presented in **Section 3.2**. The findings documented in the GSA report EI (2025d) GSA report (**Appendix D**), particularly details of the proposed excavation, shoring design, groundwater modelling predictions in relation to water level drawdowns, seepage inflows and discharge volumes, drawdown-induced ground settlement, are incorporated into various parts of this report and referenced accordingly. Refer to **Appendix E** for EI borehole / monitoring well logs. Monitoring well locations are illustrated in **Figure A2**.

3.2 Conceptual Hydrogeological Model

Based on a review of published hydrogeological data and previous geotechnical and environmental investigations undertaken at the site, the Conceptual Hydrogeological Model is outlined as follows:

- The sub-soil profile comprises:
  - Fill generally comprising sandy CLAY, silty CLAY, sandy SILT or gravelly CLAY (occurring from 0 - 1.5m BGL);
  - Residual clay described as 'firm to very stiff silty Clay' grading into extremely weathered shale (0.5 - 1.5 m BGL in thickness); and
  - Bedrock (shale and sandstone) starting at depths ranging between 1.5 and 3.20 mBGL to the maximum investigation depth of 30.05 mBGL (as documented in EI, 2025a).
- Groundwater is under pressure and moves through the fractured bedrock layer, which has been tested with characteristically low hydraulic conductivities ranging between 5.0×10^{-8} m/s and 1.6×10^{-7} m/s, as documented in the GSA report (**Appendix D**).
- Groundwater levels ranging between 3.17 and 13.75 mBGL, have been measured in monitoring wells located inside and outside of the proposed basement excavation footprint are.
- Groundwater flow direction in the vicinity of the site is inferred (based on monitoring data, see **Section 3.3**) to be south to southwest, towards Blue Gum Creek.

More detailed reviews of baseline groundwater depth variations and groundwater quality across the site are addressed in **Sections 3.3 and 3.4**, respectively.

3.3 Pre-Dewatering Groundwater Depth and Hydraulic Gradient

EI completed groundwater level monitoring from the 18th December 2024 to 13th March 2025; however, due to technical issues with the data loggers, continuous monitoring data for the period could not be achieved. For the monitoring results that were recorded within the three month period, maximum groundwater level, minimum groundwater level, and average groundwater level are summarised in **Table 3-1**. Monitoring results were reported graphically as hydrographs with rainfall data overlays, as shown in the report *Groundwater Level Monitoring No.1*, which is also included in **Appendix D**.

To identify flow direction, data from manual dipping during a site investigation on the 21st of February 2025 was used (**Table 3-2**), as presented in the groundwater contour map on **Figure A3**.

Table 3-1 Summary of Continuous Groundwater Monitoring Results

Well ID	Ground Surface RL (m AHD) [1]	Average Groundwater RL (m AHD) [2]	Max recorded Groundwater RL [3] (m AHD) / Date / Time	Min recorded Groundwater RL [4] (m AHD) / Date / Time	Contoured groundwater levels	
					Groundwater depth (m AHD) [5]	Monitoring Date
BH1M	94.80	88.20	89.31 10.02.2025 / 12:15	87.83 1.01.2025 / 18:00	88.19	21.2.25
BH2M	98.00	91.90	**92.01** 4.02.2025 / 18:00	91.71 13.01.2025 / 15:30	91.89	
BH2.1M [5]	98.00	84.50	84.68 5.03.2025 / 22:30	**84.04** 23.02.2025 / 16:45	84.16	
BH4M	80.25	N/A	N/A	N/A	76.8	
BH4.1M	80.25	N/A	N/A	N/A	76.9	

Note 1 The Ground surface RL at each monitoring well was extrapolated from survey plans provided by the client.

Note 2 The average groundwater RL, maximum and minimum recorded groundwater RLs were determined for the following periods: 18 December 2024 – 13 March 2025 for BH1M, 18 December 2024 to 20 February 2025 for BH2M, and 21 February 2025 to 13 March 2025 for BH2.1M.

Note 3 The maximum groundwater RL measured at any well during the monitoring period is shown in bold.

Note 4 The minimum groundwater RL measured at any well during the monitoring period is shown in bold.

Note 5 Groundwater levels measured by manual dipping technique using electric contact meter on 21.2.25. This data was selected for contouring analysis, as data for all three wells at the time of the Max and Min groundwater RLs was not available, as indicated under Note 2.

The groundwater elevation data for the monitoring event on 21 February 2025 were analysed to determine groundwater flow direction and hydraulic gradient using the Surfer® software package. Groundwater level contours were manually smoothed to produce **Figure A2**, which showed groundwater in the fractured bedrock to be flowing in a south-east direction towards Flat Rock Creek, under a hydraulic gradient of 0.031.

As discussed in the GSA report, two design groundwater levels (DGLs) of RL 93.0m and 77.9m were adopted for the north-eastern and south-western ends, respectively. These DGLs incorporate a 1m buffer above the observed levels to account for possible seasonal variations, which was deemed to be a reasonable estimate based on EI experience of groundwater level fluctuations on other sites with similar hydrogeological conditions, within this part of the Sydney Basin region.

3.4 Baseline Groundwater Quality Assessment

3.4.1 Monitoring Well Locations

Baseline groundwater quality data were derived from a monitoring event performed by EI on the 20th and 24th of February 2025, which included groundwater sampling from five installed monitoring wells (BH1M, BH2M, BH2.1M, BH4M and BH4.1M).

3.4.2 Sampling, Analytical and Quality Plan

The sampling, analytical and quality plan (SAQP) ensures that the data collected are representative and provide a robust basis for assessment decisions. The SAQP for the baseline GME included consideration of the following:

- Data quality objectives (DQO), including a summary of the objectives of the GME;
- Data quality indicators (DQI), applied to the field and laboratory quality control samples;
- Sampling methodology, including the wells to be sampled (sampling points), screening procedures, handling, preservation and storage, and details of the analytes be monitored;
- Laboratory analysis methods;
- Appropriate water quality assessment criteria; and
- Analytical quality assurance / quality control (QA/QC).

3.4.3 Data Quality Assessment

Internal laboratory QA/QC data are presented as part of the laboratory analytical reports in **Appendix G**. A data quality assessment in relation to field tests and laboratory QA/QC is presented in **Appendix H**. EI's data validation process found that the overall quality of field-based and laboratory analytical data produced for baseline groundwater samples were of an acceptable standard for interpretive use.

3.4.4 Groundwater Sampling Methodology

The groundwater sampling methodology followed during the GME is described in **Table 3-2**.

Table 3-2 Summary of Groundwater Sampling Methodology

Activity/Item	Details
Fieldwork	A single GME, involving water level gauging, well purging, measurement of physiochemical parameters and groundwater sampling was conducted on the 20th and 24th of February 2025 at five previously installed monitoring wells.
Monitoring well locations and Well depth	▪ BH1M: total well depth 7.14m BGL; ▪ BH2M: total well depth 7.3m BGL; ▪ BH2.1M: total well depth 18.40m BGL; ▪ BH4M: total well depth 6.87m BGL; ▪ BH4.1M: total well depth 14.65m BGL; Monitoring well locations are illustrated in **Figures A2**, and well construction logs are presented in **Appendix E**.
Well Gauging	Monitoring wells were gauged to determine standing water levels (SWL) prior to groundwater sampling. Gauging was conducted using an electric, contact water/oil interface probe.

Activity/Item	Details
Well Purging, Water Quality Measurements and Sampling	Groundwater was purged and sampled using a peristaltic pump or a bailer at all locations. During the purging process, water was continuously measured for the field parameters temperature (T), electrical conductivity (EC), oxidation-reduction potential (ORP), dissolved oxygen (DO) and pH, using a *Hanna* Multi Parameter 9829 positioned within an open flow-through cell. Once the parameters stabilised (i.e. within ± 10% for DO, ± 3% for EC, ± 0.05 for pH, ± 0.2° for temperature and ± 20mV for ORP), groundwater sampling was undertaken, by diverting the outlet of the sampling pump (immediately before the flow cell) to the sampling vials and bottles.
Decontamination Procedure	Sampling equipment (interface and water quality kit probes) were decontaminated before use, by washing in a solution of potable water and *Decon 90®*), then rinsed with potable water. Decontamination was performed between sampling locations. Dedicated gloves were used for the collection of the sample.
Sample Preservation	Pre-preserved sample containers were supplied by the laboratory with the following preservatives: ▪ One, 500ml amber glass, acid-washed and solvent-rinsed bottle; ▪ One, 200ml amber glass, acid-washed and solvent-rinsed bottle; ▪ Two, 40ml glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; ▪ One, 150mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL); and Samples for metals analysis were field-filtered using 0.45 µm pore-size filters. All containers were filled with sample to the brim then capped and stored in insulated chests (containing ice bricks), until completion of the fieldwork and during sample transit to the laboratory.
Sample Transport	After sampling, the chests were transported to SGS Pty Ltd (SGS; the primary laboratory) using strict COC procedures. Sample Receipt Advice (SRA) was provided by the laboratory to document sample condition upon receipt. Copies of the SRA and COC certificates are presented in **Appendix G**.
Quality Control, Laboratory Analysis and Sample Transport	Groundwater samples were analysed by SGS for the requested analytes as detailed on the COC form. Most samples were analysed within the required holding period, as documented in the corresponding laboratory reports (also included in **Appendix G**). In addition to an inter-laboratory duplicate sample (analysed by Envirolab Services Pty Ltd, the secondary laboratory), QC analyses comprised a blind (intra-laboratory) field duplicate, a laboratory-prepared, trip spike water sample and a laboratory-prepared, trip blank water sample, all analysed by SGS.

3.4.5 Tested Parameters

As summarised in **Table 3-3**, groundwater samples from wells BH1M, BH2M, BH2.1M and BH4M were analysed for a condensed (*Standard*) suite of analytes; however, the sample from well BH4.1M was analysed for an extended *Baseline suite* of analytes, which included all mandatory groundwater quality test parameters listed under Appendix A of DPE (2022), plus a number of additional parameters selected by the EI investigation team for site characterisation purposes.

In summary, the *Baseline test suite*, included:

- **Physical parameters:** Alkalinity (bicarbonate, carbonate, hydroxide and total), electrical conductivity (EC), pH, redox potential (Eh), total dissolved solids (TDS), total hardness, temperature, dissolved oxygen (DO);
- **Other physical parameters:** Turbidity (NTU), total suspended solids* (TSS), total organic carbon* (TOC), sodium absorption ratio (SAR);
- **Major anions:** Sulfate (SO_4), chloride (Cl), carbonates (CO_3), bromide (Br), fluoride (F);
- **Major cations:** Calcium (Ca), magnesium (Mg), sodium (Na), potassium (K);
- **Ionic balance:** Cation / anion balance (as a percentage);
- **Dissolved inorganics & metals:** Aluminium (Al), antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), boron (B), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead

(Pb), lithium (Li), manganese (Mn), mercury (Hg), molybdenum (Mo), nickel (Ni), selenium (Se), silica (dissolved SiO_2), silver (Ag), strontium (Sr), uranium (U), vanadium (V), zinc (Zn);

- **Nutrients:** Ammonia (NH_3), nitrate (NO_3), total nitrogen (N), oxidised nitrogen (N), total phosphorus (P), reactive phosphorus (P);
- **Microbiological organisms:** Faecal coliforms, faecal streptococci, Escherichia coli;
- **Organics:** Benzene toluene ethylbenzene xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), total recoverable hydrocarbons (TRHs);
- **Other:** the following parameters were also analysed as part of the site characterisation process:
    - Semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs), which included chlorinated VOCs;
    - Total Cyanide;
    - Total Phenols; and
    - Perfluoroalkyl and polyfluoroalkyl substances (PFAS).

The *Standard test suite*, included:

- Physical parameters: pH, EC, TDS and Hardness;
- Dissolved metals: aluminium, arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc;
- Organics: TRHs, BTEX, PAHs, VOCs, SVOCs, chlorinated aliphatic compounds; and
- Total cyanide and total phenols.

Table 3-3 Summary of Groundwater Quality Test Parameters

Sampling Date	Monitoring Well	Testing
20/02/2025	BH1M	Standard suite
	BH2M	Standard suite
	BH2.1M	Standard suite
24/02/2025	BH4M	Standard suite
	BH4.1M	Baseline suite

3.4.6 Assessment Criteria

The ANZG (2018) *95% Freshwater Default Guideline Values* (*DGVs)* and 99% *Freshwater DGVs* for bio-accumulative toxicants (cadmium and mercury) were adopted as the assessment criteria. For parameters that are not currently addressed by the ANZG fresh water DGVs, relevant alternative criteria were adopted. These were also selected as the appropriate discharge water quality criteria during site dewatering, as detailed in **Section 5.2**.

The criteria values are also presented alongside the analytical results in the corresponding summary tables (**Table B1** and **Table B2** in **Appendix B**).

3.4.7 Field-based Water Quality Testing and Observations

The water quality parameters DO, pH, EC, temperature and Eh, were measured in the field and recorded immediately prior to sampling, as summarised in **Table 3-3.** The groundwater samples were then evaluated on the basis of odour and visual signs of contamination and descriptions were recorded. The following observations were noted:

- Groundwater sampled from monitoring wells BH1M, BH2M and BH2.1M was light to dark brown in colour with medium to high turbidity;

- Groundwater sampled from monitoring wells BH4M and BH4.1M was light grey in colour with low to medium turbidity;
- No odours or visual evidence of contamination were detected during well purging or groundwater sampling; and
- No petrochemical surface sheen was observed on any groundwater purged / sampled.

Table 3-4 Groundwater Field Data

Well	SWL Pre-Purge (m BTOC) [1]	DO (mg/L)	pH	EC (µS/cm)	Temperature (°C)	Redox [2] (mV)
BH1M	6.93	0.0 [3]	5.37	1773	16.83	409.4
BH2M	6.72	0.3	7.54	1198	17.94	207.9
BH2.1M	13.75	0.0 [3]	6.5	2309	16.81	212.3
BH4M	3.32	0.0 [3]	7.13	1103	17.95	288.4
BH4.1M	3.17	0.0 [3]	7.34	153	17.67	246.7

Note 1 SWL in m BTOC: standing water level in metres below top of well casing, measured prior to well purging.

Note 2 Reduction-oxidation potential (Redox) readings were adjusted to the Standard Hydrogen Electrode by adding electrode potential 205mV.

Note 3 Likely due to an error in reading for DO.

Local groundwater was considered to be mildly acidic to mildly alkaline (pH: 5.37-7.54), fresh to brackish in terms of salinity as indicated by EC values (EC: 153 - 2309 µS/cm), and in an oxidised state (Redox: 207.9-409.4mV).

3.4.8 Laboratory Analytical Results

A summary of analytical results for baseline groundwater samples assessed against the adopted water quality discharge criteria is presented in **Table B1** and **Table B2** (**Appendix B**). Laboratory documentation is attached in **Appendix G**.

Results showed compliant concentrations with the proposed discharge water quality criteria in most samples, with the following exceptions:

- Turbidity (190-29000 NTU) exceeding the criterion (10 NTU) at monitoring wells BH1M, BH2M, BH4 and BH4.1M;
- pH (5.6-6.3) values below the criterion of range (6.5-8.0) at monitoring wells BH1M, BH2M and BH4M;
- Aluminium (76-130 µg/L), exceeding the criterion (55 µg/L pH>6.5) at monitoring wells BH1M, and BH2M;
- Nickel (12-78 µg/L), exceeding the criterion (11 µg/L) at monitoring wells BH1M, BH2M and BH4M;
- Copper (32 µg/L), exceeding the criterion (14 µg/L) at monitoring well BH1M;
- Zinc (130 µg/L), exceeding the criterion (80 µg/L) at monitoring well BH1M;
- Total Nitrogen (820 µg/L), exceeding the criterion (350 µg/L) at monitoring well BH4.1M.
- Total Phosphorus (220 µg/L), exceeding the criterion (10 µg/L) at monitoring well BH4.1M.

Groundwater salinity was found to range between 370 mg/L and 1400 mg/L TDS, i.e. less than 1,500 mg/L, which is relevant for aquifer interference policy considerations, discussed in **Section 7**.

3.4.9 Water Treatment Requirements

Water treatment during construction dewatering

The baseline groundwater quality data indicates water treatment is required in relation to:

- The physical parameters: pH and turbidity;
- Metals: copper, nickel, zinc, aluminium; and
- The nutrient parameters: total phosphorus and total nitrogen.

A potentially suitable water treatment option may involve pumping tail waters through a sediment settlement (baffle) tank, where the following could be implemented:

- pH correction via the addition of sodium hydroxide solution;
- Addition of flocculent/coagulant for settlement of suspended particles, which would lower turbidity and assist in the control of metals; and
- Adjustment of the flow rate to allow sufficient residence time for flocculation/coagulation and settlement to take place.

While the above provides basic guidance in relation to available treatment options, a water treatment specialist should be engaged to advise on appropriate water treatment technologies for site specific conditions. It would be appropriate to engage the water treatment specialist early to allow sufficient time for the design of the water treatment system, prior to the start of dewatering.

Further details on water quality management are provided in **Section 5.4**.

Water treatment during operational dewatering

Laboratory test results for the routine treated water sample collected at the end of basement construction will be used to verify discharge water quality at the end of the construction phase. The results will also inform any required adjustments to the water treatment system for the operational phase, to ensure that water quality is complaint with the discharge criteria (**Table 5-1**).

Water treatment requirements for the occupational phase will be determined at the completion of the construction dewatering phase, as described in **Section 7.3**.

4. DEWATERING METHODOLOGY

4.1 Excavation and Shoring

The proposed development will include a stepped, shared basement, with bulk excavation ranging between RL 68.7m and 80.9m, which includes allowance for the construction of the basement slab. To achieve the BEL, excavation depths from 10m to 20m BGL have been estimated. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches.

With reference to the GSA report, the shoring system was assumed to be soldier pile wall socketed below BEL. During construction and in the long-term, groundwater seepage will be freely allowed to flow into the basement.

This assessment does not assess the overall stability of the shoring system. Should the design relating to the adopted shoring system be updated, this analysis should be revised accordingly.

4.2 Estimated Groundwater Take Volumes

As described in the GSA report, groundwater seepage analysis was undertaken using PLAXIS 2D Advanced (Version 2024.1.0.1060). PLAXIS 2D is a finite element software package, which estimates the seepage rate of water entering the excavation through and beneath the shoring wall. This model is appropriate for non-complex sites with laterally uniform subsurface conditions and provides predictive estimates of seepage inflow volumes during basement construction, as well as the annual water take applicable for the occupational phase of the development.

As the basement will be designed as a draining structure, groundwater mounding was not a consideration for modelling purposes.

Based on a specific set of assumptions and field test data, which included two design groundwater levels of RL 93.0m and 77.9m (**Section 3.3)** and calculated, layer-specific hydraulic conductivities for the various classes of bedrock encountered at the site (detailed in the GSA report), annual groundwater seepage flow draining into the excavation is predicted to be **4.94 ML** (i.e. predicted daily inflow rate 13.52 m^3/day). This would apply for both the construction and the operational phases of the development.

It is noted that in accordance with the NSW *Water Management (General) Regulation 2018*, a Water Access Licence is required where the estimated groundwater take is more than 3 ML/year, in the absence of any relevant exemption. Based on the modelled seepage volume, a Water Access License will be required.

4.3 Dewatering Level and Drawdown Monitoring

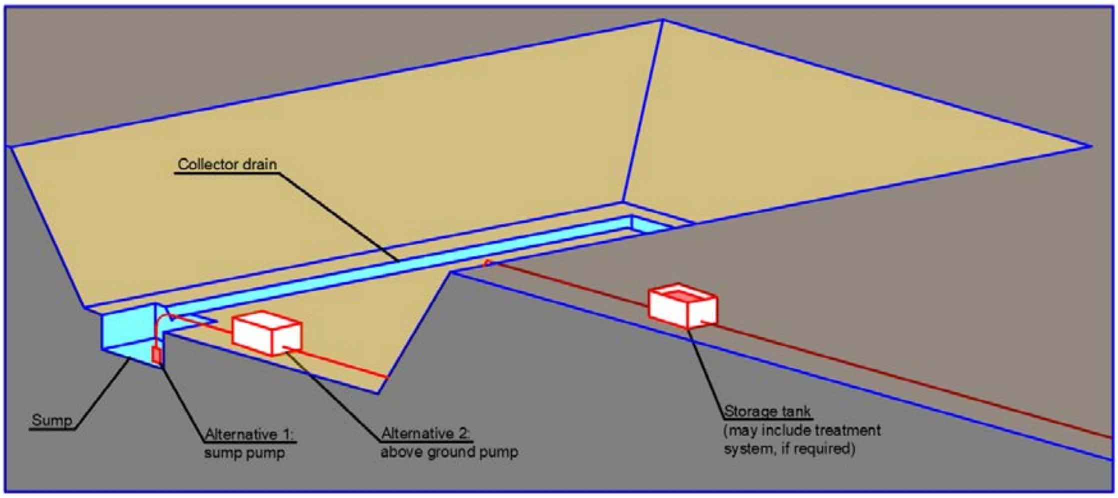
Groundwater modelling indicated a predicted maximum groundwater level drawdown of 12.0m on the northeast boundary, and 8.7m for the southwest boundary. Based on the modelled settlements, the ground outside the shoring wall is expected to experience a maximum settlement of up to 6mm. This level of settlement is considered to pose a 'negligible' risk in terms of the category of damage risk due to dewatering, as defined by Cashman and Preene (2021).

Groundwater elevations will be monitored periodically during the dewatering period, using selected monitoring wells. It is recommended that groundwater depth is gauged by electric water contact meter, during each dewatering monitoring event, and recorded onto a site log, as described in **Section 5.4**.

4.4 Dewatering Method

A sump and pump system will be used to control seepage into the excavation during basement construction and in the long-term, as illustrated in **Figure 4-1**.

Figure 4-1 Hypothetical layout of a Sump and Pump seepage collection system



4.4.1 Construction Phase Dewatering

During construction, it is recommended that groundwater is pumped-out from a collection sump located at the lowest part of the excavation and discharged initially into a vessel (or equivalent) for sediment settling. The preferred vessel type will require capacity to accommodate the rate of groundwater extraction, which is estimated to be approximately 13.52 m^3/day.

Groundwater treatment will be undertaken either in the vessel, or via a water treatment system installed close to the vessel prior to discharge. The treated water will then be discharged into the municipal storm water pit provided that prior approval for discharge has been obtained from the relevant consent authorities.

The pumping system may operate on a full time or intermittent basis (as required) for the approved construction dewatering period, to control seepage during basement construction.

The Site Manager, Dewatering Contractor and Water Treatment Specialist must agree on a dewatering strategy to confirm that dewatering treatment systems and water retention tanks can be positioned appropriately within approved areas of the site, prior to the commencement of the excavation works.

4.4.2 Operational Phase Dewatering and Groundwater Reuse Plan

A drained basement is to be adopted for the operational (post-construction) phase of the development; however, discharge to the stormwater network will be minimised by applying the significant component (>90%) of groundwater seepage to onsite planted areas, in accordance with the following Groundwater Reuse Protocol:

a) Post-construction groundwater seepage will continue to be collected into sump storage;

b) Sump waters will be directed to a water filtration and treatment system to achieve compliance with the water quality requirements detailed in **Section 5.2**; and

c) Filtered/treated water will be pumped to irrigation water storage (i.e. dedicated, onsite holding/rainwater tank), and subsequently used to irrigate onsite planted areas.

The above groundwater reuse protocol will be implemented for 42 weeks per year, thereby utilising 92% of the predicted annual groundwater seepage volume for plant irrigation. In accordance with this water reuse strategy 8% of annual groundwater seepage will be discharged to storm water during 10 weeks of winter, when onsite irrigation demand is at its lowest.

Consistent with the dewatering management plan, only treated waters that are confirmed to comply with the DWC will be discharged from the site during the approved 10 weeks of winter.

4.5 Discharge Flow and Volume Monitoring

The volume of water discharged must be monitored by a calibrated flow meter (or equivalent alternative means) that is integrated as part of the dewatering system for the complete duration of the temporary construction dewatering period. The flow meter will therefore display cumulative volume discharged at any stage during dewatering, which will be documented as part of the dewatering monitoring records.

In regards to the drainage and disposal of seepage waters entering the basement, the client must provide details for the proposed disposal connection to the stormwater system, preferably in the form of drawings, suitable for Council review purposes.

Flow monitoring data will be documented by a suitably trained site employee under the supervision of the Site Manager. Tabulated records should be maintained on site and made available to the Environmental Consultant for inclusion in the routine monitoring event reports.

These records will be used to calculate the actual groundwater volume taken from the site and will be included in the Construction Dewatering Completion Report (**Section 5.4.3**), to be issued to Council and WaterNSW after the completion of construction dewatering activities.

For the construction phase, water level and volume monitoring will be conducted during the same monitoring events described in **Section 5.4**. For the operation phase, these monitoring events will be conducted annually, as described in **Section 7.3**.

4.6 Potential Drawdown-Induced Impacts

A review of potential adverse effects of dewatering on neighbouring properties and groundwater dependent ecosystems was undertaken, as summarised in **Table 4-1.**

Table 4-1 Assessment of Potential Dewatering Effects

Attribute	Description
Proximity of Groundwater Dependent Ecosystems (GDEs)	No high priority groundwater dependent ecosystems were documented within a 40m radius of the site (1), as described in **Section 2.6**.
Water supply losses by neighbouring groundwater users	As described in **Section 2.4** a review of registered bores within a 500 m radius of the site identified 13 monitoring bores, all with cancelled licenses and with no water supply bores. As there are no local users relying on groundwater as a water supply source, water supply losses due water level drawdown effects are unlikely to be experienced as a result of site dewatering..
Potential impacts on groundwater quality resulting from contaminant migration	As described in **Section 2.5**, onsite impacted soils will be removed during the course of bulk excavations, and the potential for contaminant plume migration from the petrol station at the corner of Pacific Hwy &, Boundary St, is low. Therefore it is unlikely that groundwater quality impacts due to site dewatering would cause degradation of the beneficial use category of the groundwater source for any user.
Potential subsidence of neighbouring structures	As documented in the GSA report, PLAXIS 2D modelling determined that the maximum predicted ground settlements occur immediately outside of the shoring wall, and are estimated to be 6mm for the northeast boundary and 4mm for the

Attribute	Description
	southwest boundary. Ground settlement levels <10mm are considered to pose a 'negligible' risk in terms of the category of damage risk due to dewatering, as defined by Cashman and Preene (2021).
Mounding of water up gradient of structure	As the basement will be designed as a draining structure for this project, groundwater mounding is not a consideration.

Note 1 Based on a search of Schedule 4 in NSW Water Sharing Plan for the Greater Metropolitan Region groundwater sources 2011.

5. WATER QUALITY MANAGEMENT

5.1 Responsibility

The Principal Contractor or Site Manager, appointed by the client for the construction works, will be responsible for implementing the procedures for water quality management as described in this report. Post-construction (i.e. occupational phase) water quality management, including water treatment and water quality monitoring will be overseen by strata management (see also **Section 7.3**). The Principal Contractor or Site Manager, appointed by the client for the construction works, will be responsible for implementing the procedures for water quality management as described in this DMP.

5.2 Discharge Water Quality Guidelines

In accordance with statutory requirements for site dewatering operations, discharged water must comply with the ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, or relevant default criteria where the ANZG (2018) guidelines do not provide values. This requirement is in compliance with the *Protection of the Environment Operations Act 1997*.

The primary receiving water body is Blue Gum Creek, a partially tidally influenced waterbody, which is deemed to be a freshwater ecosystem at the point which the sites discharge water would enter (**Section 2.6**). The 2022/23 Willoughby Waterway Health Report Card ranked Blue Gum Creek ‘B’ out of an A-F scoring, on grounds of microbiological, nutrient and physical and metal compliance testing, suggesting a slightly to moderately disturbed ecosystem (WCC, 2024).

Therefore, the ANZG (2018) *95% Freshwater Default Guideline Values* (*DGVs)*, in combination with the 99% *Freshwater DGVs* for bio-accumulative toxicants were therefore adopted as the Discharge Water Criteria (DWC). These will be the trigger levels for contingent actions (see **Section 6.5**) to ensure that water of an appropriate quality is discharged to the environment.

For water quality parameters not addressed by the ANZG (2018) Freshwater DGVs, relevant alternative criteria are to be adopted. The listed parameters and their respective criteria that are applicable for the assessment of water quality during site dewatering are presented in **Table 5-1**.

The listed parameters and their respective criteria will apply for both the initial (pre-dewatering) and on-going assessment of the quality of water being discharged to the storm water system during the construction and occupational phases of the development. It is noted however, that specific analytical parameters are not mandatory after the baseline groundwater quality assessment, in accordance with the Routine water quality monitoring lists in Appendix A of DPE (2022).

Table 5-1 Discharge Water Criteria

Analyte	DWC (µg/L) [1]
Metals	
Aluminium (for waters with pH > 6.5) (Al)	55 [2]
Antimony (Sb)	9 [4]
Arsenic ^{III} (As III)	24
Arsenic ^{V} (As V)	13
Barium (Ba)	No Relevant Criteria
Beryllium (Be)	No Relevant Criteria

Analyte	**DWC (µg/L)** [1]
Boron (B)	940
Cadmium (Cd)	0.06
Chromium ^{III} (Cr III)	3.3 [4]
Chromium ^{VI} (Cr VI)	1
Cobalt (Co)	1.4 [4]
Copper (Cu)	14 [3]
Iron (Fe)	No Relevant Criteria
Lead (Pb)	3.4
Lithium (Li)	No Relevant Criteria
Manganese (Mn)	1900
Mercury (total) (Hg)	0.06
Molybdenum (Mo)	34 [4]
Nickel (Ni)	11
Selenium (Se)	11
Silica (dissolved SiO_2)	No Relevant Criteria
Silver (Ag)	0.05
Strontium (Sr)	No Relevant Criteria
Uranium (U)	0.5 [4]
Vanadium (V)	6 [4]
Zinc (Zn)	80 [3]
Petroleum Hydrocarbons	
Oil and grease	*No visible sheens, surface films or oil and grease* [5]
Volatile TRH ($C_6 – C_9$)	No Relevant Criteria
Semi-volatile to heavy TRH ($C_{10} – C_{40}$)	No Relevant Criteria
Monocyclic Aromatic Hydrocarbons (BTEX)	
Benzene	950
Toluene	180
Ethylbenzene	80
o - xylene	350
p - xylene	200
m - xylene	75
Polycyclic Aromatic Hydrocarbons (PAH)	
Benzo(a)pyrene	0.1
Naphthalene	16

Analyte	DWC (µg/L) [1]
Microbiological Organisms	
Faecal coliforms, Faecal streptococci, Escherichia coli (E. coli)	No Relevant Criteria
Major Ions	
Anions: sulfate, chloride, carbonates, bromide, fluoride	No Relevant Criteria
Cations: calcium, magnesium, sodium, potassium	No Relevant Criteria
Ionic balance: cation / anion balance (as a percentage)	No Relevant Criteria
Nutrients	
Ammonia	900
Nitrate (NO_3)	700 [8]
Nitrite (NO_2)	No Relevant Criteria
Total Oxidised Nitrogen (NO_x) 10 9	40 [10]
Total Nitrogen (TN) 350 9	500 [10]
Total Phosphorus (TP) 10 9	50 [10]
Reactive Phosphorus (FRP) 5 9	20 [10]
Other	
Total Cyanide	7
Phenol	320
PFOS	0.13 [9]
PFOA	220 [9]
Physiochemical Parameters	
EC (µS/cm)	2,200 [7]
pH (pH units)	6.5 to 8.0 [6]
Turbidity (NTU)	50 [7]

Note 1 Discharge water criteria are the ANZG (2018) *95% Default Guideline Values (DGVs)* for the protection of slightly to moderately disturbed freshwater ecosystems, with the *99% DGVs* applied for the bio-accumulative parameters *benzo(a)pyrene*, *cadmium* and *mercury*, unless otherwise indicated.

Note 2 Criterion for Aluminium based on the pH of the receiving waterbody. Local waterway quality testing in upstream (i.e. non-tidal) reaches has found pH in Blue Gum Creek to be above 6.5 from 2016 – 2023 (WCC, 2023)..

Note 3 For the metals copper and zinc, which are commonly present as regional background components in groundwater at concentrations above the ANZG 2018 95% Fresh DGVs, discharge water criteria are set at one order of magnitude higher than the ANZG 2018 DGV.

Note 4 The ANZG (2018) only provides freshwater criteria at an ‘unknown’ level (%) of species protection for *antimony, chromium III, cobalt, molybdenum, uranium* and *vanadium*; therefore, these DGVs are applied.

Note 5 NHMRC (2008) No Detectable Oil & Grease - OG test must find no visible film or sheen at the water surface and no detectable hydrocarbon odours, based on aesthetic aspects, as described in NHMRC (2008) *Guidelines for managing risks in recreational water*, Section 10.2.2.

Note 6 In the absence of ANZG (2018) criteria, alternative pH criteria from ANZECC / ARMCANZ (2000), Table 3.3.2 *Default trigger values for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems* were used. The adopted pH range for *Freshwater lakes & Reservoirs* was applied.

Note 7 In the absence of ANZG 2018 criteria in relation to Turbidity and water salinity (as indicated by EC), the ANZECC & ARMCANZ (2000), Table 3.3.3 *upper default trigger value for Lakes & reservoirs* is applied.

Note 8 In the absence of ANZG (2018) criteria in relation to *Nitrate*, the ANZECC & ARMCANZ (2000), *95% Freshwater Trigger value (Ref. Table 3.4.1 Trigger values for toxicants at alternative levels of protection)* is applied.

Note 9 DWC value is derived from the National Environmental Management Plan for PFAS (2020) - *95% species protection for slightly to moderately disturbed systems*.

Note 10 In the absence of ANZG (2018) criteria, alternative criteria from ANZECC / ARMCANZ (2000), Table 3.3.2, *Default trigger values for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems, Freshwater lakes & Reservoirs* criteria were adopted for total oxidised nitrogen (NO_x), total phosphorus (TP), reactive phosphorus (FRP) and total nitrogen (TN).

5.3 Additional Pre-dewatering Monitoring Event

As the baseline groundwater quality assessment included all mandatory parameters listed in Appendix A of DPE 2022 (as detailed in **Section 3.4.5**), an additional pre-dewatering GME is considered unwarranted.

As described in **Section 3.4**, water quality conditions outside of the DWC have previously been detected in relation to copper, nickel, zinc, aluminium, total phosphorus, total nitrogen, pH and turbidity. With the aim of preventing adverse impacts on receiving waters, extracted groundwater should therefore be treated prior to stormwater discharge, while monitoring of all parameters should continue regularly, as described in **Section 5.4**. Water treatment requirements are addressed in **Section 5.5**.

EI found no evidence to warrant additional PFAS testing of the groundwater passing beneath the site.

5.4 Discharge Water Quality Monitoring

5.4.1 Visual Monitoring

Visual inspections of the dewatering measures and equipment should occur regularly (daily where possible) by the Site Manager and/or Dewatering Contractor, to ensure:

- The effective operation of all dewatering and water treatment equipment, including inspection to confirm that no short-circuiting of water is occurring around baffles and filter media within sediment retention tanks;
- No petrochemical sheens are visible on the water surface and no detectable hydrocarbon odours are being generated by the treated groundwater or sediment; and
- No green, blue or extremely clear effluent is observable, potentially indicating high levels of dissolved aluminium (if used in the treatment process).

The Site Manager must maintain a logbook record of all visual observations and operational measurements such as flow rates and water flow meter readings (if used), as detailed in **Section 5.6**.

5.4.2 Sample Collection and Analysis

On-going sample analysis must continue for the duration of the dewatering activities, to establish that the treatment system (if required) is functioning as intended, and to confirm the quality of discharge water is acceptable for release into receiving water bodies (Blue Gum Creek).

Sample collection should be completed by a suitably qualified environmental scientist or equivalent, with the subsequent analyses performed by a reputable environmental laboratory using NATA-registered analytical methods. The analytical program is to initially include the parameters listed in **Table 5-1 (Section 5.2)**, in accordance with *Appendix A – Routine water quality monitoring lists* (Ref. DPE, 2022). Additional water quality parameters may be added to the analytical test suite, should daily monitoring indicate this is warranted.

The following activities are to be implemented for the on-going monitoring program:

Trial-Run Period:

- Prior to the discharge of any extracted groundwater, a trial run will be completed as follows:
  - Groundwater will be pumped into the sediment settlement tank and passed through the water treatment system;
  - Samples of the (treated) groundwater will be collected and laboratory analysed for the water quality parameters of concern; and
  - The water testing results will be compared against the DWC, to confirm compliance and signify extracted groundwater can be directed to the municipal stormwater network (from the approved connection point).
- As a minimum, two samples of groundwater will be collected for each of two weeks during the designated trial-run period. The analytical results will be compared to DWC, to assess the performance of the water treatment system. The results of each sampling event will be recorded, to establish chemical concentration trends (if any).
- Sampling for trial run purposes will cease once the target parameters in treated water stabilise (i.e. consecutive tests are within ±10%) and contaminant concentrations are within the adopted discharge criteria for three consecutive sampling events. The trial-run period may be extended if stabilisation is not observed, or if the treated water does not satisfy the adopted criteria.
- The Dewatering Contractor / Water Treatment Specialist should seek advice from the Environmental Consultant regarding termination of the trial-run period.
- During the trial-run period, all collected (treated) groundwater (including treated water) should be retained on-site and stored in appropriate bulk containers. Alternatively, baffle tanked groundwater may be re-injected into the sub-surface of the site (away from the extraction / pumping point). No collected groundwater should be discharged until it is proven to meet the adopted DWC.

Construction Phase Discharge Monitoring (Weekly to Monthly):

- After the Trial-Run Period, and subject to consent authority approval, treated water may be discharged to the receiving water bodies. A weekly sampling frequency will be adopted for four weeks. The sampling program will involve the collection of one system discharge (i.e. treated) sample (as a minimum), to be analysed for the target parameters of concern, to confirm the system is functioning as intended.
- After four weeks, the weekly sampling frequency may be extended to fortnightly monitoring for one month and then monthly for the remaining duration of construction phase dewatering, provided the analytical monitoring results indicate the treated water quality consistently meets the adopted criteria. If this is not achieved, contingency measures must be implemented, with monitoring frequency going back to weekly until consistency in the discharged water results is re-established.

Operational Phase Discharge Monitoring (Annual)

- Provided that Construction Phase Discharge Monitoring shows consistent and compliant results, the monitoring frequency can be extended to annually during the operational period, until the end of year 3, as described in **Section 7.3**.
- As per the construction phase monitoring, contingency measures detailed in **Section 6.5** should be implemented if groundwater results exceed or are predicted to exceed the adopted criteria for any one monitoring event.
- Any changes to the sampling frequency are to be determined by the appointed environmental consultant, and justification must be documented in the monitoring records.

5.4.3 Reporting of Water Quality Results

Dewatering management procedures and monitoring results will be reviewed by the appointed Environmental Consultant to ensure that the treatment procedures are effective, and that the discharge waters are in compliance with the adopted criteria (**Section 5.2**). Discharge water quality reporting will be required as follows:

- **Interim Monitoring Reports:** will be prepared upon receipt of laboratory data for each round of water quality monitoring for the discharged waters. The interim reports will detail the sampling methods and procedures, provide a comparison between historical and current results, assess the results against the adopted criteria and provide recommendations on corrective actions, when required.
- **Dewatering Completion Report:** Following completion of construction dewatering activities, a *Dewatering Completion Report* (DCR) will be prepared by the appointed Environmental Consultant, and must include copies of all analytical results and interim monitoring reports issued during the construction phase dewatering period. The DCR will be prepared using the pro-forma available for download through the WaterNSW website, as described in **Section 5.6**.
- **Annual Dewatering Monitoring Reports:** will be prepared upon receipt of laboratory data for each annual round of water quality monitoring during the operational phase of the development, as described in **Section 7.3**.

5.4.4 Reporting of Other Information

The Site Manager must keep records of cumulative discharge volume and treatment methods and treatment chemicals applied to the water discharge, if any. In addition, any periods of dewatering stoppage should also be recorded. This information may be compiled using the DCR pro-forma (see **Section 5.6**).

5.5 Water Treatment

5.5.1 Treatment System Design

This section provides only general guidance on the treatment of groundwater that is dewatered from the site. Specific details on the water treatment system and associated treatment technologies/methods will be finalised after engagement of a contract water treatment specialist and may be submitted to Council and WaterNSW at that stage.

5.5.2 Water Treatment Design Considerations

Baseline groundwater quality data to date (**Section 3.4.8**) indicates that treatment of seeped groundwater will be necessary prior to discharge to the storm water system. It is recommended that the selection and design of the preferred treatment system are managed by a Dewatering Contractor / Water Treatment Specialist, in collaboration with the appointed Environmental Consultant. Alternative and/or additional water treatment options may be required, depending on which parameters are found to exceed the DWC during the Trial-Run period described in **Section 5.4.2**.

The design and installation of the preferred system should consider:

- A treatment tank with minimum capacity capable of containing the expected inflow for the basement (as described in **Sections 4.2** and **4.4**);
- Water filtration to reduce coarse and fine suspended solids;
- If applicable, automated in-line chemical dosing systems for the addition of coagulants for the adjustment of turbidity and other parameters, which may be required as described in **Section 6.5** *Dewatering Contingencies*;
- Groundwater treatment to reduce concentrations of contaminants exceeding the DWC to below the values presented in **Section 5.2**;

- Spare retention tank(s) to provide additional residence time and sedimentation, in the case that non-compliant water quality is identified during routine monitoring, triggering temporary redirection and storage while adjustments to the water treatment system are being implemented; and
- A means of monitoring flow rate to enable the accurate determination of total discharge volume.

The water treatment system should be installed, tested and made operational prior to the commencement of dewatering, to ensure that only treated water that meets the adopted quality criteria is discharged.

5.5.3 Treatment System Maintenance

The water treatment system(s) must be regularly maintained by the Dewatering Contractor / Water Treatment Specialist. Maintenance must include (if applicable):

- Regular cleaning and or replacement of the geo-fabric/particle filters within the retention tanks;
- Media changeover (e.g. granular activated carbon – GAC) whenever breakthrough conditions are met; and
- Regular removal of sediment from the retention tanks by an appropriately-licensed waste contractor.

5.6 Reporting of Dewatering Information

5.6.1 Interim Report - Construction Dewatering

In accordance with WaterNSW requirements (Ref. WaterNSW Fact Sheet 260923, Link: https://www.waternsw.com.au/__data/assets/pdf_file/0005/155417/Fact-sheet-Completion-report-Construction-dewatering.pdf), a *completion report* will be prepared and submitted to WaterNSW, at the completion of site dewatering. The completion report must accompany an application to WaterNSW to surrender the *water supply work approval*, at the time that site dewatering is ended.

As the proposed dewatering will involve operational dewatering, the first report to be submitted to WaterNSW for this site will be titled "*Interim Report – Construction Dewatering"* and will document all records collected from the beginning to the end of the construction dewatering period. A blank *Interim Report* form may be downloaded from the WaterNSW website using the internet link: https://www.waternsw.com.au/__data/assets/pdf_file/0004/167278/Completion-report-for-dewatering-work.pdf, and is to be used to record all of the required information, as listed on the form itself (see **Appendix I**).

The routine logging of flow meter readings at the start and finish of each dewatering event is to be completed by a responsible representative of the construction team (e.g. the Site Manager). Each flow meter entry will record a volume of water take associated with it, to enable the calculation of cumulative water take volume at any time during the site dewatering period.

Other records including water quality results, laboratory analytical reports and groundwater level monitoring records may be supplied by the appointed specialist contractors/consultants to the responsible person, who will compile and attach the relevant information to the *Interim Report* form. The Site Manager may authorise a qualified contractor/consultant to maintain the *Interim Report* on the Site Manager's behalf.

At the completion of the construction phase, the Interim Report will be submitted to WaterNSW for review.

5.6.2 Annual Reporting for Operational Dewatering

As site dewatering will continue during the occupational phase of the development, monitoring will continue under the responsibility of Strata Management through the occupational phase. This will require the same information as required for the *Interim Report* (described in **Section 5.6.1**), to be logged and submitted to WaterNSW on an annual basis under the report title "*Annual Report – Occupational Dewatering"*.

Monitoring frequencies for the occupational phase are detailed in **Section 7.3**.

All laboratory analytical results, flow meter logs and groundwater level monitoring records must be maintained by strata management, and should be made available upon request by Council and/or WaterNSW.

5.6.3 Dewatering Completion Report

A final *"Dewatering Completion Report"* will be submitted to WaterNSW at the termination of site dewatering, together with an application to surrender the water supply works approval.

6. SITE MANAGEMENT CONTROLS

6.1 Deviations from this Plan

The Site Manager should seek advice from the Environmental Consultant whenever deviation from the agreed monitoring program is considered. One of the objectives of the dewatering monitoring program is to provide early warning to prevent adverse impacts from non-compliant discharge water quality, excessive groundwater extraction and excessive drawdown in groundwater levels.

Should any variation to this plan be considered to be warranted, written notification (with technical justification) must be submitted to the relevant consent authority (Council / WaterNSW) for consideration.

Variations to the discharge water criteria (specified in **Table 5-1** of this plan), require approval from the consent authority for the stormwater system before alternative discharge criteria are applied.

6.2 Contact Details for Key Personnel

Once the relevant personnel have been appointed, their names and contact information must be clearly displayed on-site, within the site office. An example format is as follows:

Site Manager	Name: To be confirmed. Company: To be confirmed.	Mobile phone: To be confirmed. Email: To be confirmed.
Dewatering Contractor	Name: To be confirmed. Company: To be confirmed.	Mobile phone: To be confirmed. Email: To be confirmed.
Water Treatment Specialist	Name: To be confirmed. Company: To be confirmed.	Mobile phone: To be confirmed. Email: To be confirmed.
Environmental Consultant (Water Quality Expert)	Name: To be confirmed. Company: To be confirmed.	Mobile phone: To be confirmed. Email: To be confirmed.

6.3 Summary of Specific Activities

The appointed contractors and/or Site Manager will be responsible for ensuring that the following activities (requirements) are undertaken during the dewatering program:

- Maintain erosion and sediment control measures in a functioning condition, until all earthwork activities are completed.
- Perform daily visual inspection of the recharge well(s), stormwater diversions and sediment / erosion control devices, ensuring they are operating effectively and at full capacity.
- Implement appropriate remedial measures where any controls or devices are not functioning effectively or are inappropriate.
- Collate records and comments on the condition of existing erosion and run-off controls (drains, silt fences, catch drains etc.), dewatering procedures and test results, and any site instructions issued to sub-contractors to undertake remedial works.
- Maintain rainfall data (to be filed on site).
- Confirm water quality parameters meet the relevant discharge limits, by disclosing supporting documentation upon request.
- Reporting any incidents of poor drainage or uncontrolled discharge.

- Recording all daily inspection reports, environmental incidents and controlled discharge volumes, which may be reviewed during any environmental audit performed on the site.

6.4 Vibration, Noise, and Odour Management

The following vibration, noise and odour risks must not occur during dewatering:

- Excessive vibration and noise levels associated with site plant / dewatering equipment; and
- Odours released from collected groundwater, which may pose a risk to human health and/or the aesthetic condition of the environment.

It is the responsibility of the Site Manager to ensure appropriate management of vibration, noise and odour during dewatering operations. Appropriate management methodologies include:

- Undertaking dilapidation surveys of neighbouring buildings, in accordance with potential for impacts in final design type.
- All sub-contractors to work only within defined hours set by the development consent conditions.
- All reasonable steps shall be taken to muffle and acoustically baffle all plant and equipment. Noise and vibration levels generated by site works must be within the limits set by the consent conditions, the site specific environmental management plan and the *Protection of Environmental Operation Act 1997*.
- Give consideration to noise emitted by plant/equipment prior to its selection/mobilisation to site.
- Schedule the use of noisy equipment at the least-sensitive time of day.
- Situate noisy equipment at the greatest distance from the noise-sensitive area, or orient the equipment so that noise emissions are directed away from sensitive areas, to achieve the maximum attenuation of noise.
- Where there are several noisy pieces of equipment, schedule operations to minimise cumulative impacts.
- Keep equipment well maintained.
- Ensure engine shrouds (acoustic linings) are installed (where feasible).

6.5 Dewatering Contingencies

Contingent actions for scenarios that may arise during dewatering are detailed in **Table 6-1**.

Table 6-1 Mitigation Measures for Potential Dewatering Issues

Anticipated Problems	Corrective Actions
Water Quality Criteria Non-compliance	
Discharge Water Criteria Exceedance Laboratory analytical report for any monitoring event reveals that the quality of treated discharge water does not satisfy the adopted discharge performance criteria detailed in **Table 5-1**, **Section 5.2**.	Immediate action must be taken to halt the release of water into Council's stormwater system, where water quality is found not to meet the discharge criteria detailed in **Table 5-1**. 1) Discharge to the stormwater system must be suspended to enable the following procedure to be implemented: 2) Discharge water will be redirected to the spare retention basin; 3) A water sample will then be collected and sent to the laboratory for confirmation analysis for the non-compliant parameter(s) on an express (24 hour) results turn-around basis; 4) Should the analytical result for the confirmation sample show that the previously non-compliant parameter(s) is/are now meet the adopted discharge water quality performance criteria, the treated

Anticipated Problems	Corrective Actions
	water outlet may be redirected to the stormwater system; however 5) Should the analytical result for the confirmation sample show that the discharge water quality is confirmed not to comply with the discharge criteria, then the Water Treatment Specialist will be directed to modify the water treatment system accordingly to achieve compliant discharge water quality and a new treated water sample will be collected; 6) After laboratory confirmation that the revised treated water quality complies with the discharge criteria, the extracted groundwater may be re-directed to the stormwater discharge point; and 7) The frequency of treated discharge water quality monitoring will be returned to weekly, until such time that three consecutive compliant laboratory reports for weekly monitoring events are achieved, at which stage fortnightly monitoring may be reinstated. **Note: Wastewater Removal** - It may be necessary to have collected waters removed by a licensed wastewater contractor, should quantities exceed the on-site capacity for temporary storage. In this case, records must be maintained to document quantities of wastewater disposed in this way, with provision of wastewater disposal dockets issued by the contractor to be retained for audit and reporting purposes.
Visible & Olfactory Impacts Visual and / or olfactory anomalies (e.g. change in water colour, turbidity, odour, presence of oil / grease) are observed in extracted groundwater.	Similar to the above procedure (Steps 1 to 6) treated water will be redirected to the spare retention basin, while the treatment system is adjusted to manage the observed water quality issues. It may be necessary to have collected waters removed by a licensed wastewater contractor, should retained quantities exceed the onsite capacity for temporary storage. The contractor is to seek advice from a suitably experienced environmental consultant in regard to the additional assessment and treatment that may be required for any observed changes to water appearance or detectable odours.
Repeated Criteria Exceedances After three performance criteria non-compliances for discharge water quality	Retain extracted water onsite in spare retention basin(s) and appropriate bulk containers, until it can be removed by a licensed waste contractor. Determine an alternative discharge method, if necessary, updating the DMP accordingly.
Groundwater Take Non-compliance	
Excessive Extraction The predicted daily inflow rate (specified in **Section 4.2**) is exceeded.	Retain tail water onsite in appropriate bulk containers. Remove water by a licensed wastewater contractor, or seek Council approval for temporary increase in discharge rate to the stormwater system.
Drawdown Settlement Risk	

Anticipated Problems	Corrective Actions
Excessive Water Level Drawdown	As documented in the GSA report (EI 2025d), dewatering will have negligible, if any, adverse impact on the neighbouring properties. Should groundwater level monitoring during site dewatering reveal greater than predicted groundwater drawdown levels at the site boundary, however, the following action should be implemented: 1) The client, geotechnical engineer, structural engineer and relevant stakeholders (including potentially affected neighbouring property owner(s)), should be notified; and 2) Revisions to the dewatering approach for localised deeper works (e.g. localised pumping around lift pits and other deeper construction features), should be defined and implemented, thus limiting the lateral extent of deeper dewatering.
System Performance Issues	
Dewatering system failures	Ensure that spare equipment parts (where practical) are on hand. Ensure that the failed equipment can be serviced by site personnel or an appointed contractor who can rapidly report to site when needed.
Power outages	Ensure that a backup generator is readily available. In this event, an assessment across the site and surrounding sites should also be completed in order to identify whether any other lights and electrical equipment are working so to identify if the issue is site specific or if it is across a whole area. In addition to having the back-up generator running, the contractor should also seek advice from an electrician in regard to the additional assessment and repairs that may be required.
Unexpected contaminants found during monitoring	Contact the appointed water quality expert and assess against relevant criteria. If contaminant is found to exceed the adopted criteria, follow the corrective actions corresponding to “Performance Criteria Exceedance” above. Expand Discharge Water Criteria accordingly.
Chemical/ fuel spill and leaks from machinery	Stop earthworks, notify site project manager. Use accessible soil or appropriate absorbent material to absorb the spill (if practicable). Stockpile the impacted material in a secure location, on builder’s plastic to avoid cross contamination. Inspect groundwater and note any visual and/or changes. The contractor should also seek advice from environmental consultant in regard to the additional assessment and treatment that may be required.
Excessive rainfall	Ensure sediment and surface water controls are in place and functioning as intended, as per the designs provided in the site specific Soil and Water Management Plan. Any non-conformance is to be documented and rectified. The capacity of the dewatering system to dispose larger volumes of water should be evaluated and if required, a temporary system should be utilised following correspondence with Council / WaterNSW and the environmental consultant.
Excessive Noise	Identify the source and isolate if possible. Modify the actions of the source or erect temporary noise barriers if required.
Impacts on the stability of adjacent structures	Contractor to seek advice from qualified professional (such as a geotechnical engineer and/or structural consultant) in regards to the additional assessment and monitoring that may be required.
Complaint Management	Notify Client, Project Managers and Environmental Consultant (if required) following complaint. Report complaint as per management

Anticipated Problems	Corrective Actions
	procedures. Implement control measures to address reason of complaint (if possible). Notify complainant of results of remedial actions.
Excessive Organic Odours / Vapours	In accordance with Council’s Contaminated Land Policy, no nuisance odours are to be detected at any site boundary during the dewatering stage. Should odour emissions be detected at a site boundary, the following measures will be implemented: 1) Stop work, to allow odour to subside. 2) Monitor ambient air across the site and boundaries with a portable photo-ionisation detector (PID). 3) Implement control measures, including respirators for on-site workers, use of odour suppressants and wetting down of excavated material. 4) Notify the occupants of adjoining premises regarding odour issues. Notification should be in writing, providing the contact details of the responsible site personnel. 5) Record logs for volatile emissions and odours.

7. MINIMAL HARM ASSESSMENT

7.1 Consideration of NSW Aquifer Interference Policy

In accordance with the NSW Water Management Act 2000 the taking of water from an aquifer and/or the disposal of water taken from an aquifer is defined as an aquifer interference activity. The NSW 2012 Aquifer Interference Policy (the 'NSW AIP') provides guidance for the assessment of potential impacts of dewatering on water users and groundwater dependent ecosystems. The NSW AIP assessment process was performed with due regard for all hydrogeological information collected for the site and is presented below.

7.1.1 Hydrogeological Model Summary

With reference to the site-specific hydrogeological conceptual model (**Section 3.2**), for a bedrock aquifer with groundwater under pressure, groundwater seepage would enter the excavation flowing through joints, faults and bedding plane fractures within the bedrock. Lower seepage flow volumes may be expected during depressed groundwater levels in dry periods, with higher seepage flow after high rainfall events, which would be expected to cause temporary, elevated groundwater levels.

7.1.2 Groundwater Source Category

Under the NSW Government (2012) *Aquifer Interference Policy*, "highly productive" groundwater is defined as a groundwater source that:

a) has total dissolved solids (TDS) of less than 1,500 mg/L; and

b) contains water supply works that can yield water at a rate greater than 5 L/sec.

The baseline groundwater quality assessment has identified groundwater salinity values ranging between 370 mg/L and 1,400 mg/L TDS, (see **Table B2**). Modelled inflow to the basement will be 13.52 m^3/day (**Section 4.2**) i.e. 0.17 L/sec, for both the construction and operational phases of the development.

The aquifer at the site therefore meets the description of a *"less productive groundwater source"*, as defined under Section 3.2.1 *Aquifer impact assessment* of the NSW AIP.

7.1.3 Minimal Impact Considerations

In accordance with the NSW AIP Table 1 *"If the predicted impacts are less than the Level 1 minimal impact considerations, then these impacts will be considered as acceptable."*

Table 1 *Minimal Impact Considerations for Aquifer Interference Activities* of the NSW AIP shows that for *Less Productive Groundwater Sources* in low yielding porous and fractured rock water sources that are under groundwater pressure conditions, the following minimal impact considerations are applicable:

Drawdown

- *Level 1 – A cumulative pressure head decline of not more than 2m, at any water supply work.*
- *Level 2 – If the predicted pressure head decline is greater than the Level 1 requirement (above), then appropriate studies are required to demonstrate to the Minister's satisfaction that the decline will not prevent the long-term viability of the affected water supply works unless make good provisions apply.*

Water Quality

- *Level 1 - Any change in groundwater quality should not lower the beneficial use category of the groundwater source beyond 40m from the activity.*

- *Level 2 - If the Level 1 condition (above) is not met, then appropriate studies will need to demonstrate to the Minister's satisfaction that the change in groundwater quality will not prevent the long-term viability of the dependent ecosystem, significant site or affected water supply works.*

7.1.4 Minimal Impact Conclusions

The proposed dewatering for the construction and operational phases of the project are considered to be compliant with the NSW AIP minimal impact criteria for the following reasons:

- Although the estimated maximum cumulative pressure head declines (12.0m on the northeast boundary, and 8.7m on the southwest boundary) have been modelled to be greater than *Level 1 minimal impact considerations* with respect to drawdown, the drawdown will occur in competent bedrock, with less than 10 mm predicted ground settlement immediately outside of the shored wall. Drawdown-induced ground settlement would therefore have negligible impact on neighbouring properties, beyond the site boundary.
- As described in **Section 2.4**, the lack of registered water supply bores within 500m of the site indicates that groundwater is not relied on as a local water supply source. This indicates there are no beneficial users of the groundwater resource within the zone of drawdown influence that would be adversely affected by the drop in groundwater levels.
- There is a petrol station (7-Eleven, Corner Pacific Hwy &, Boundary St, Roseville NSW 2069) 250m southeast, cross gradient from the site which is a potential source of groundwater contamination. Since groundwater is not being utilised within 500m of the site, any water quality impacts are unlikely to adversely impact the beneficial use category of the groundwater source. The AIP *Level 1 Water Quality* conditions would therefore be maintained.
- There are no documented high priority, groundwater dependant ecosystems within 40m of the site.

In addition to the above, the routine monitoring of treated water quality, cumulative drawdown and water take and the dewatering contingencies tabulated in **Section 6.5** are designed to ensure that potential adverse impacts are minimised.

7.2 Assessment Inputs

The inputs for assessing the potential impacts of dewatering on the groundwater system are summarised in **Table 7-1**.

Table 7-1 Assessment inputs summary

Assessment Items	Comments
1. Estimated water take volume	The water take volume is calculated as **4.94 ML per year**, for both the construction phase and the operational phase of the development (**Section 4.2**).
2. Suitability of volume estimation	Use of PLAXIS 2D, as part of the GSA (**Appendix D**).
3. Ground elevation across the site topography	The site is located on a slope which generally falls west. The site itself is varied in elevation, with relative levels varying from 88m to 100m AHD (**Table 2-3**).
4. Geotechnical ground characterisation	Refer to GSA report in **Appendix D** and bore logs in **Appendix E**.
5. Water level measurements	Groundwater levels were at depths from 3.17-13.75m BTOC (**Table 3-3**). Periodic groundwater level gauging will be conducted on an annual basis (i.e. 1 monitoring event per year) at monitoring wells during the operational phase, as described in **Section 5.4.2**.
6. Required water level draw down and potential impacts	As described in **Section 2.4** a review of registered bores within a 500 m radius of the site identified no registered bores that are being used for

Assessment Items	Comments
	groundwater supply purposes. Water level drawdown effects are therefore unlikely to cause water supply losses to local groundwater users. Based on the GSA (EI, 2024c), the anticipated maximum water level drawdown surrounding the site due to dewatering is between 12.0m and 8.7m within the shale/sandstone bedrock, potentially resulting in ground settlements of 6mm for the northeast boundary, and 4mm for the southwest boundary, as predicted by numerical modelling. Drawdown-induced ground settlements of less than 10mm are categorised as posing 'negligible' risk of damage (Ref. Cashman and Preene, 2001). As the dewatered lithology comprises competent bedrock, the predicted ground settlements due to water level drawdown are therefore unlikely to cause adverse impacts on neighbouring properties. Notwithstanding, as stated in the GSA report, "it would be prudent for a thorough assessment of potential risks posed on neighbouring structures to be completed by a qualified and experienced structural engineer".
7. Works proposed for dewatering	A drained basement using drainage to a sump-and-pump system, with water treatment to achieve compliant discharge water quality, as described in **Section 4.4** and **Section 5.5**.
8. The base level of the aquifer	Shale and fractured sandstone bedrock extends below the proposed BEL, see **Section 3.2**.
9. Excavation footprint dimensions	Refer to basement plan included in **Appendix C**.
10. Hydraulic conductivity of lithological units	Detailed in Table 1 of the GSA report in **Appendix D**.
11. Anticipated duration of dewatering	Dewatering will be ongoing for the approved construction dewatering period, while operational dewatering will be ongoing for the life time of the project.
12. Depth of piling embedment beneath bulk excavation	Refer to **Section 4.1** – embedment depth will be provided with final design and detailed shoring plans.

7.3 Operational (Occupational) Phase Dewatering Management

7.3.1 Operational Phase Water Treatment

The need for water treatment during the operational phase will be dependent on water quality, as it was during construction phase dewatering. Under the Groundwater Reuse Protocol described in **Section 4.4.2**, a combination of onsite reuse and stormwater discharge is planned annually during the winter period, at which time collected groundwater seepage volume is expected to be above the onsite irrigation demand.

To determine water treatment requirements, a pre-treatment water sample will be collected prior to the stormwater discharge period and laboratory analysed for the dewatering parameters listed in **Table 5-1**. Any exceedances of the DWC, will indicate the need for water treatment for the con-compliant water quality parameter. An appropriate water treatment system will be established to ensure that discharge water quality (i.e. treated water) is appropriate for stormwater discharge.

It will be the responsibility of Strata Management to ensure that the water treatment is appropriately maintained to ensure that only compliant water quality is discharged from the site.

7.3.2 Monitoring Frequency and Reporting

Strata Management is also responsible for the engagement of a suitably qualified and appropriately experienced environmental consultant, to perform dewatering monitoring and annual reporting for the occupational phase of the project.

The following procedure will be adhered to ensure that the long-term dewatering system is managed appropriately:

- **Groundwater level monitoring**: Scheduled groundwater level monitoring is required for the first 36 months of the sump and pump operational phase in order to characterise seasonal groundwater level fluctuations for the operational (post-construction) phase of the development.

  A quarterly groundwater level monitoring frequency (i.e. once every 3 months) will be adopted for the first twelve months of occupation. This will be followed by semi-annual water level monitoring (i.e. once every 6 months) for the second year; then annual monitoring (i.e. a monitoring event at the end of the third year). Groundwater levels will be measured at each of the onsite monitoring wells and data will be recorded on a data form which also documents date of monitoring, well identification number, reference point from where all water level measurements are consistently taken (e.g. top of well casing, or ground level), the depth to water in metres relative to Australian Height Datum and the name and company of the person conducting the monitoring.

  Should the environmental consultant discover that the monitoring wells are no longer functional, Strata Management must be immediately notified to implement the Well Replacement Protocol described in **Section 7.3.3**.

- **Discharge volume monitoring**: The volume of water discharged to stormwater must be monitored by a calibrated flow meter (or equivalent alternative means) that is integrated as part of the long-term pumping system. The flow meter (or flow monitoring device) will display cumulative volume discharged, which will be recorded onto the same data form used to document groundwater level, at the time of each water level monitoring event. Discharge volume monitoring frequency will therefore be the same as for groundwater level monitoring, i.e. quarterly for the first year, every 6 months for year two, and a single monitoring event at the end of year three.

- **Water quality monitoring**: A single, post-treatment water sample will be collected on an annual basis during the final monitoring event in each year (i.e. at 12 months, 24 months and 36 months of operation). Treated water samples will be laboratory analysed for the water quality parameters listed in **Table 5-1**, to confirm compliance with the DWC. Laboratory analytical reports and associated results summary tables must be returned to Strata Management for record archiving. The data will also be attached to the annual monitoring report.

- **Annual dewatering monitoring report**: A factual, 12-monthly *Interim Report – Operational Dewatering* will be prepared using the WaterNSW Completion Report form template (described in **Section 5.6.1**), after each 12 months of monitoring. Each report will document the groundwater level gauging results, groundwater quality results and the cumulative volume of water discharge from the seepage collection sump to the storm water system. Each annual monitoring report will also include a trend analysis of the monitoring data and provide a discussion to characterise discernible/statistical trends in groundwater quality, and/or groundwater levels as measured in the monitoring well(s) and water discharge volumes over time.

- **Cessation of monitoring**: Should the annual dewatering monitoring report after the 36th month of occupation confirm that groundwater quality, groundwater level fluctuations at the monitoring well(s) and annual groundwater discharge volumes are stable (i.e. not statistically trending up or down), then it will be determined that equilibrium has been reached and termination of the monitoring program would be justified. Should this not be the case, then ongoing monitoring for occupational phase dewatering will be reviewed accordingly.

  The appointed environmental consultant will provide notification to Council to document the termination or continuation of monitoring, if warranted. Should monitoring be continued, a review of monitoring frequency will be undertaken and appropriate notification to Council and WaterNSW will be issued by the appointed environmental consultant, through Strata Management.

7.3.3 Monitoring Well Replacement Protocol

EI notes that the existing groundwater monitoring wells BH3M, BH11M and BH12M are located outside the basement footprint (the ‘external wells’), and BH6M is located inside of the basement footprint. At least one of three wells (and if practical, all external wells) should be preserved to enable groundwater level monitoring close to the basement.

Should all existing wells be damaged during the construction works, installation of a new, long-term, groundwater monitoring well must be installed as follows:

a) The replacement monitoring well must be appropriately located so as to avoid any damage or destruction during construction works;

b) Well design should be in accordance with the design for water monitoring bores for water level monitoring as specified under the *Minimum Construction Requirements for Water Bores in Australia* (Ref. NUDLC, 2020);

c) The well should be appropriately screened, with the water intake interval set across the lowermost basement level to monitor groundwater levels at the bulk excavation level, assuming uniform ground conditions; and

d) All reasonable steps must be taken to have the replacement bore installed within one week of the damage having occurred, subject to licensed driller availability.

8. DEWATERING MANAGEMENT SUMMARY

The requirements of this Dewatering Management Plan are summarised in **Table 8-1.**

Table 8-1 Dewatering Management Summary

Item	Requirement / Procedure
Objective of DMP	Ensure that the proposed dewatering operations do not impact on the quality of the receiving surface waters (i.e. at the point of groundwater discharge). Where necessary, groundwater will be treated to achieve an acceptable water quality prior to discharge: ▪ *See **Section 3** for groundwater conditions.* ▪ *See **Section 5.2** for groundwater quality discharge requirements.* ▪ *See **Section 5.5** for groundwater treatment options.* Provide comment on groundwater level changes that occur during dewatering: ▪ *See **Section 4** for summary of groundwater seepage analysis model.* Provide relevant information demonstrating that post-construction, operational dewatering would pose minimal harm to the groundwater source: *See **Section 7** for operational phase dewatering management.*
Person Responsible for Implementation of DMP	During basement excavation and construction, the Site Manager / Water Treatment Specialist will be responsible for ensuring the implementation of appropriate treatment of extracted groundwater, as outlined in this document. Occupation phase responsibility will rest with Strata Management.
Operation Dewatering Policy	To ensure that all extracted groundwater from dewatering is effectively treated prior to discharge to the receiving water bodies, as will be confirmed by the Operational Dewatering Management Procedure detailed in **Section 7.3**.
Pre-Dewatering Groundwater Assessment	As set out in **Section 3.4**, representative samples were collected prior to dewatering and tested for the identified potential contaminants, to provide baseline groundwater quality data and review the proposed discharge water quality requirements.
Discharge Water Quality Criteria	All groundwater to be discharged into the local stormwater network is to meet (at the very least) the criteria outlined in **Table 5-1**, **Section 5.2**.
Implementation Strategy	All extracted groundwater will be monitored and treated (where necessary). On-going testing to be performed, to confirm water quality meets the adopted DWC prior to release into the stormwater network. Additional treatment / wastewater disposal to be undertaken if the DWC values are not met.

Item	Requirement / Procedure
Monitoring Requirements for Construction Phase Dewatering	As specified in **Section 5.4**: ▪ 1. Initial Assessment = Prior to dewatering ▪ 2. Trial-run period = Twice per week* ▪ 3. Discharge monitoring period = Weekly for a month to fortnightly for a month then monthly* ** provided the analytical results indicate treated water quality meets the adopted criteria, or risks are considered to be significantly low. Should analytical results exceed the adopted discharge criteria, contingencies listed in **Section 6.5** must be followed.*
Monitoring Requirements for Operational Phase Dewatering	As specified in **Section 7.3**: Quarterly for the first year, every 6 months for year two, and a single monitoring event at the end of year three.
Auditing	The appointed environmental consultant (water quality expert) will undertake weekly audits during the Trial-Run Period (if required), and monthly audits during the Monitoring Period, to ensure that all discharges to receiving water bodies comply with the criteria specified in **Section 5.2**.
Reporting	The contractor responsible for dewatering will keep records of all monitoring and laboratory test results, as well as quantities of treatment agents applied during the dewatering process. All records should be made available for inspection onsite during the construction phase.
Corrective Actions	As specified in the contingency measures, outlined in **Section 6.5**.

9. STATEMENT OF LIMITATIONS

This plan has been prepared for the exclusive use of Aqualand Prestige 2 Pty Ltd, whom is the only intended beneficiary of EI’s work. The scope of work completed for the purpose of this plan is limited to that agreed with Aqualand Prestige 2 Pty Ltd.

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

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

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

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

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

10. REFERENCES

ANZECC / ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, October 2000.

ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian State and Territory Governments, Canberra ACT, Australia, August 2018.

Chapman GA and Murphy CL (1989) *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, September 1989.

DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, New South Wales Department of Environment and Conservation, DEC 2007/144, June 2007.

DMR (1989) *Sydney 1:100,000 Geological Series Sheet 9130*, Geological Survey of New South Wales, Department of Mineral Resources.

Department Of Natural Resources (2006) *Survey of Tidal Limits And Mangrove Limits in NSW Estuaries 1996 To 2005*. Report No. MHL1286, published April 2006.

DCCEEW (2024) *eSPADE v2.2 Portal*, NSW Department of Climate Change, Energy, the Environment and Water, retrieved from www.espade.environment.nsw.gov.au.

EPA (2013) *Licencing Fact Sheet - Using Environment Protection Licensing to Control Water Pollution*, New South Wales Environment Protection Authority, EPA 2013/0119, May 2013.

Murphy CL (1997) *Acid Sulfate Soil Risk of the Prospect / Parramatta Sheet* (Second Edition), Department of Land and Water Conservation, Sydney (supplied by the Sydney South Coast, Geographical Information Systems Unit).

NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure*, National Environment Protection Council, April 2013.

NHMRC (2022) *Australian Drinking Water Guidelines. Paper 6 National Water Quality Management Strategy*, National Health and Medical Research Council, Commonwealth of Australia, Canberra, Version 3.8, September 2022.

NUDLC (2020) *Minimum Construction Requirements for Water Bores in Australia* (4th Edition), National Uniform Drillers Licensing Committee.

Rygate & Co (2024) *Preliminary Survey Plan*, Rygate & Company Pty Ltd, Sheets 1 to 7, Rev. A, 3 September 2024

US EPA (2024) *Radionuclide Basics: Uranium*, United States Environmental Protection Agency, https://www.epa.gov/radiation/radionuclide-basics-uranium .

Vic EPA (2000) *Groundwater Sampling Guidelines*, Environment Protection Authority for the State Government of Victoria, April 2000.

Willoughby City Council (2023) *Water Quality Monitoring Report Spring 2022 - Autumn 2023*, Vers. 1, Document ID 6930371, dated 13/11/2023. Accessed at https://www.willoughby.nsw.gov.au/Environment/Environmental-Health/Water/Waterway-health

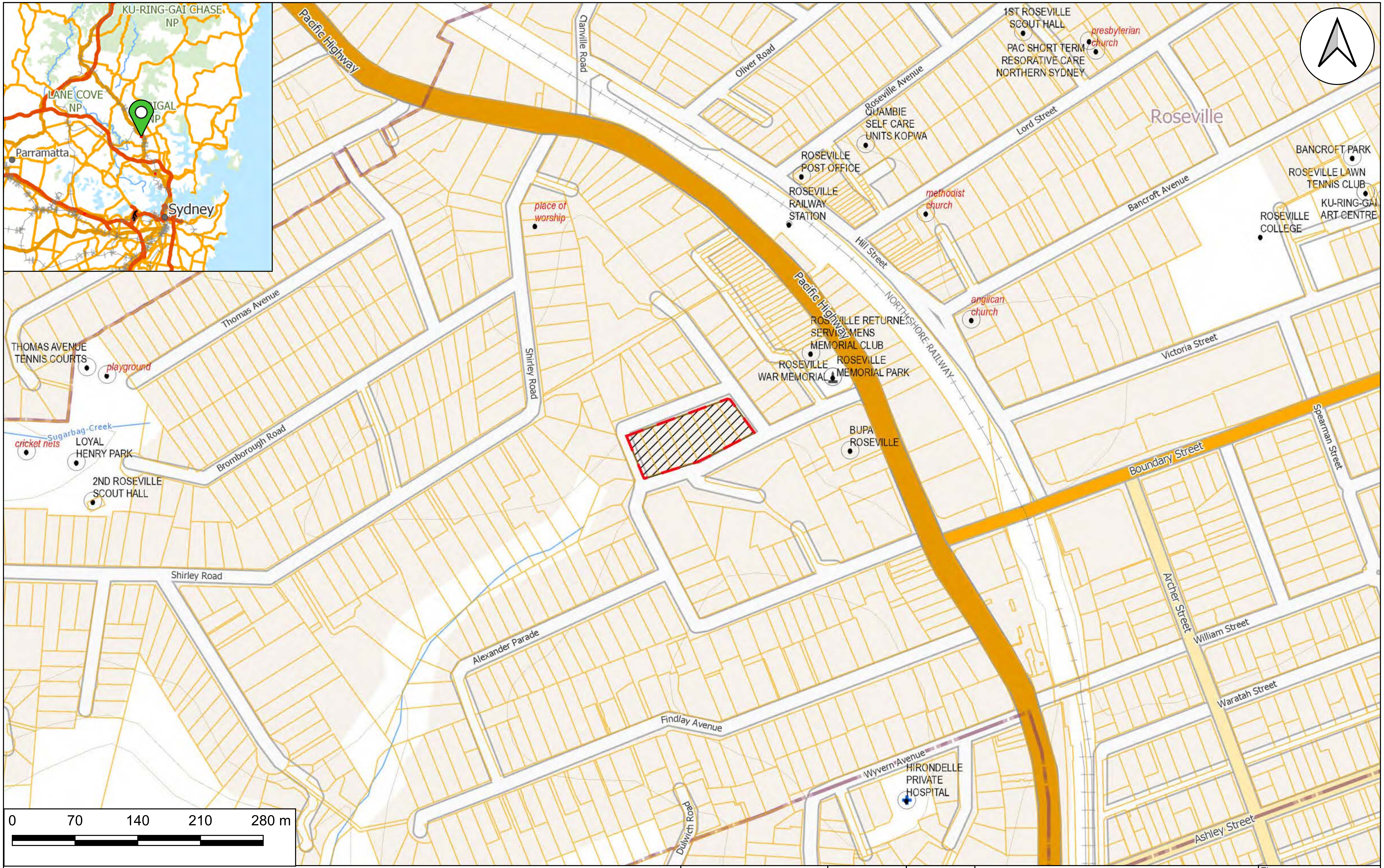
Willoughby City Council (2024), *2022/23 Willoughby Waterway Health Report Card* Version 1, Document ID 6969257, dated 12/02/2024. Accessed at https://www.willoughby.nsw.gov.au/Environment/Environmental-Health/Water/Waterway-health

Woods Bagot (2025) *Architectural drawings - Various sheets*, Project No. 122021, Rev P3, 24 March 2025.

ABBREVIATIONS

AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment Conservation Council
ANZG	Australian and New Zealand Governments
ASS	Acid Sulfate Soils
BEL	Bulk Excavation Level
BGL/BEGL	Below Ground Level existing at the time of the referenced bore or excavation
BEGL	Below Existing Ground Level
BTEX	Benzene, Toluene, Ethyl benzene, Xylene
DMP	Dewatering Management Plan
DP	Deposited Plan
DWC	Discharge Water Criteria
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Infrastructure
DPE	Department of Planning and Environment
EC	Electrical Conductivity
GME	Groundwater Monitoring Event
GSA	Groundwater Seepage Assessment
km	Kilometres
LEP	Local Environmental Plan
LOR	Limit of Reporting (limit of reporting for respective analytical method)
m	metres
ML	Megalitres
mg/L	Milligrams per litre
MPD	Maximum predicted drawdown (the target groundwater level during site dewatering)
µg/L	Micrograms per litre
µS/cm	Microsiemens per Centimetre
NA	Not Applicable
NATA	National Association of Testing Authorities
NC	No Criterion
NTU	Nepholemetric Turbidity Units
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
pH	Potential Hydrogen (a measure of the acidity or basicity of an aqueous solution)
PID	Photo-Ionisation Detector
PQL	Practical Quantitation Limit (quantitative limit for respective analytical method)
RL	Reduced Level
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)

Appendix A – Figures



LEGEND. Note: All locations are approximate

🟥 Site Boundary

eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	T.Y.
Approved:	
Date:	19/02/2025

AL Prestige 2 Pty Ltd

Preliminary Site Investigation

2-16 Pockley Avenue, Roseville NSW

Site Locality Plan

Figure:
A1

Project: E26491.E16

Groundwater elevation contours based on water level data obtained during groundwater monitoring event on 21/02/2025

Map Source: NSW SIXMaps, viewed 10/03/2025

LEGEND Note: Areas are approximate

- Site Boundary
- Monitoring Well Locations (EI, 2024)
- Inferred Groundwater Flow Direction
- Groundwater Contours (interval 1m)

eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	M.O.
Approved:	NK
Date:	03/04/2025

AL Prestige 2 Pty Ltd

Dewatering Management Plan

2-16 Pockley Avenue, Roseville NSW

Groundwater Contour Map

Figure:
A2

Project: E26491.E16

Appendix B – Tables

Table B1 - Summary of Baseline Groundwater Quality - Analytical Results

Sample ID	Sampling Date	Metals																							PAHs			BTEX					VOCs
		Total As	Cd	[1] Total Cr	Cu	Pb	Hg	Ni	Zn	Al	Sb	Ba	Be	Co	Fe	Li	Mn	Mo	Se	SiO_2	Ag	Sr	U	V	Total PAHs	Benzo(α)pyrene	Naphthalene	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	Total VOCs
Groundwater Investigation (EI, 2025)																																	
BH1M	20/02/2025	<1	0.1	<1	32	<1	<0.1	78	46	130	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<10
BH2M		<1	<0.1	2	4	<1	<0.1	12	23	76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<10
BH2.1M		1	<0.1	<1	1	<1	<0.1	4	130	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<10
BH4M	24/02/2025	<1	<0.1	<1	<1	<1	<0.1	27	48	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<10
BH4.1M		<1	<0.1	<1	<1	<1	<0.1	2	19	19	<1	48	<1	<1	6600	24	920	<1	5	18	<1	60	<1	<1	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<10
Guidelines																																	
Water Quality Criteria		24 (As III) 13 (As V)	0.06	3.3 (Cr III) 1 (Cr VI)	14	3.4	0.06	11	80	55 pH (>6.5)	9	▨	▨	1.4	▨	▨	1900	34	11	▨	0.05	▨	▨	6	▨	0.1	16	950	180	80	350	275	▨

Sample ID	Sampling Date	Petroleum Hydrocarbons			Microbiological Organisms (CFU/100 mL)			Total Phenols	Total Cyanide	PFAS			Other																							
		Oil & Grease	TRH C6 - C9	TRH C10 - C40	Faecal coliforms	Faecal streptococci	Escherichia coli (E. coli)			PFOS	PFOS + PFHxs	PFOA	Fluoride (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Bromide (mg/L)	Ammonia Nitrogen $_3$ NH as N	Nitrate Nitrogen NO3-N	Nitrite Nitrogen NO2 as N	Total Oxidised Nitrogen, NOx-N	Total Kjeldahl Nitrogen	Total Nitrogen (calc)	Total Phosphorus (Kjeldahl) as P	Filterable Reactive Phosphorus as P	Bicarbonate Alkalinity as CaCO3 (mg/L)	Carbonate Alkalinity as CaCO3 (mg/L)	Hydroxide Alkalinity as CaCO3 (mg/L)	Total Alkalinity as CaCO3 (mg/L)	Hydroxide Alkalinity as OH (mg/L)	Bicarbonate Alkalinity as HCO3 (mg/L)	Carbonate Alkalinity as CO3 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
Groundwater Investigation (EI, 2025)																																				
BH1M	20/02/2025	NA	<40	<320	NA	NA	NA	NA	<4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2M		NA	<40	<320	NA	NA	NA	NA	<4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2.1M		NA	<40	<320	NA	NA	NA	NA	<4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4M	24/02/2025	NA	<40	<320	NA	NA	NA	NA	<4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	17	NA	NA
BH4.1M		NA	<40	<320	17	<1	13	<50	NA	<0.01	<0.01	<0.01	0.43	170	45	1.1	<100	<5	<5	<5	820	820	220	<5	140	<5	<5	140	<5	170	<5	28	14	120	52
Guidelines																																				
Water Quality Criteria		▨	▨	▨	▨	▨	▨	320	7	0.13	▨	220	▨	▨	▨	▨	900	▨	▨	10	▨	350	10	5	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨

Notes:

All values are μg/L unless stated otherwise

Water quality criteria are based on the ANZG, 2018 (Rev. Jan 2024) 95% fresh water DGVs, or relevant default guidelines where ANZG fresh DGVs are not currently available, as explained in the footnotes to **Table 5-1**, in **Section 5** of the DMP.

[1] This result was for *Total Chromium*. Chromium speciation testing was not undertaken, but should be included in future monitoring.

🟨 Highlighted value does not meet the adopted criteria

▨ No relevant criteria are currently available

Table B2 – Summary of Baseline Groundwater Quality Results: Physicochemical Characteristics

E26491 - Roseville

Sample ID	Date sampled	Physiochemical Characteristics												Aesthetic Properties
		Electrical Conductivity (Field EC) (µs/cm)	Electrical Conductivity (µs/cm)	pH	pH (field)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Field Redox (mV)	Hardness (mg $CaCO_3$/L)	Dissolved Oxygen (field DO) (mg/kg)	Dissolved Oxygen (mg/L)	Total Organic Carbon as NPOC (mg/L)	Oil & Grease (present/absent)
Groundwater Investigation (EI, 2025)														
BH1M	20/02/2025	1773	540	5.6	5.37	370	NA	510	409.4	35	0	NA	NA	Absent
BH2M		1198	1400	6.3	7.54	840	NA	29000	207.9	21	0.3	NA	NA	Absent
BH2.1M		2309	2100	6.6	6.5	1400	NA	9.3	212.3	180	0	NA	NA	Absent
BH4M	24/02/2025	1103	850	6.3	7.13	500	NA	190	288.4	86	0	NA	NA	Absent
BH4.1M		153	820	6.5	7.34	500	320	210	246.7	130	0	6.5	2.7	Absent
Guidelines														
Water Quality Criteria				6.5 - 8.0	6.5 - 8.0			10						No visible sheens, surface films or oil and grease

Notes:

All values are in units as shown.

Water quality criteria are based on the ANZG, 2018 (Rev. Jan 2024) 95% fresh water DGVs, or relevant default guidelines where ANZG fresh DGVs are not currently available, as explained in the footnotes to **Table 5-1**, in **Section 5** of the DMP.

🟨	Highlighted value does not meet the adopted criteria
▨	No relevant criteria are currently available

Table B3- QA/QC Results for Groundwater Samples

Date	Sample Identification	Description	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Inter-laboratory Duplicate																		
24/02/2025	BH4.1M	Primary Groundwater Sample	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	2	19
24/02/2025	GW-QD1	Inter-laboratory duplicate of BH4.1M	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	4	8
RPD			***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	**66.67**	**81.48**
Intra-laboratory Duplicate																		
24/02/2025	BH4.1M	Primary Groundwater Sample	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	2	19
24/02/2025	GW-QT1	Inter-laboratory duplicate of BH4.1M	<10	<50	<100	<100	<1	<1	<1	<3	<1	<0.1	<1	<1	<1	<0.05	2	1
RPD			***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***NA***	***0.00***	**180.00**
Trip Blank																		
24/02/2025	GW_TB1	Water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Trip Spike																		
24/02/2025	GW_TS1	Water	-	-	-	-	[96%]	[94%]	[100%]	[84%]	-	-	-	-	-	-	-	-
Rinsate Blank																		
24/02/2025	GW_QR1	Equipment rinsate water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5

▨	Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.
■	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Note: All water results are reported in µg/L.

F1 = TRH C6-C10 less the sum of BTEX
F2 = TRH >C10-C16 less naphthalene
F3 = TRH >C16-C34
F4 = TRH >C34-C40

eiaustralia
Contamination | Remediation | Geotechnical

Appendix C – Development Plans and Survey

Drawing No	Sheet Title
DEVELOPMENT APPLICATION - POCKLEY	
0 GENERAL	
01 Drawing List	
DA-AR - B-00-000	Pockley : Cover Sheet and Drawing List
1 OVERALL ARRANGEMENT	
10 Overall Arrangement	
DA-AR - B-10-000	Site Location Plan
DA-AR - B-10-100	Site Analysis
DA-AR - B-10-200	Demolition Plan
DA-AR - B-10-400	Proposed Site Plan
2 GENERAL ARRANGEMENT	
22 Floor Plans	
DA-AR - B-22-093	Basement 07 Plan
DA-AR - B-22-094	Basement 06 Plan
DA-AR - B-22-095	Basement 05 Plan
DA-AR - B-22-096	Basement 04 Plan
DA-AR - B-22-097	Basement 03 Plan
DA-AR - B-22-098	Basement 02 Plan
DA-AR - B-22-099	Basement 01 Plan
DA-AR - B-22-100	Ground Floor Plan
DA-AR - B-22-101	Level 01 Plan
DA-AR - B-22-102	Level 02 Plan
DA-AR - B-22-103	Level 03 Plan
DA-AR - B-22-104	Level 04 Plan
DA-AR - B-22-105	Level 05 Plan
DA-AR - B-22-106	Level 06 Plan
DA-AR - B-22-107	Level 07 Plan
DA-AR - B-22-108	Level 08 Plan
DA-AR - B-22-109	Level 09 Plan
DA-AR - B-22-190	Roof Plan
3 GENERAL ARRANGEMENT	
32 Elevations and Sections	
DA-AR - B-32-001	Building Elevation - North
DA-AR - B-32-002	Building Elevation - South
DA-AR - B-32-003	Building Elevations - East & West
DA-AR - B-32-101	Building Sections - A
DA-AR - B-32-102	Building Sections - B&C
DA-AR - B-32-103	Building Sections - D
7 SOLAR AND SHADOWS	
70 Shadows	
DA-AR - B-70-001	June Sun Eye Views
DA-AR - B-70-101	June Shadows
DA-AR - B-70-102	June Shadows
8 COMPLIANCES	
80 Compliances	
DA-AR - B-80-021	GFA Diagrams
DA-AR - B-80-022	GFA Diagrams
DA-AR - B-80-031	Cross Ventilation
DA-AR - B-80-032	Cross Ventilation
DA-AR - B-80-033	Solar
DA-AR - B-80-034	Solar
DA-AR - B-80-041	Deep Soil & Planting
DA-AR - B-80-051	Area Schedule
81 Unit Plans	
DA-AR - B-81-001	Unit Types - 1 Bedroom
DA-AR - B-81-002	Unit Types - 2 Bedrooms
DA-AR - B-81-003	Unit Types - 2 Bedrooms
DA-AR - B-81-004	Unit Types - 2 Bedrooms
DA-AR - B-81-005	Unit Types - 3 Bedrooms
DA-AR - B-81-006	Unit Types - 3 Bedrooms
DA-AR - B-81-007	Unit Types - 3 Bedrooms
DA-AR - B-81-008	Unit Types - 3 Bedrooms
DA-AR - B-81-009	Unit Types - 3 Bedrooms
DA-AR - B-81-010	Unit Types - 4 Bedrooms
DA-AR - B-81-011	Unit Types - 4 Bedrooms
DA-AR - B-81-012	Unit Types - Townhouses

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked XXX
Approved XXX
Sheet size A1
Scale

Sheet title
Pockley
Cover Sheet and Drawing List

Sheet number
DA-AR-B-00-000

Revision
A

Status

Date generated 17/04/2025 8:59:30 AM

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 8:59:41 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number	Size check	Checked	Approved	Sheet size	Scale
122021	25mm	Checker	Approver	A1	1 : 1000

Sheet title
Site Location Plan

Sheet number
DA-AR-B-10-000

Revision
A

Status

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:10:50 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

Scale
1 : 500

Sheet title
Site Analysis

Sheet number
DA-AR-B-10-100

Revision
A

Status

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

– – – – – To be Demolished

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

Scale
1 : 500

Sheet title
Demolition Plan

Sheet number
DA-AR-B-10-200

Revision
A

Status

Date generated 17/04/2025 9:00:38 AM

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:00:48 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

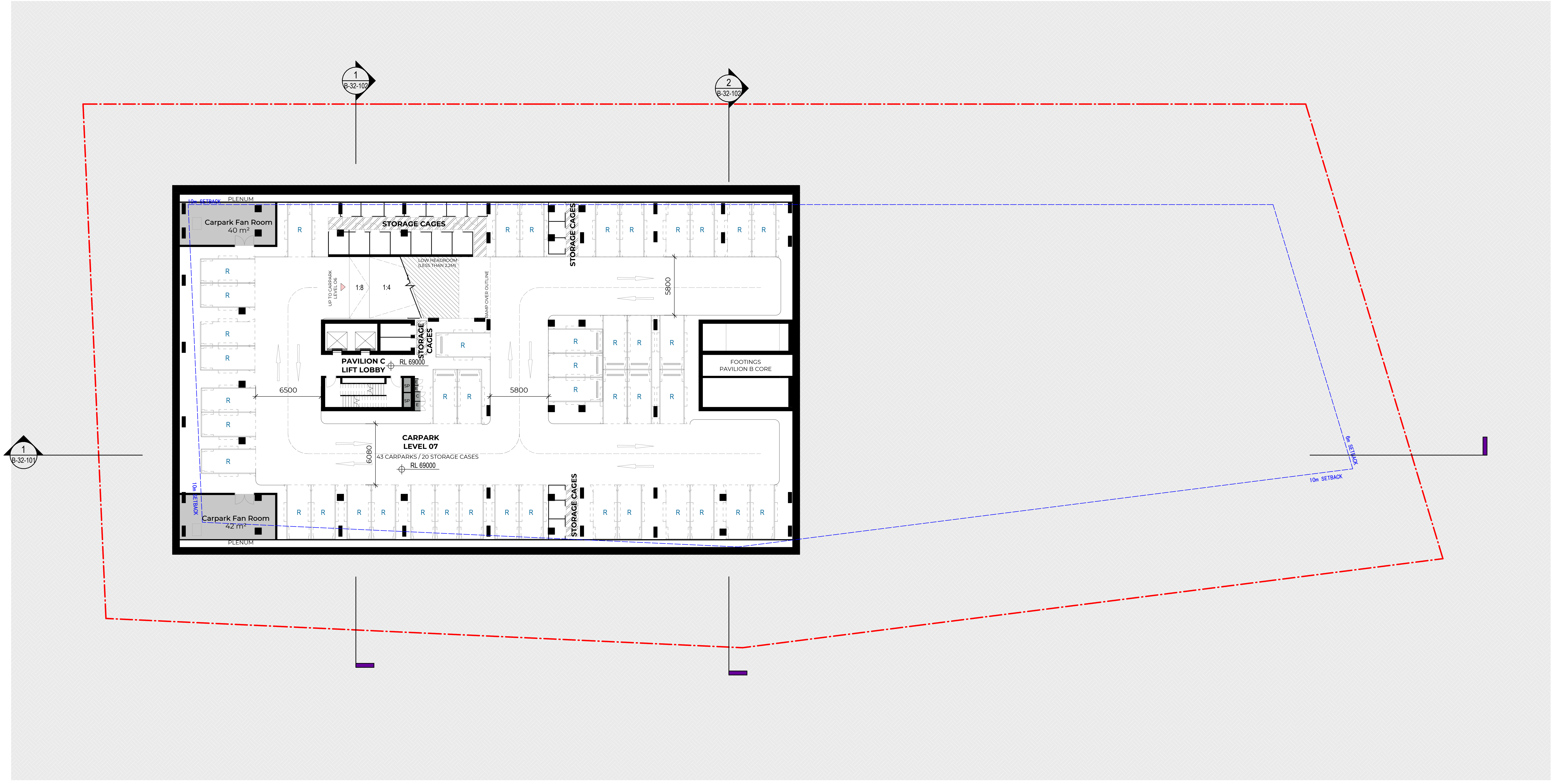
Scale
1 : 500

Sheet title
Proposed Site Plan

Sheet number
DA-AR-B-10-400

Revision
A

Status



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Date generated 17/04/2025 9:00:50 AM

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

LEGEND

LR - LOBBY RELIEF
SP - STAIR PRESSURIZATION
GE - GARBAGE EXHAUST
C - COMM CUPBOARD
E - ELECTRICAL CUPBOARD
KE - KITCHEN EXHAUST
CE - CARPARK EXHAUST
HR - HYDRAULIC RISER
F - FIRE EXTINGUISHER
FCR - FIRE CONTROL ROOM
FHR - FIRE HOSE REEL
W - WATER METER
GM - GAS METER
GC - GARBAGE CHUTE
WR - WASTE ROOM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

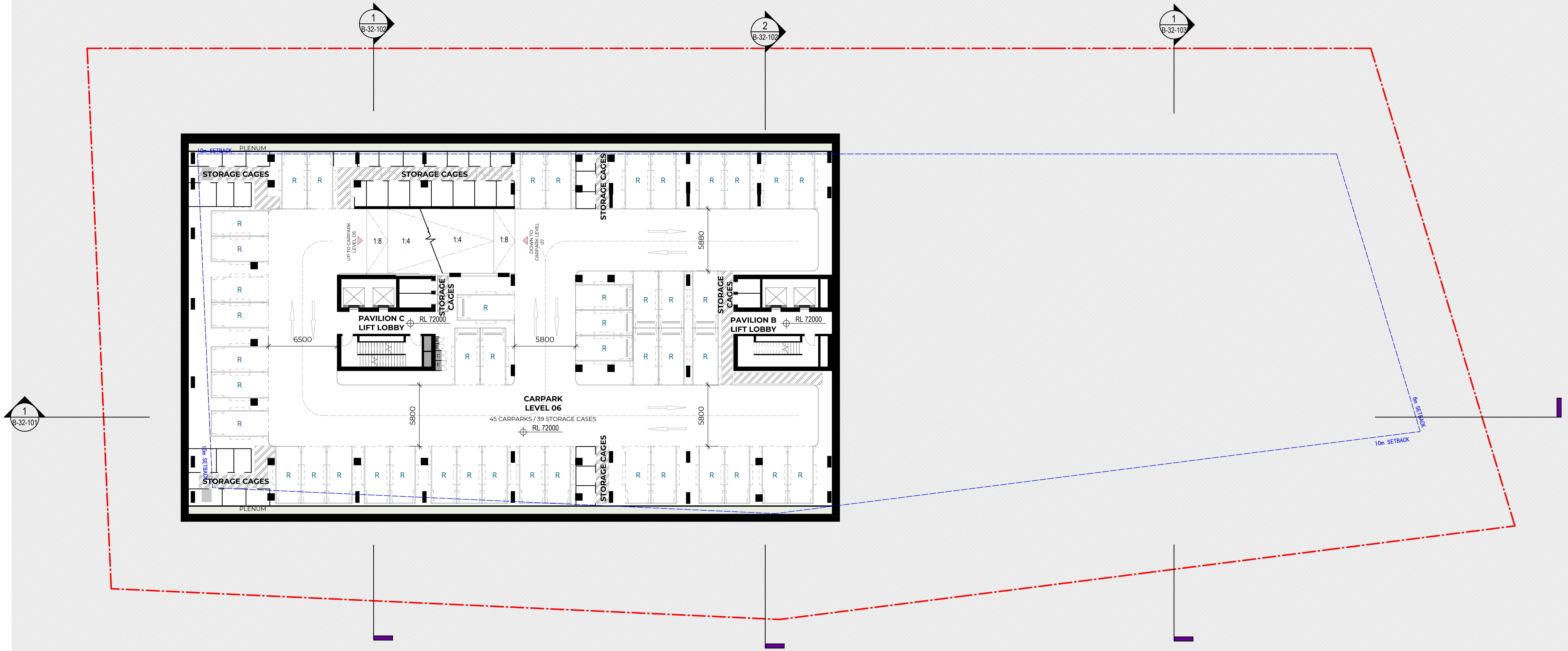
Scale
1 : 200

Sheet title
Basement 07 Plan

Sheet number
DA-AR-B-22-093

Revision
A

Status
For Information



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

LEGEND

LR - LOBBY RELIEF
SP - STAIR PRESSURIZATION
GE - GARBAGE EXHAUST
C - COMM CUPBOARD
E - ELECTRICAL CUPBOARD
KE - KITCHEN EXHAUST
CE - CARPARK EXHAUST
HR - HYDRAULIC RISER
F - FIRE EXTINGUISHER
FCR - FIRE CONTROL ROOM
FHR - FIRE HOSE REEL
W - WATER METER
GM - GAS METER
GC - GARBAGE CHUTE
WR - WASTE ROOM

Date generated 17/04/2025 9:00:52 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

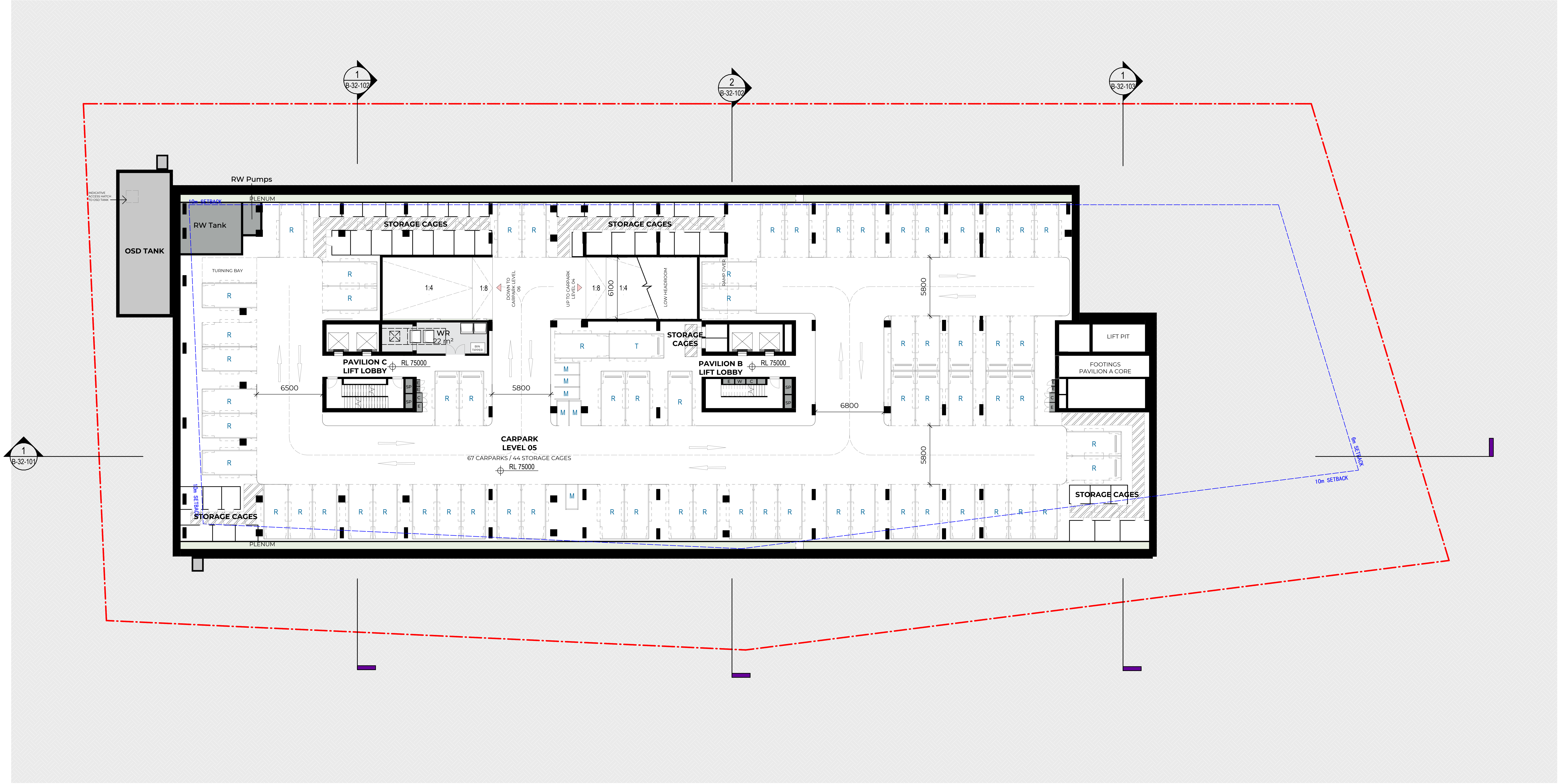
Size check
25mm

Checked	Approved	Sheet size	Scale
Checker	Approver	A1	1 : 200

Sheet title
Basement 06 Plan

Sheet number
DA-AR-B-22-094
Revision
A

Status
For Information



Recent revision history			
#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:00:54 AM

LEGEND

LR - LOBBY RELIEF
SP - STAIR PRESSURIZATION
GE - GARBAGE EXHAUST
C - COMM CUPBOARD
E - ELECTRICAL CUPBOARD
KE - KITCHEN EXHAUST
CE - CARPARK EXHAUST
HR - HYDRAULIC RISER

F - FIRE EXTINGUISHER
FCR - FIRE CONTROL ROOM
FHR - FIRE HOSE REEL
W - WATER METER
GM - GAS METER
GC - GARBAGE CHUTE
WR - WASTE ROOM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

Size check
25mm

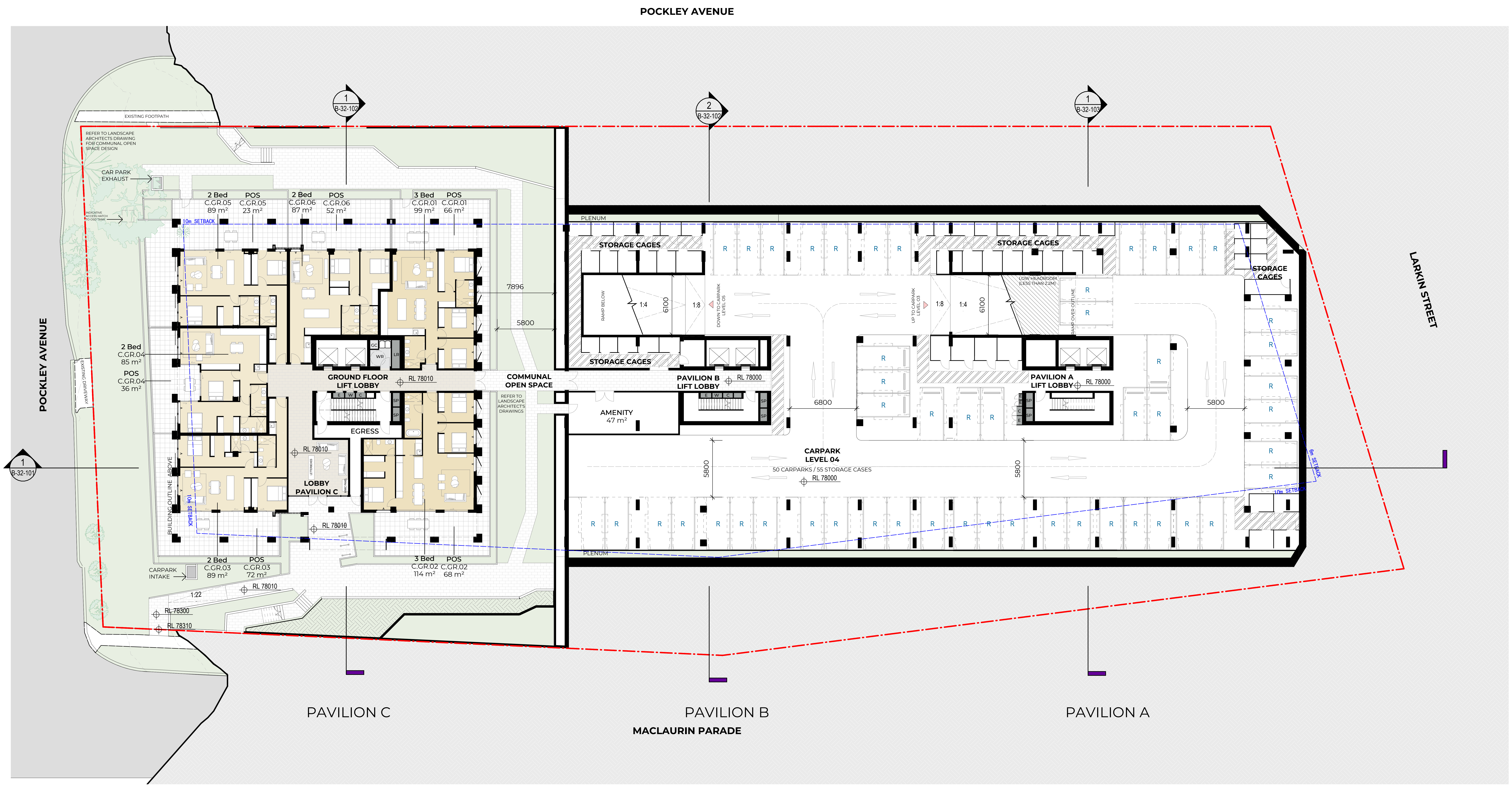
Checked	Approved	Sheet size	Scale
Checker	Approver	A1	1 : 200

Sheet title
Basement 05 Plan

Sheet number
DA-AR-B-22-095

Revision
A

Status
For Information



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

LEGEND

LR - LOBBY RELIEF
SP - STAIR PRESSURIZATION
GE - GARBAGE EXHAUST
C - COMM CUPBOARD
E - ELECTRICAL CUPBOARD
KE - KITCHEN EXHAUST
CE - CARPARK EXHAUST
HR - HYDRAULIC RISER
F - FIRE EXTINGUISHER
FCR - FIRE CONTROL ROOM
FHR - FIRE HOSE REEL
W - WATER METER
GM - GAS METER
GC - GARBAGE CHUTE
WR - WASTE ROOM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Approved

Sheet size
A1

Scale
1 : 200

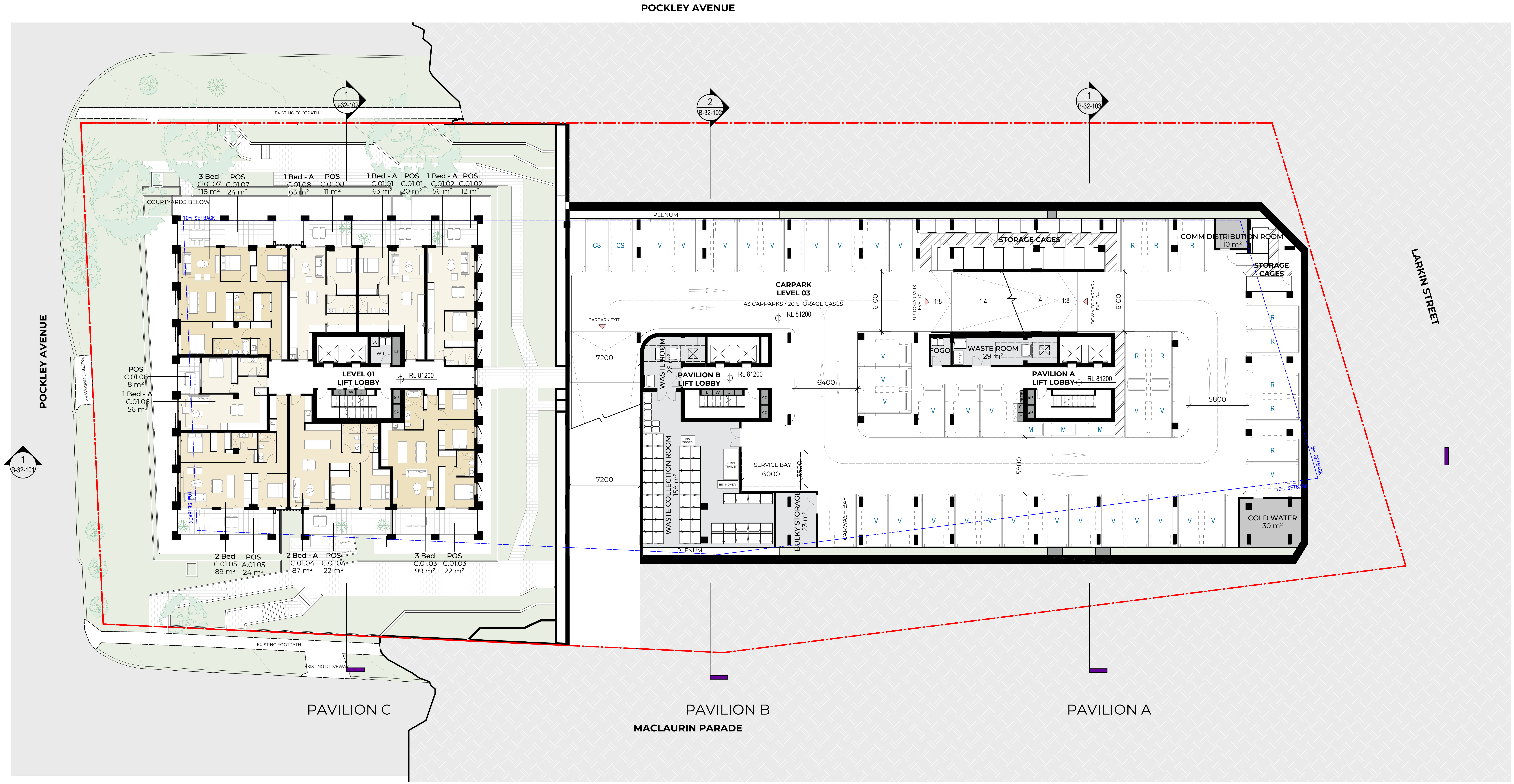
Sheet title
Basement 04 Plan

Sheet number
DA-AR-B-22-096

Revision
A

Status
For Information

Date generated 17/04/2025 9:00:57 AM



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:01:02 AM

LEGEND

LR - LOBBY RELIEF
SP - STAIR PRESSURIZATION
GE - GARBAGE EXHAUST
C - COMM CUPBOARD
E - ELECTRICAL CUPBOARD
KE - KITCHEN EXHAUST
CE - CARPARK EXHAUST
HR - HYDRAULIC RISER

F - FIRE EXTINGUISHER
FCR - FIRE CONTROL ROOM
FHR - FIRE HOSE REEL
W - WATER METER
GM - GAS METER
GC - GARBAGE CHUTE
WR - WASTE ROOM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Approved

Sheet size
A1

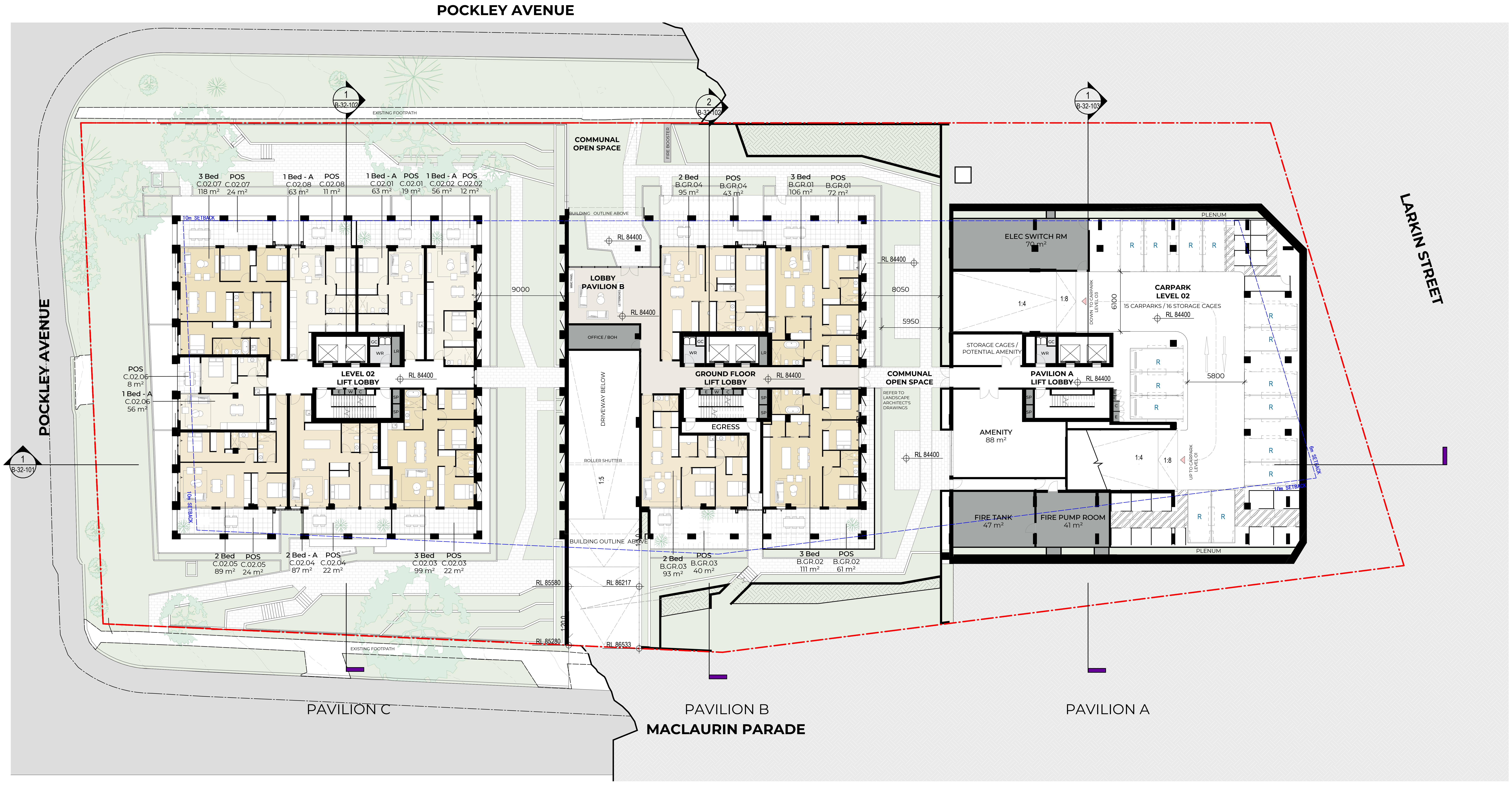
Scale
1 : 200

Sheet title
Basement 03 Plan

Sheet number
DA-AR-B-22-097

Revision
A

Status
For Information



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Date generated 17/04/2025 9:01:07 AM

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

LEGEND

LR - LOBBY RELIEF
SP - STAIR PRESSURIZATION
GE - GARBAGE EXHAUST
C - COMM CUPBOARD
E - ELECTRICAL CUPBOARD
KE - KITCHEN EXHAUST
CE - CARPARK EXHAUST
HR - HYDRAULIC RISER

F - FIRE EXTINGUISHER
FCR - FIRE CONTROL ROOM
FHR - FIRE HOSE REEL
W - WATER METER
GM - GAS METER
GC - GARBAGE CHUTE
WR - WASTE ROOM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

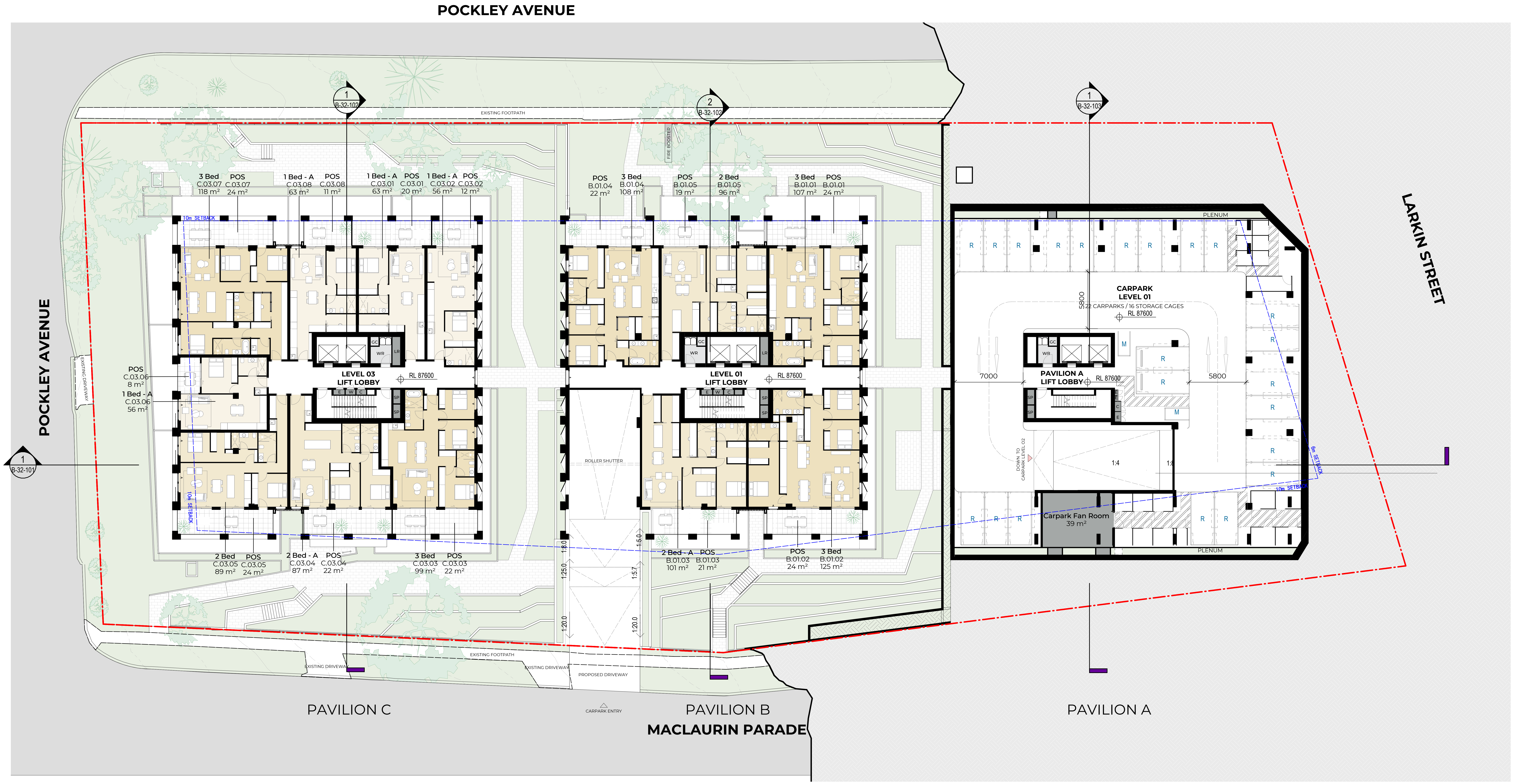
Size check
25mm

Checked: Checker
Approved: Approver
Sheet size: A1
Scale: 1 : 200

Sheet title
Basement 02 Plan

Sheet number: **DA-AR-B-22-098**
Revision: A

Status
For Information



Recent revision history			
#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:01:15 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

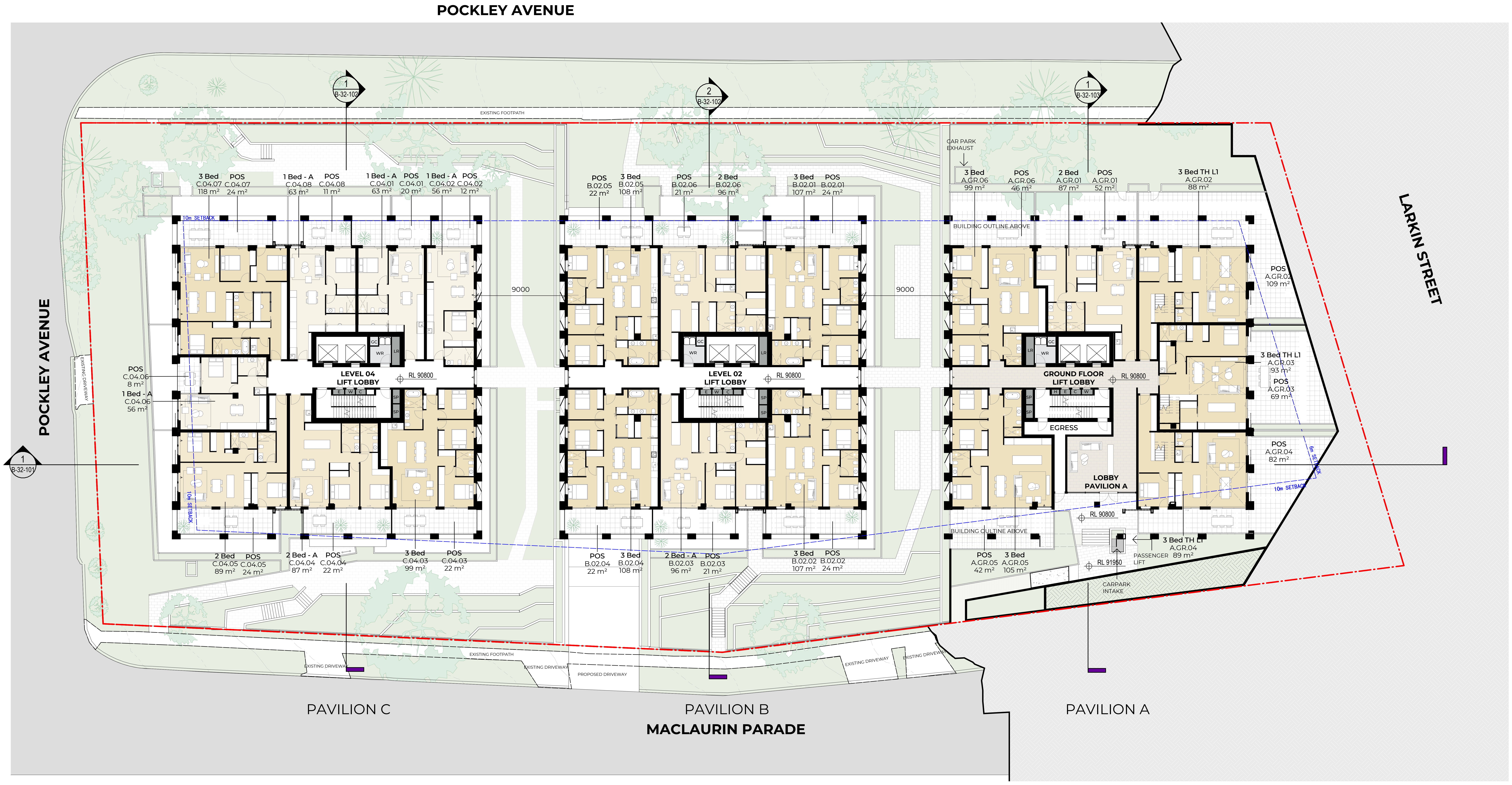
Scale
1 : 200

Sheet title
Basement 01 Plan

Sheet number
DA-AR-B-22-099

Revision
A

Status
For Information



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:01:25 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

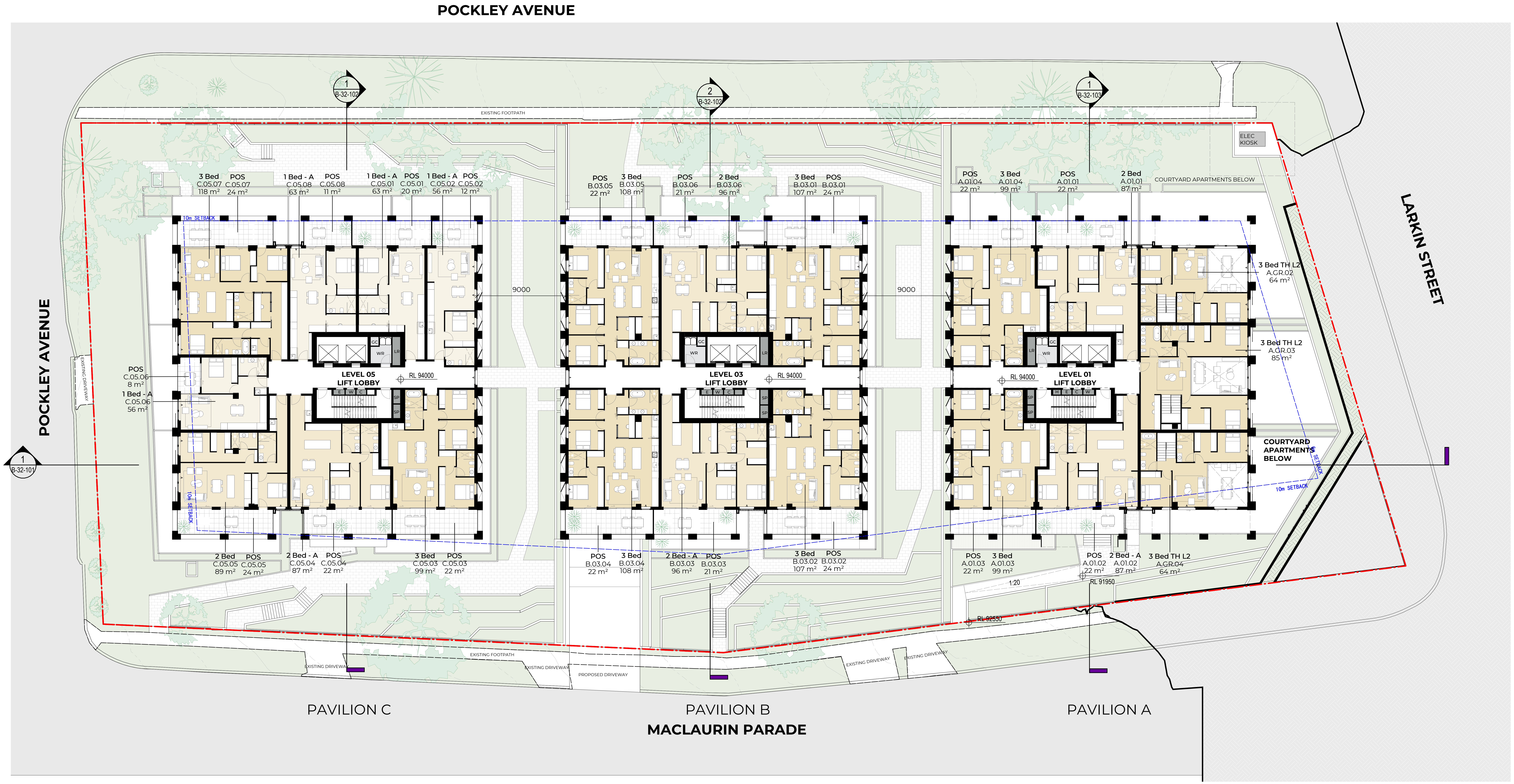
Scale
1 : 200

Sheet title
Ground Floor Plan

Sheet number
DA-AR-B-22-100

Revision
A

Status
For Information



Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Date generated 17/04/2025 9:01:37 AM

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

Scale
1 : 200

Sheet title
Level 01 Plan

Sheet number
DA-AR-B-22-101

Revision
A

Status
For Information

1 B - North Elevation
SCALE 1 : 200

MATERIAL FINISHES LEGEND


CD:01 - Stone Look Cladding


CD:02 - Vertically Ribbed Metallic Cladding - Warm Charcoal


CD:03 - Flat Metallic Cladding - Warm Charcoal


CD:04 - Gabion Wall


BL:01 -Angled Flat Bar Balustrade


MW:01 - Vertically Expressed Metallic Privacy Screen


WD:01 - Metallic Window and Door Frames - Warm Charcoal


GL:01 - Glass

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:03:52 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

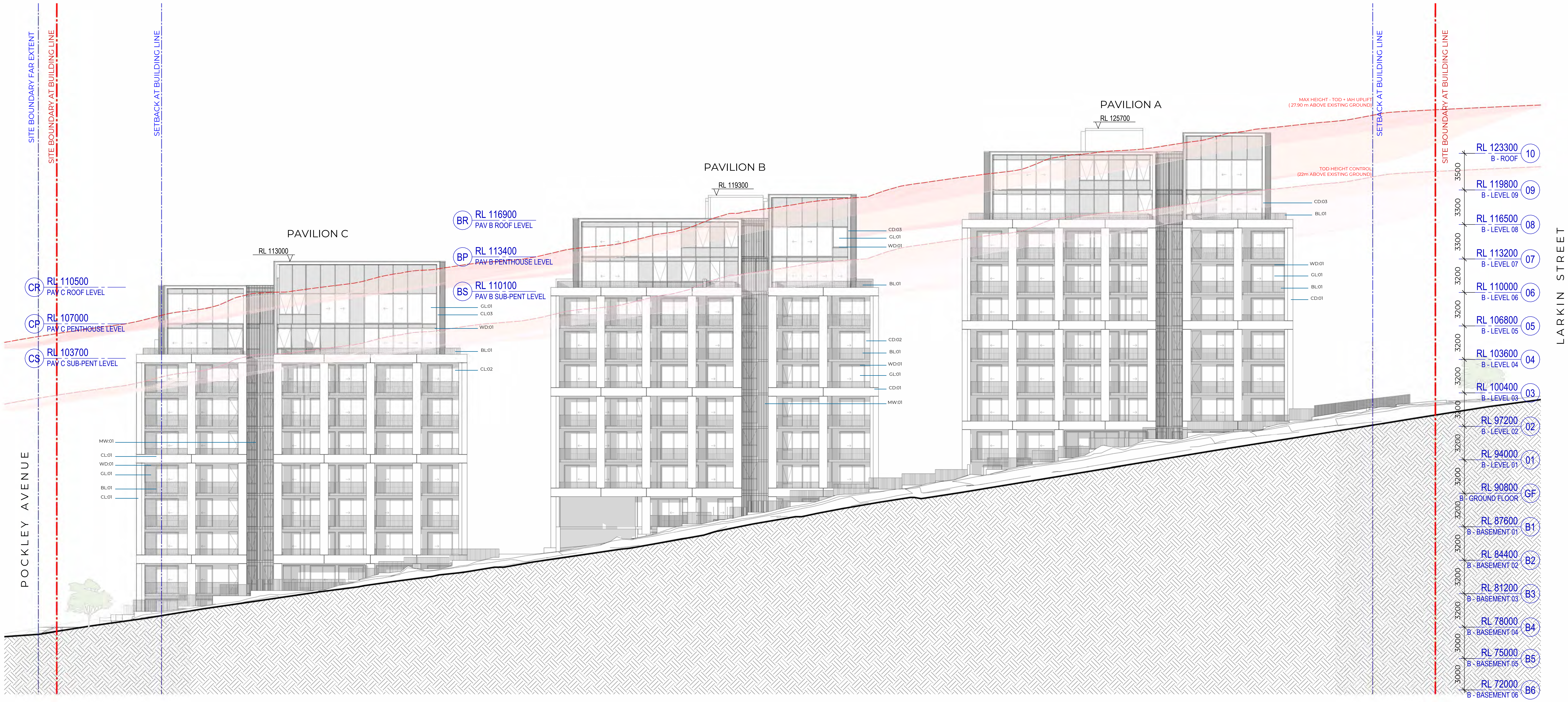
Scale
1 : 200

Sheet title
Building Elevation - North

Sheet number
DA-AR-B-32-001

Revision
A

Status



1 B- South Elevation
SCALE 1 : 200

MATERIAL FINISHES LEGEND


CD:01 - Stone Look Cladding


CD:02 - Vertically Ribbed Metallic Cladding - Warm Charcoal


CD:03 - Flat Metallic Cladding - Warm Charcoal


CD:04 - Gabion Wall


BL:01 -Angled Flat Bar Balustrade


MW:01 - Vertically Expressed Metallic Privacy Screen


WD:01 - Metallic Window and Door Frames - Warm Charcoal


GL:01 - Glass

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

Scale
1 : 200

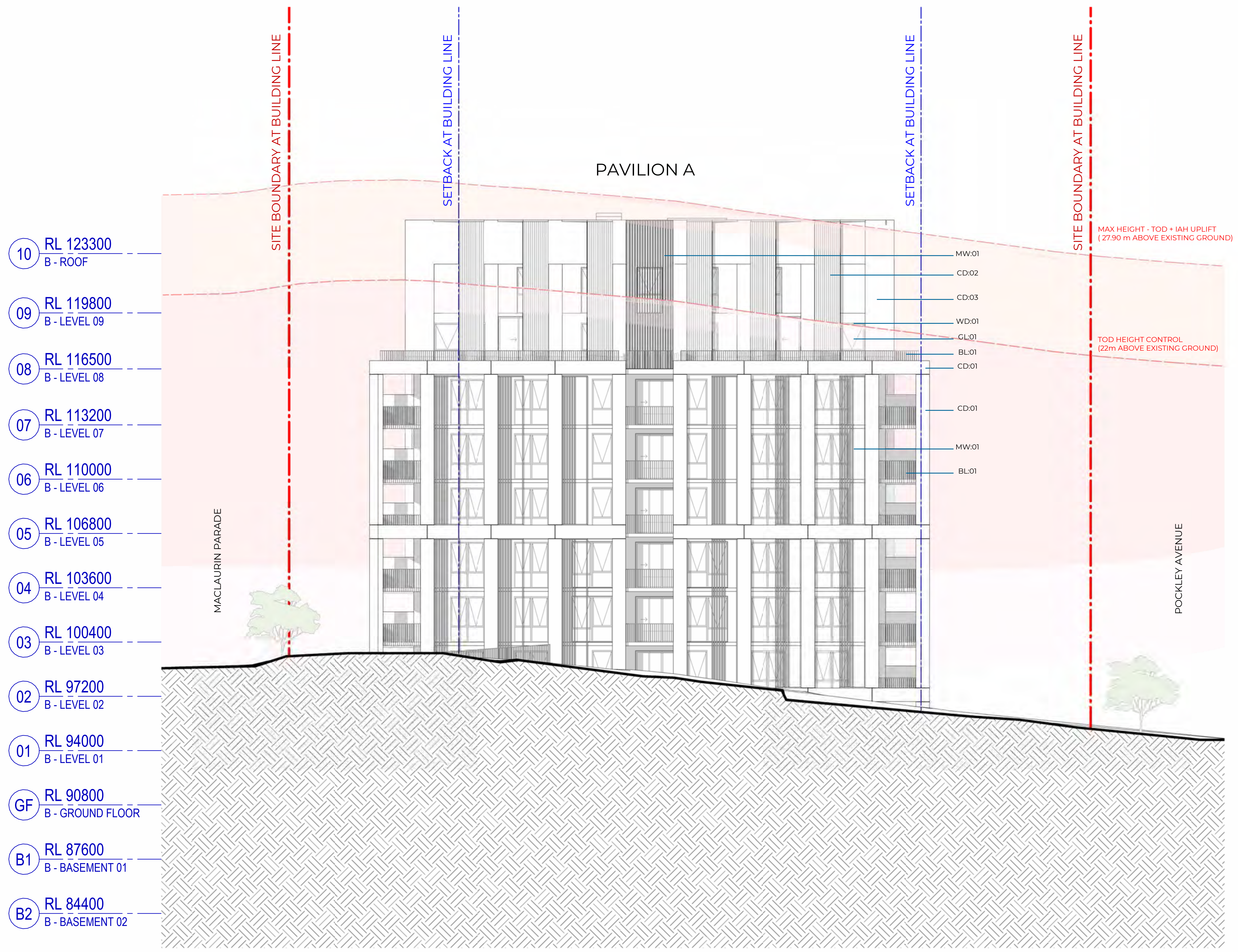
Sheet title
Building Elevation - South

Sheet number
DA-AR-B-32-002

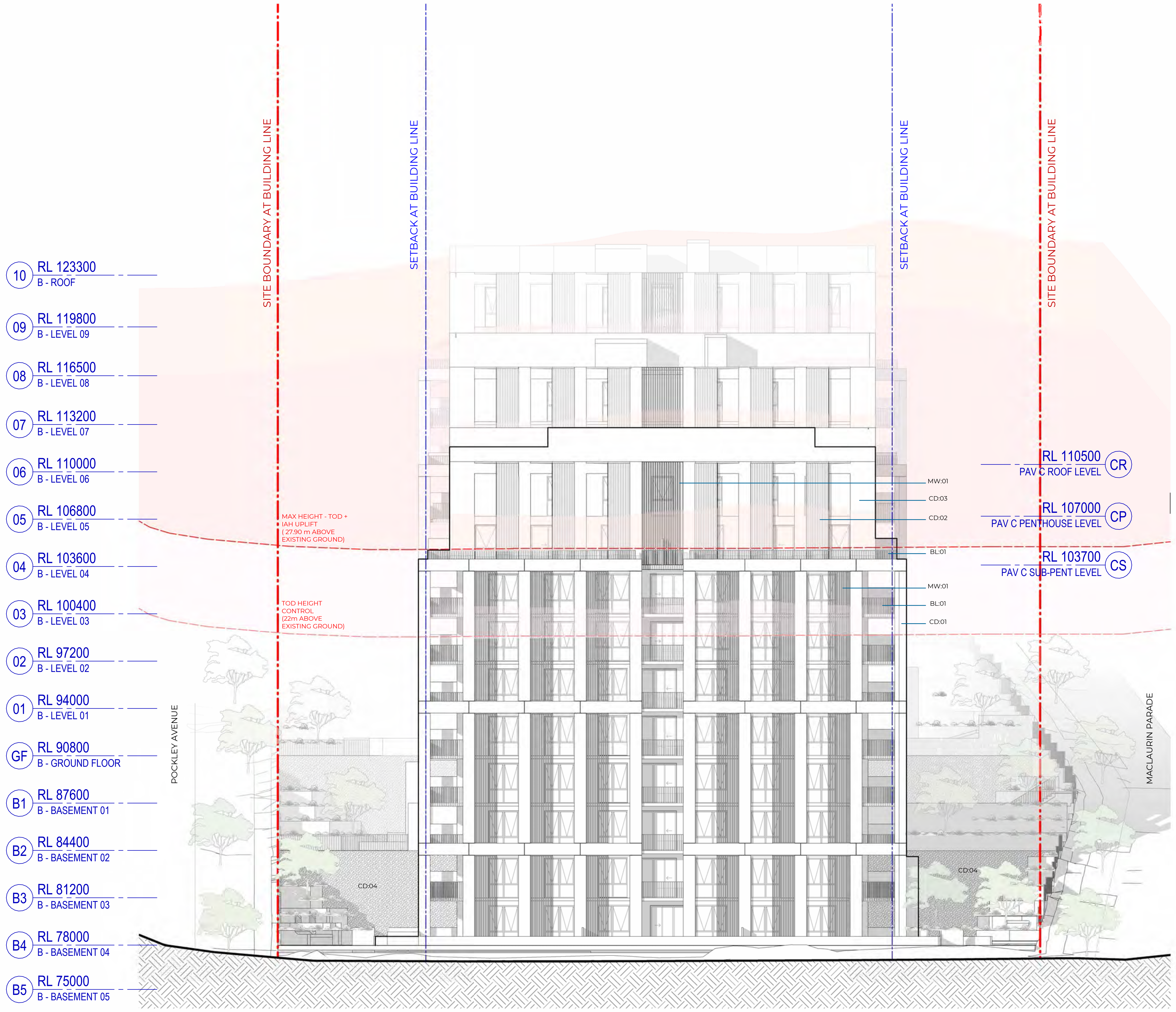
Revision
A

Status

Date generated 17/04/2025 9:05:01 AM



1 B - East Elevation
SCALE 1 : 200



2 B - West Elevation
SCALE 1 : 200

MATERIAL FINISHES LEGEND


CD:01 - Stone Look Cladding


CD:02 - Vertically Ribbed Metallic Cladding - Warm Charcoal


CD:03 - Flat Metallic Cladding - Warm Charcoal


CD:04 - Gabion Wall


BL:01 -Angled Flat Bar Balustrade


MW:01 - Vertically Expressed Metallic Privacy Screen


WD:01 - Metallic Window and Door Frames - Warm Charcoal


GL:01 - Glass

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:06:20 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

Scale
1 : 200

Sheet title
Building Elevations - East & West

Sheet number
DA-AR-B-32-003

Revision
A

Status

1 B - Building Section A - Long Section
SCALE 1 : 200

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:06:37 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

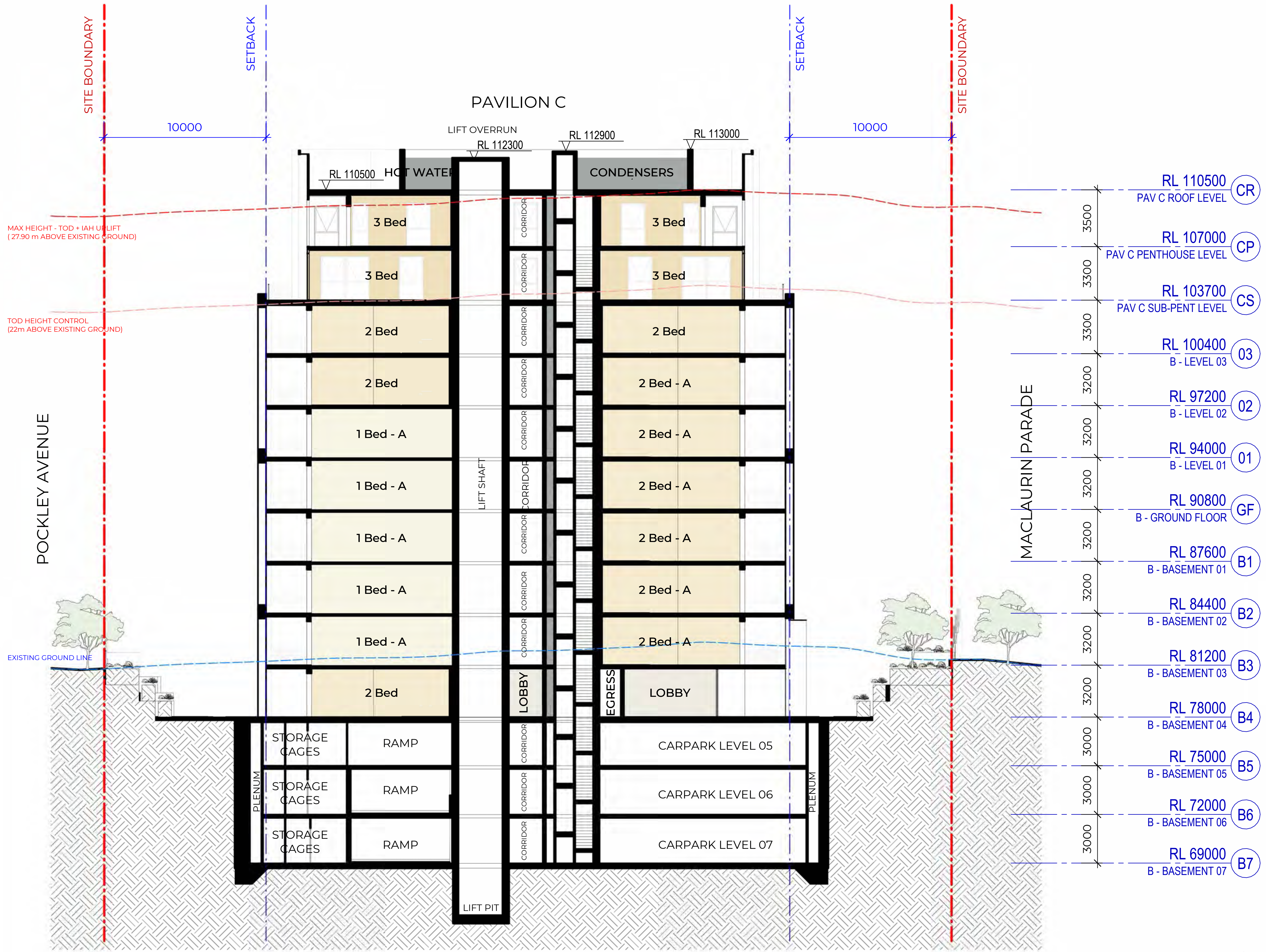
Scale
1 : 200

Sheet title
Building Sections - A

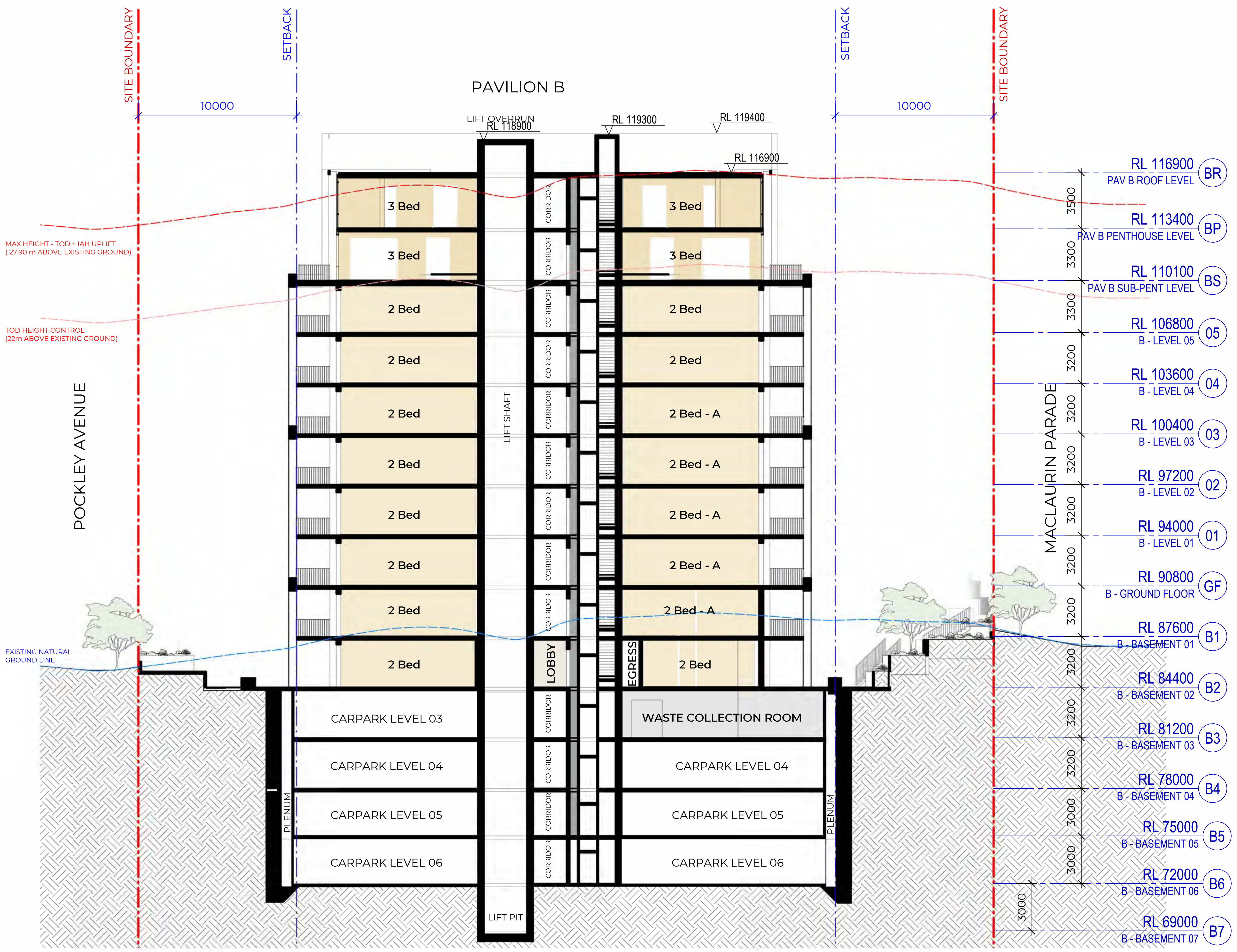
Sheet number
DA-AR-B-32-101

Revision
A

Status



1 Building Section B - Pavilion C
SCALE 1 : 200



2 B - Building Section C - Pavilion B
SCALE 1 : 200

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:06:57 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W—B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

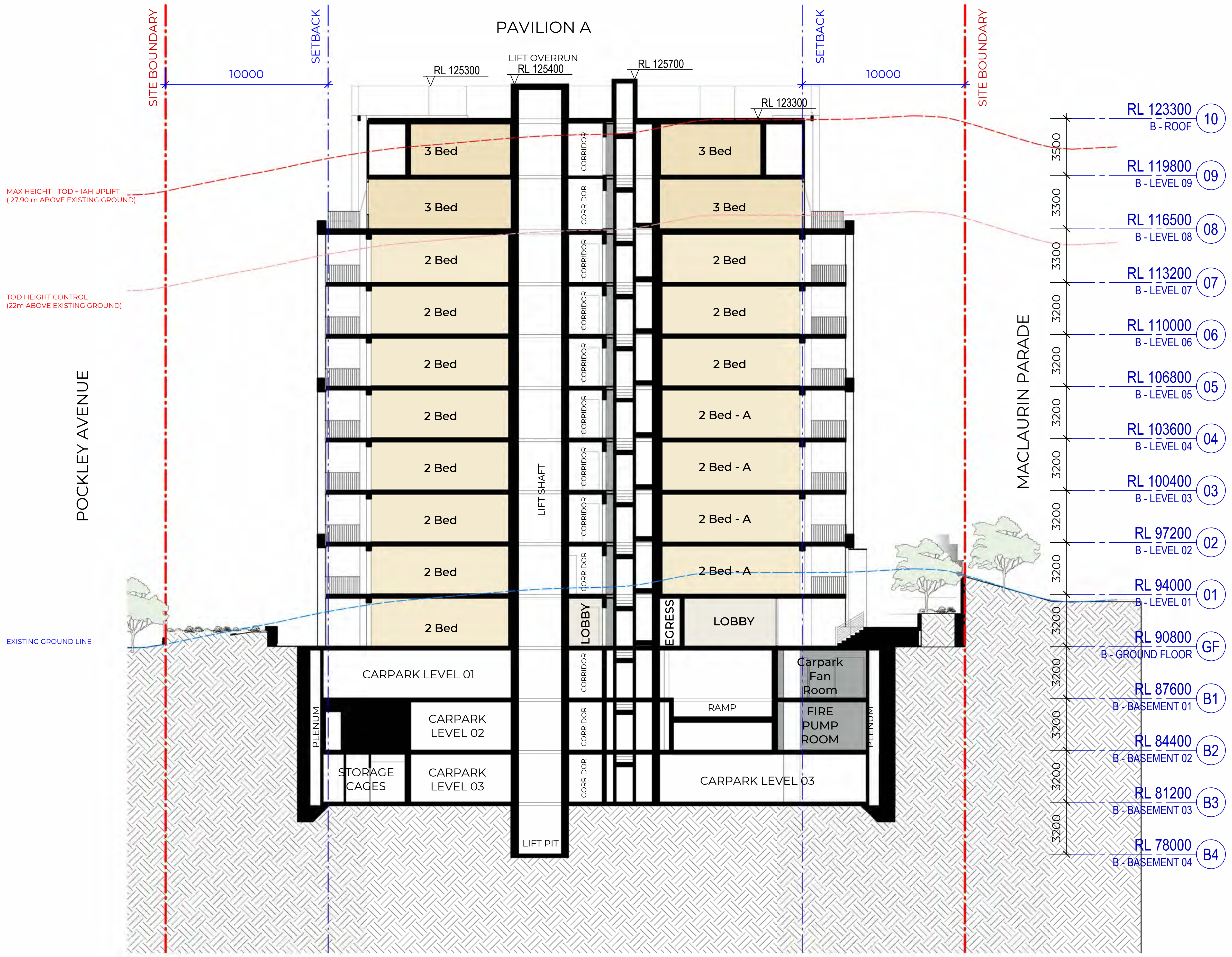
Scale
1 : 200

Sheet title
Building Sections - B&C

Sheet number
DA-AR-B-32-102

Revision
A

Status



1 B - Short A
SCALE 1 : 200

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:07:18 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

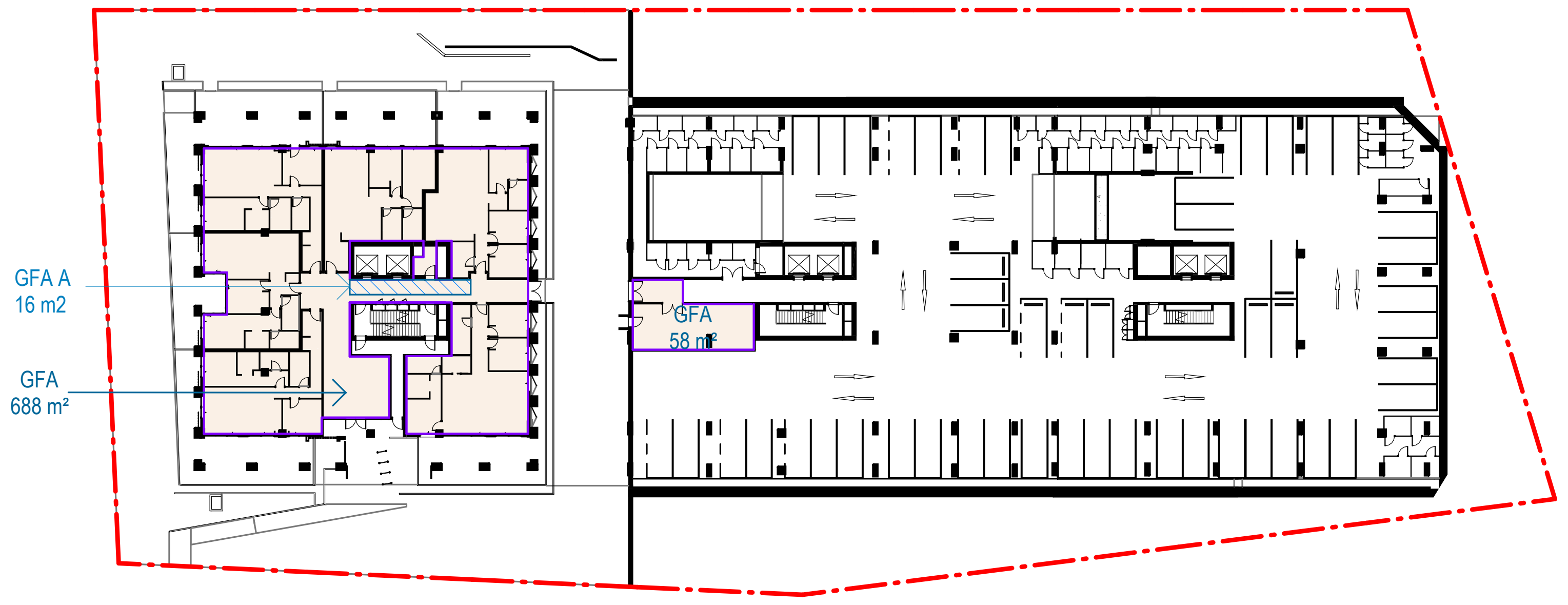
Scale
1 : 200

Sheet title
Building Sections - D

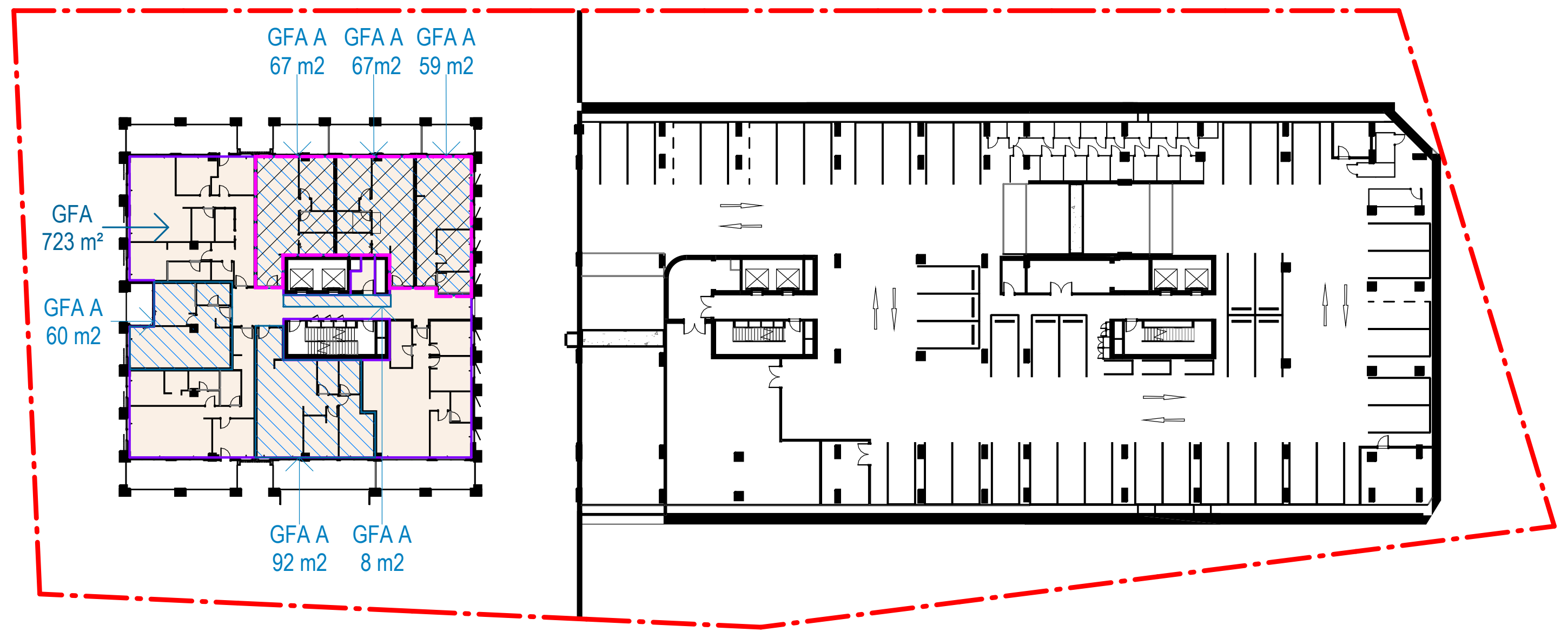
Sheet number
DA-AR-B-32-103

Revision
A

Status



1 B - BASEMENT 04_GFA
SCALE 1 : 600



2 B - BASEMENT 03_GFA
SCALE 1 : 600

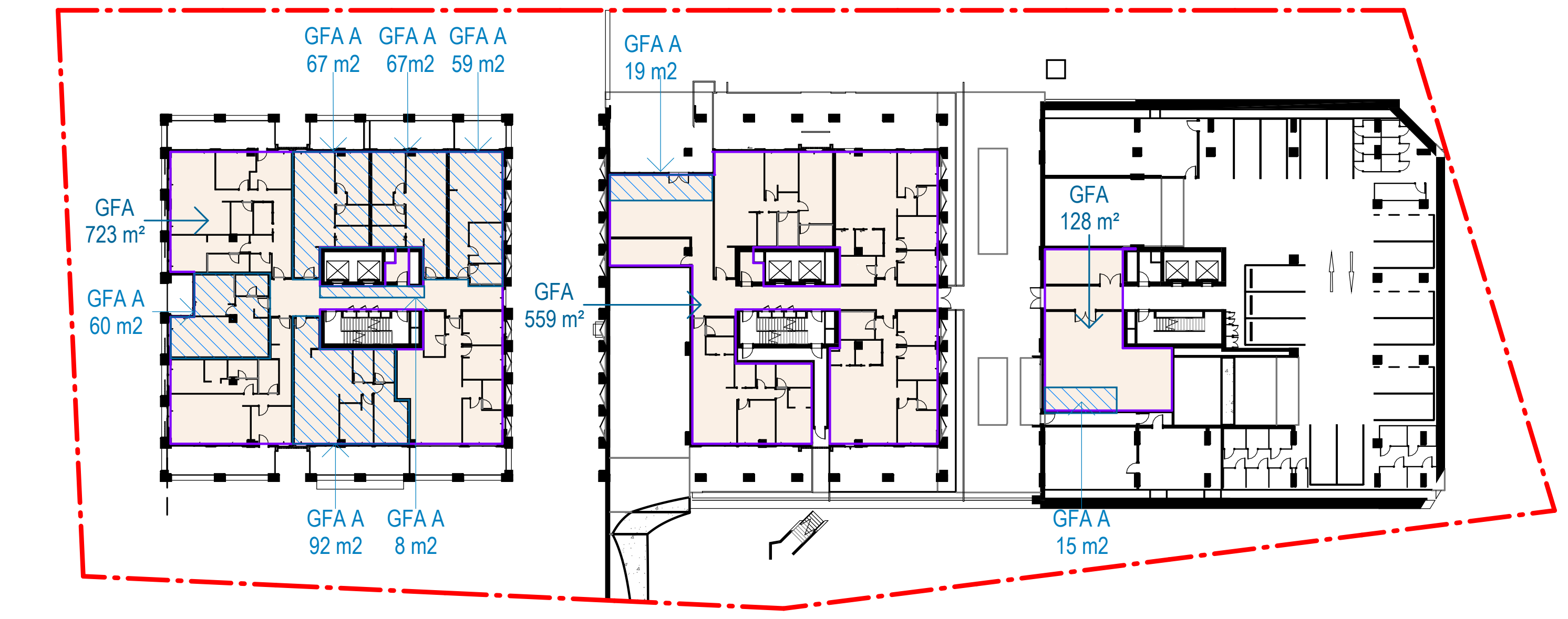
GFA	
Level	Area
B - BASEMENT 04	746 m²
B - BASEMENT 03	723 m²
B - BASEMENT 02	1410 m²
B - BASEMENT 01	1356 m²
B - GROUND FLOOR	2145 m²
B - LEVEL 01	2104 m²
B - LEVEL 02	2173 m²
B - LEVEL 03	2173 m²
B - LEVEL 04	2070 m²
B - LEVEL 05	2070 m²
B - LEVEL 06	1335 m²
B - LEVEL 07	1335 m²
B - LEVEL 08	619 m²
B - LEVEL 09	619 m²
	20702m2

SITE AREA: 6,539 M2

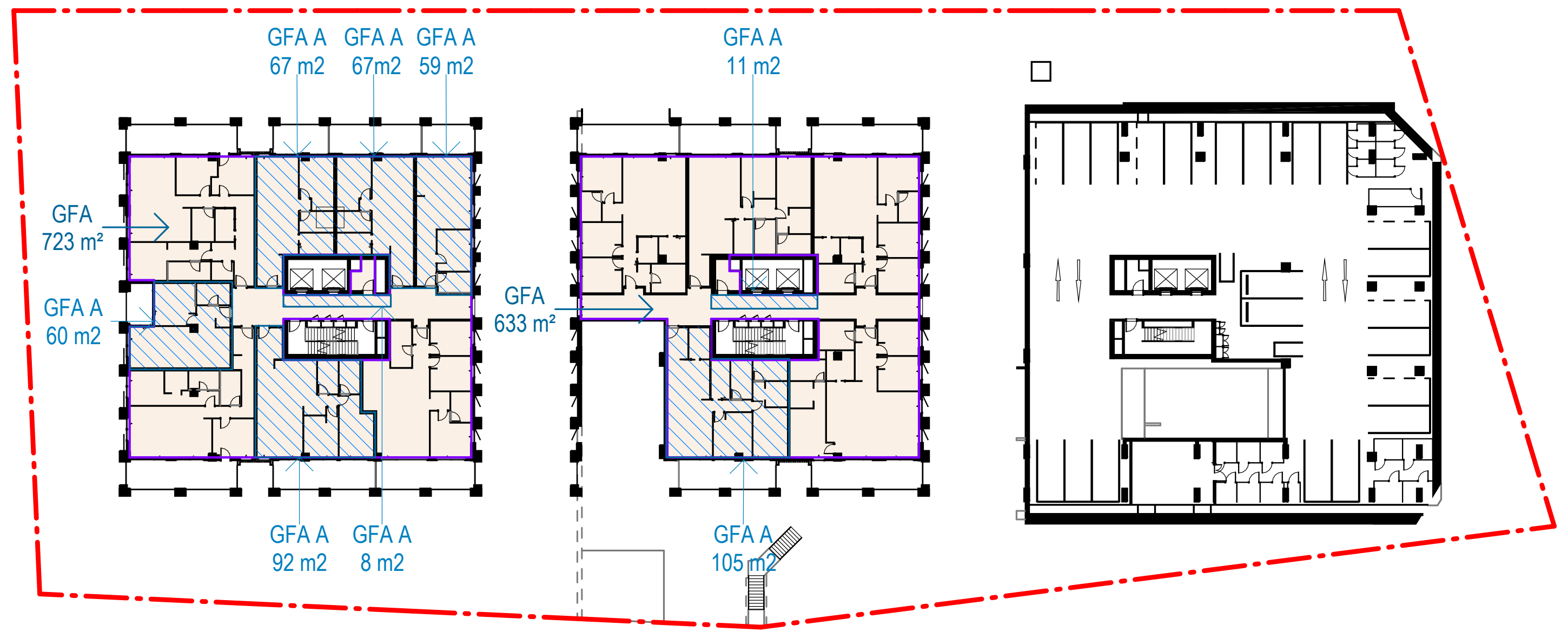
ORIGINAL SCHEME:
FSR: 2.50:1
COMPLIANT GFA: 16,348 M2

PROPOSED 'UPLIFT' CALCULATIONS:
AFH BONUS FSR: 3.25:1
AFH BONUS GFA: 3,188 M2
TOTAL MAX GFA: 21,252 M2
PROPOSED GFA: 20,702 M
PROPOSED AFH SEPP GFA: 3,188M2*
PROPOSED FSR: 3.17:1

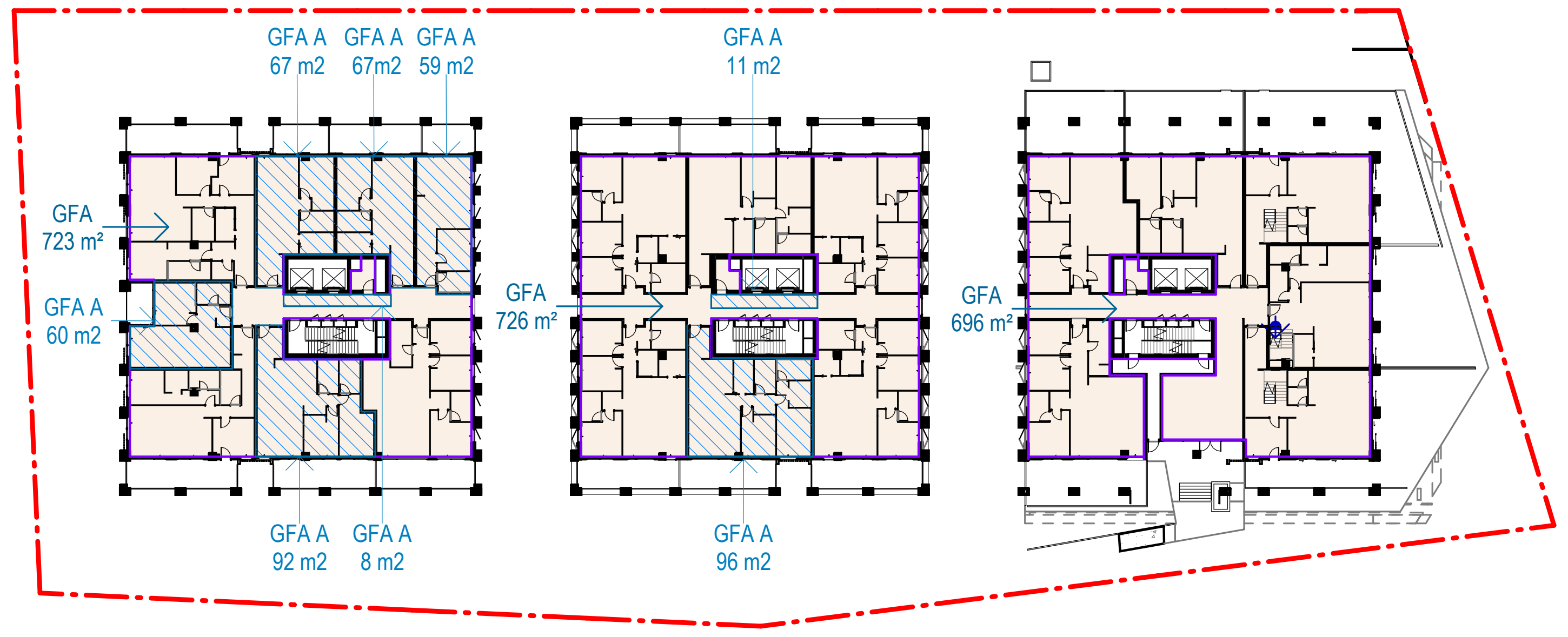
Note:
* Includes 15.40% of common area (corridors + Internal community room)
** Proposed total GFA inclusive of 1m2 deduction per residential unit (178 units) for services.



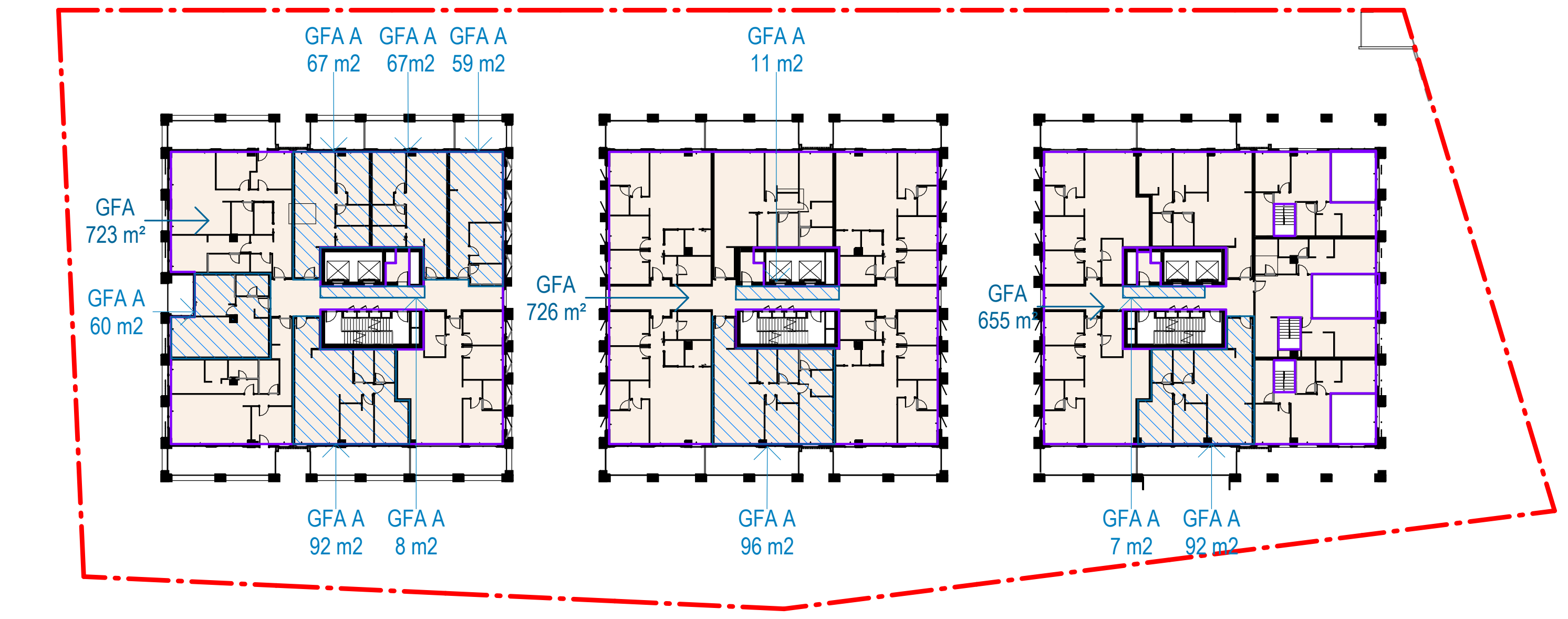
3 B - BASEMENT 02_GFA
SCALE 1 : 600



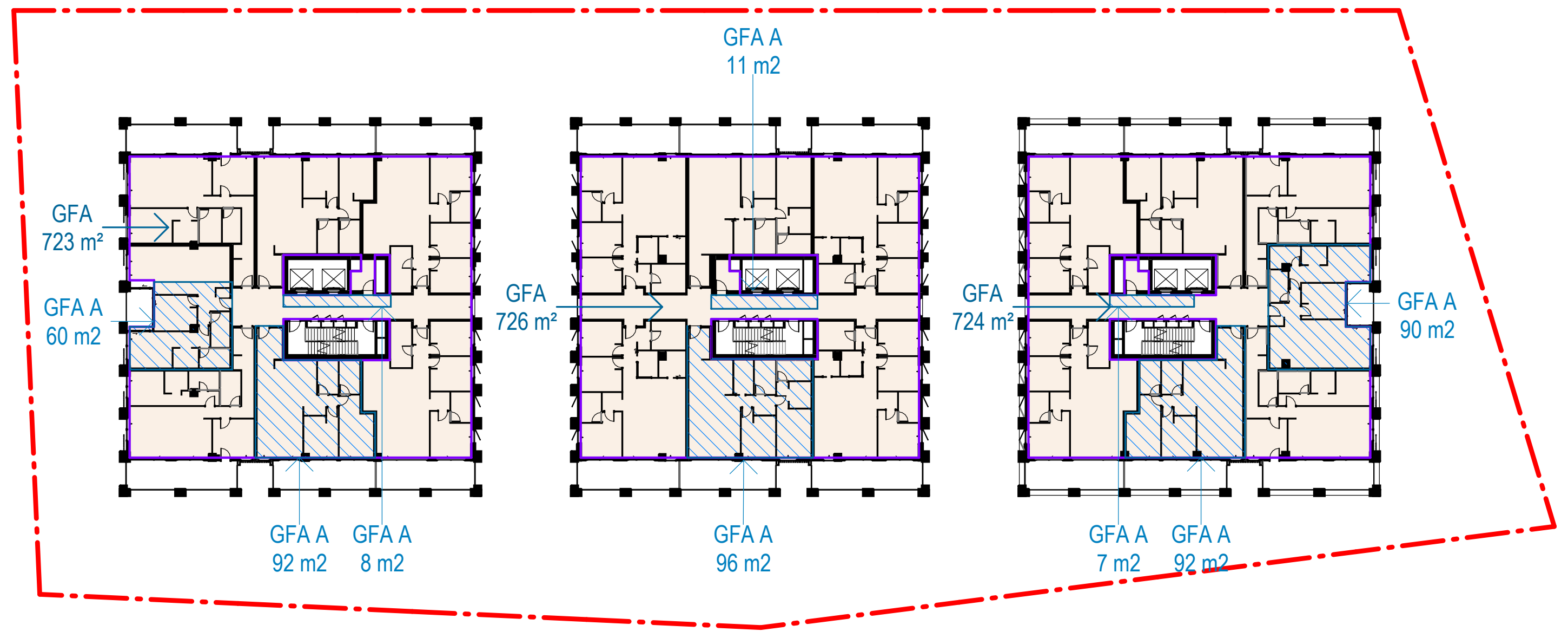
4 B - BASEMENT 01_GFA
SCALE 1 : 600



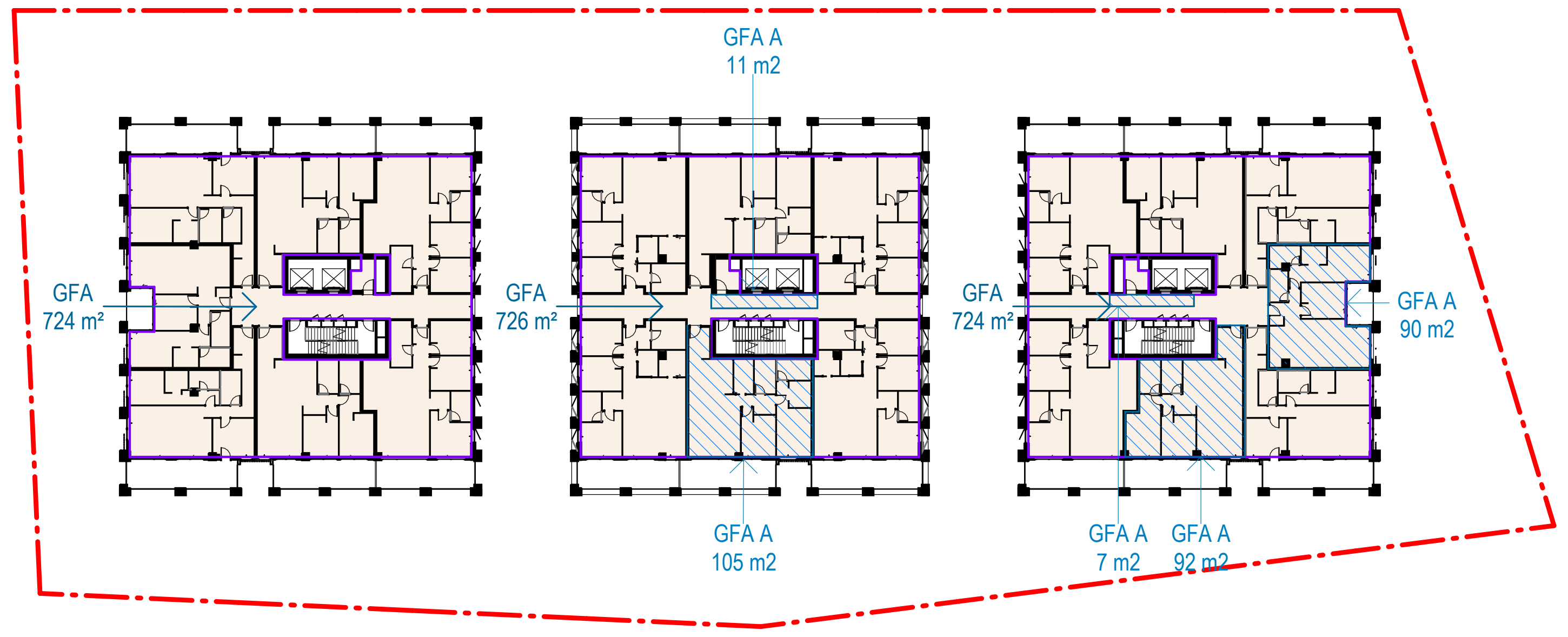
5 B - GROUND FLOOR_GFA
SCALE 1 : 600



6 B - LEVEL 01_GFA
SCALE 1 : 600



7 B - LEVEL 02_GFA
SCALE 1 : 600



8 B - LEVEL 03_GFA
SCALE 1 : 600

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:09:32 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

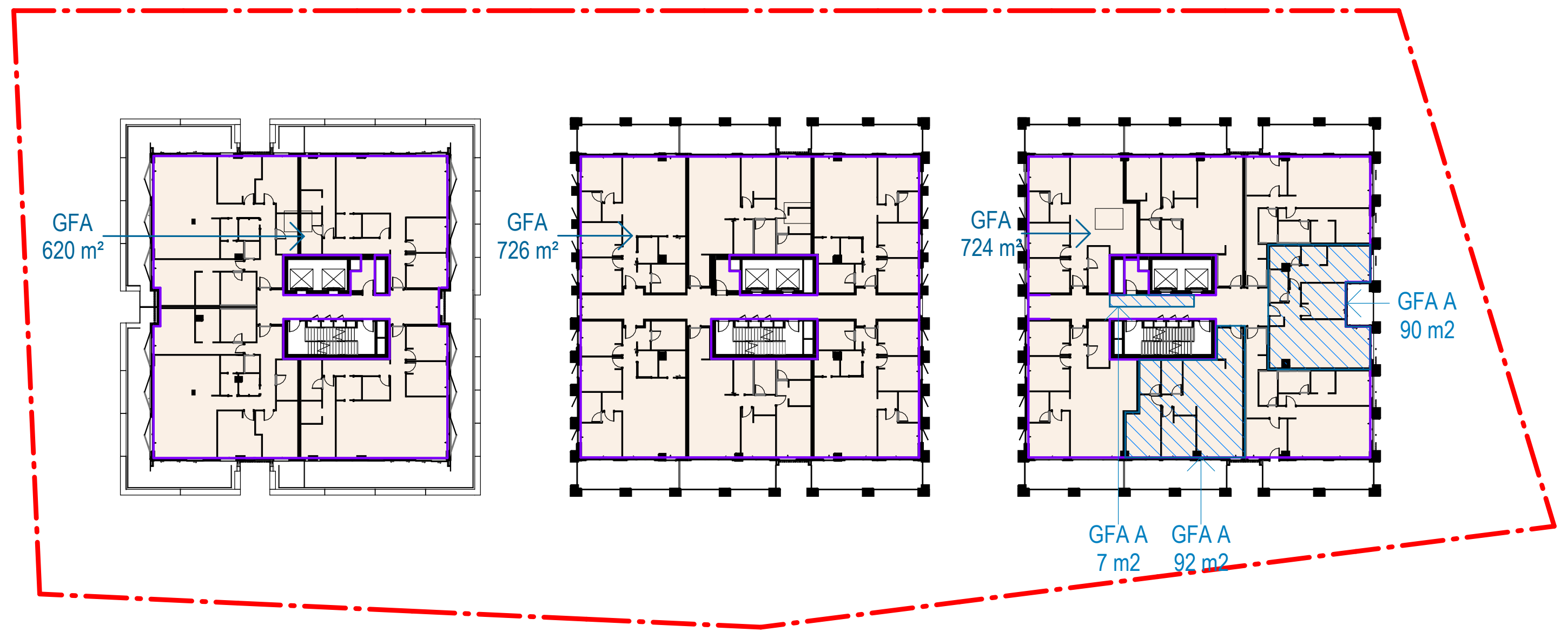
Scale
1 : 600

Sheet title
GFA Diagrams

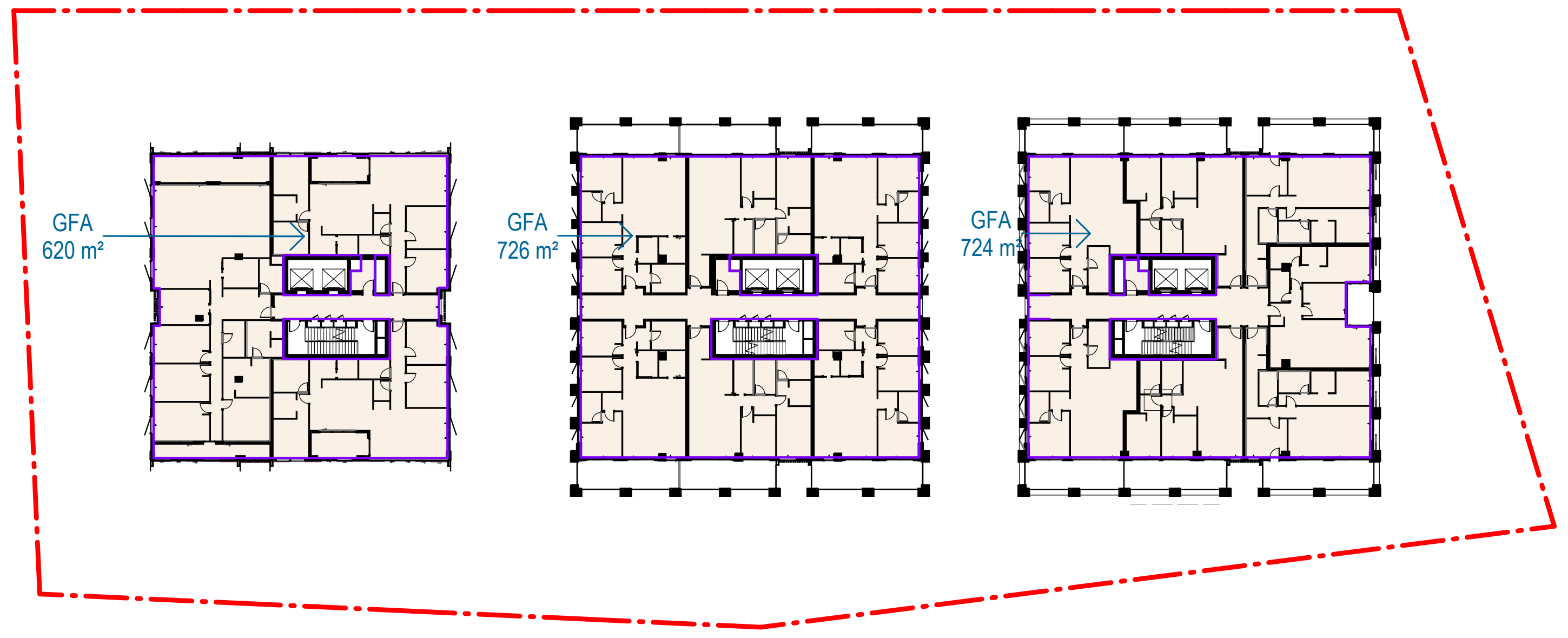
Sheet number
DA-AR-B-80-021

Revision
A

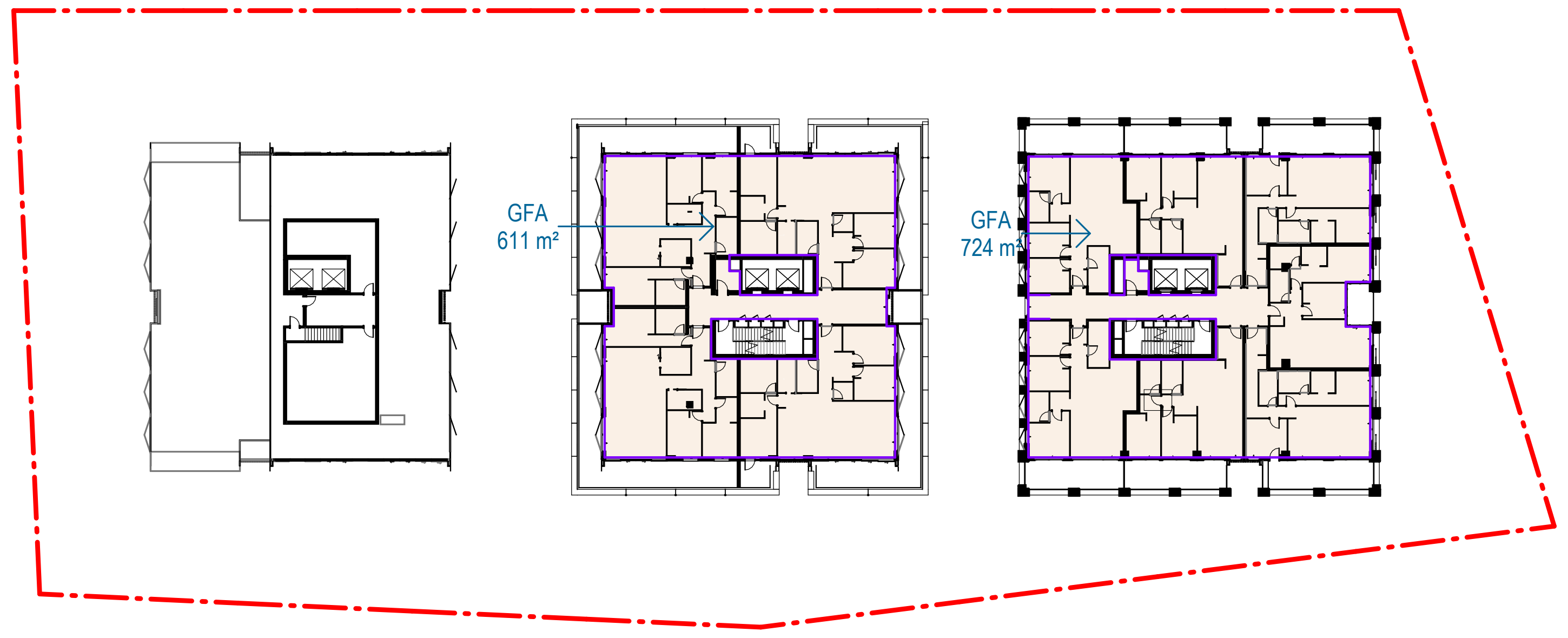
Status



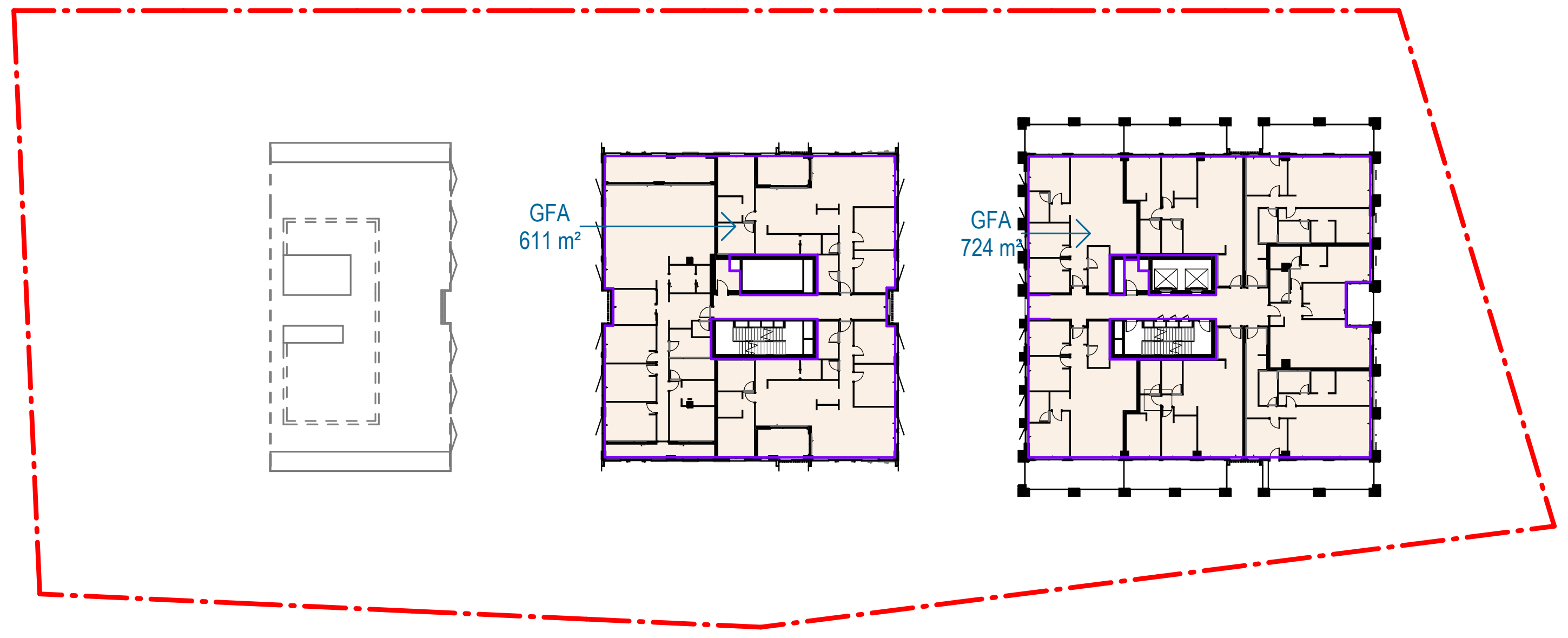
1 B - LEVEL 04_GFA
SCALE 1 : 600



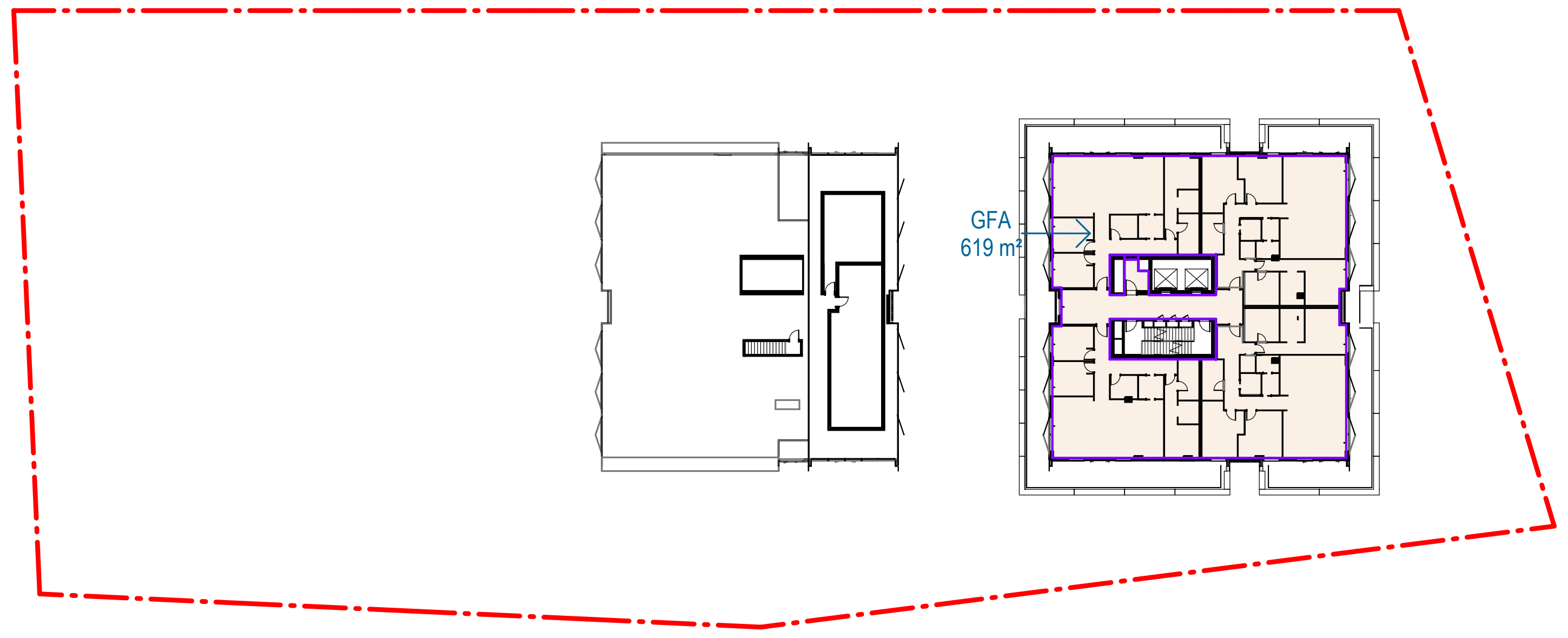
2 B - LEVEL 05_GFA
SCALE 1 : 600



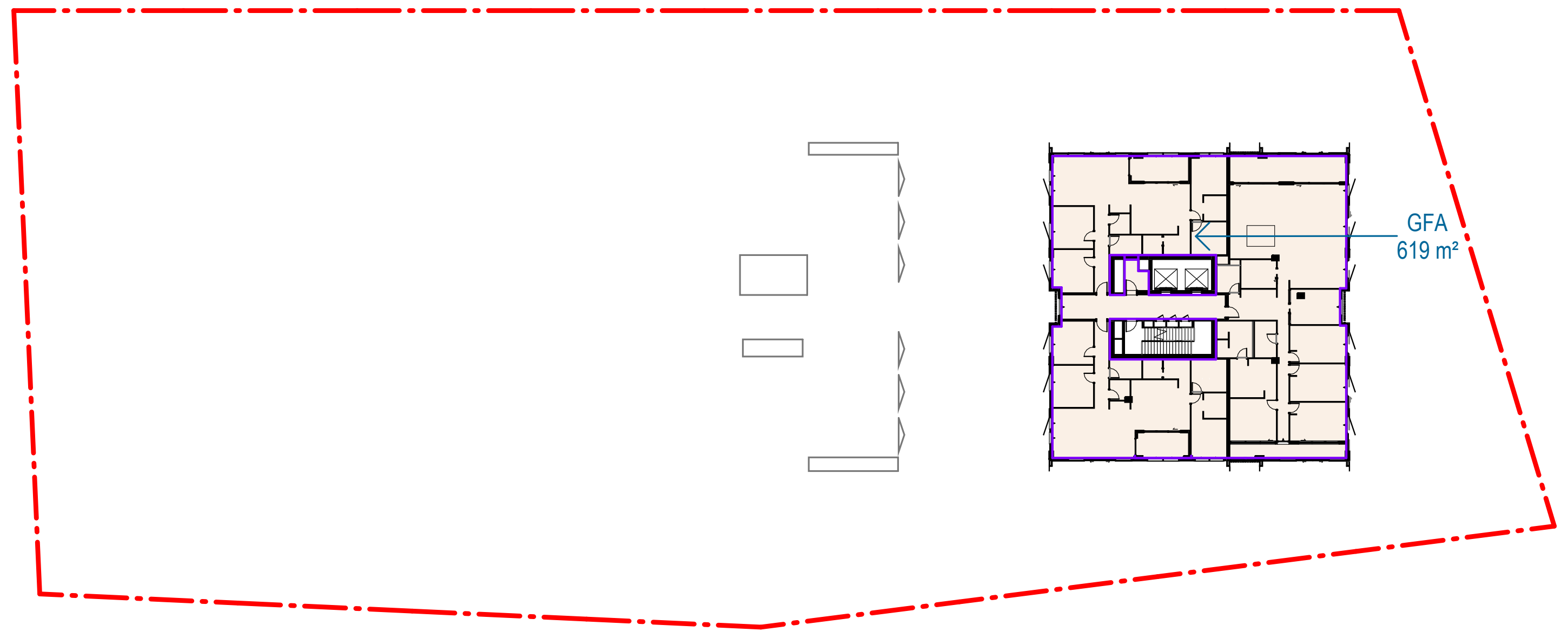
3 B - LEVEL 06_GFA
SCALE 1 : 600



4 B - LEVEL 07_GFA
SCALE 1 : 600



5 B - LEVEL 08_GFA
SCALE 1 : 600



6 B - LEVEL 09_GFA
SCALE 1 : 600

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:09:42 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

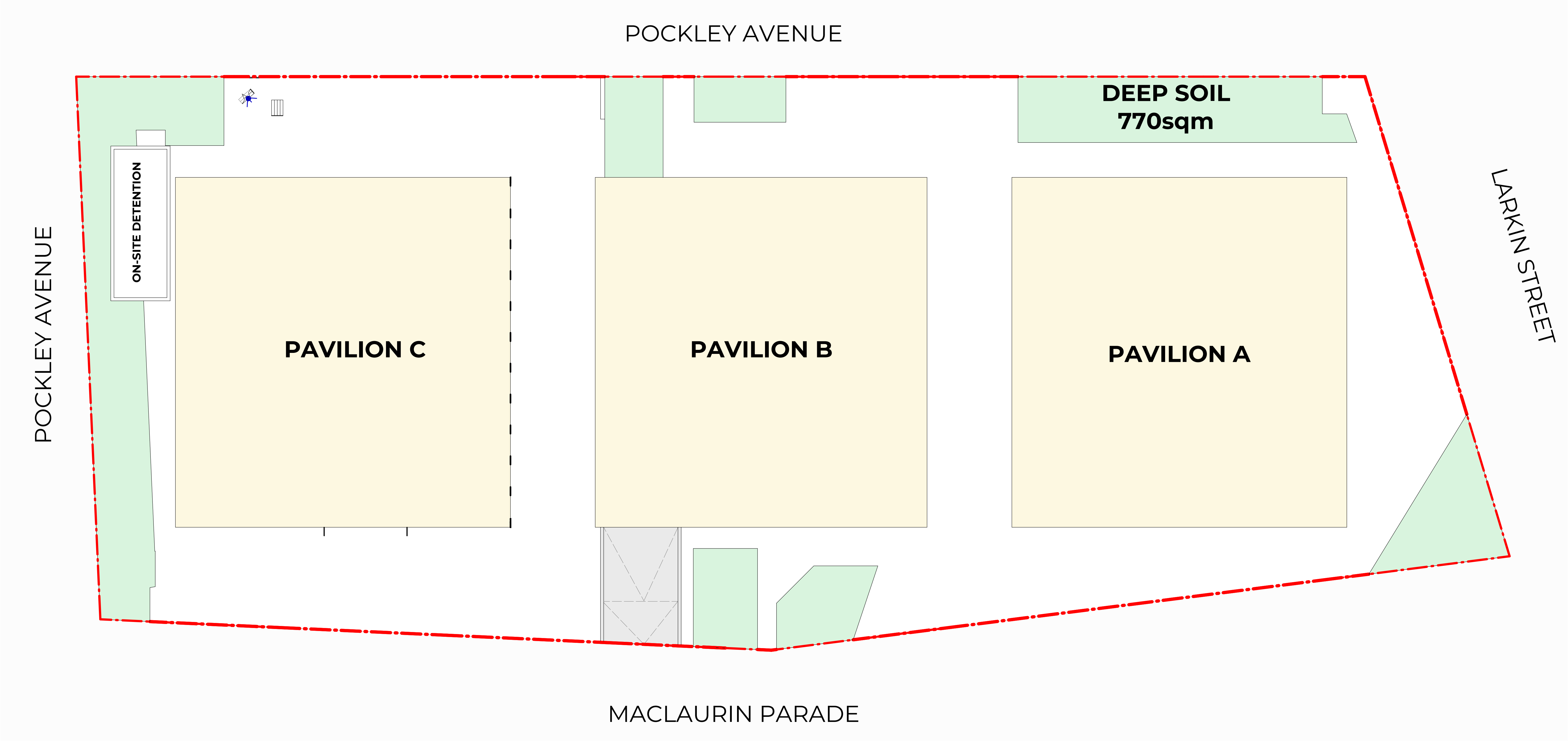
Checked	Approved	Sheet size	Scale
Checker	Approver	A1	1 : 600

Sheet title
GFA Diagrams

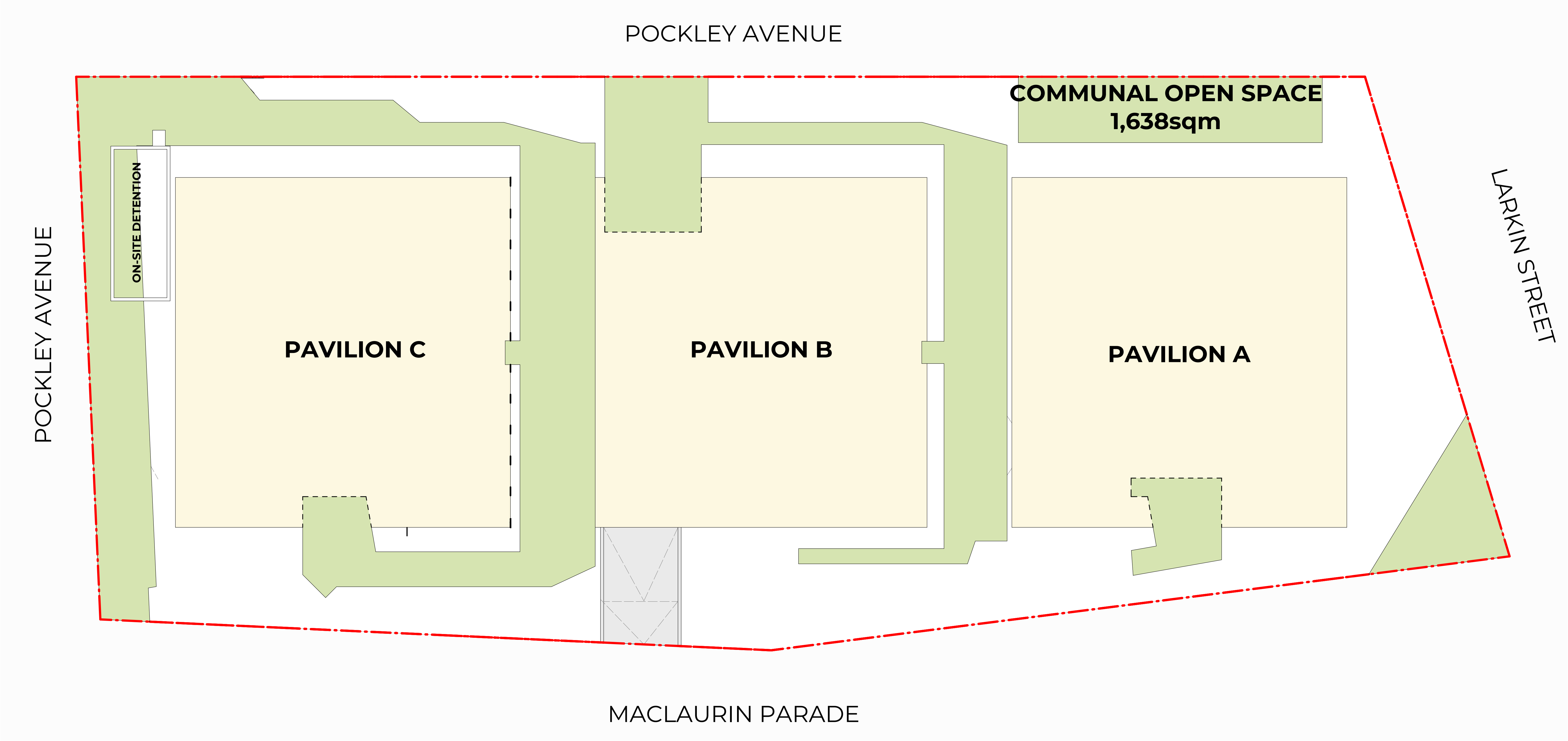
Sheet number
DA-AR-B-80-022

Revision
A

Status



1 POCKLEY - DEEP SOIL DIAGRAM
SCALE 1 : 300



2 POCKLEY - COMMUNAL OPEN SPACE
SCALE 1 : 300

Recent revision history

#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 17/04/2025 9:10:30 AM

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
W–B
WOODS BAGOT

Project number
122021

Size check
25mm

Checked	Approved	Sheet size	Scale
Checker	Approver	A1	1 : 300

Sheet title
Deep Soil & Planting

Sheet number
DA-AR-B-80-041

Revision
A

Status

WOODS BAGOT

LARKIN & POCKLEY - POCKLEY (SITE B)
AREA SCHEDULE
v1.0
16 Apr 25

KEY:
- *Plant*
- *BTS*
- *AFH*
- *Courtyard Apartments*
- *Carpark/Basement*

Site Area	***6,539* sqm**			**PAVILION C**				**PAVILION B**				**PAVILION A**			
				Ground RL	78.0m			Ground RL	84.4m			Ground RL	90.8m		
				Roof RL	110.0m			Roof RL	116.5m			Roof RL	123.3m		
				Height	32m			Height	32m			Height	33m		
Base Level	**Fl To Fl**	**RL**	**Use**		GFA AFH	GFA BTS	**Total GFA**		GFA AFH	GFA BTS	**Total GFA**		GFA AFH	GFA BTS	**Total GFA**
Roof	2	123.3	Plant	144											
Level 9	3.5	119.8	*Residential*	*733*										*619*	**619**
Level 8	3.3	116.5	*Residential*	*1129*										*619*	**619**
Level 7	3.3	113.2	*Residential*	*1708*						*611*	**611**			*724*	**724**
Level 6	3.2	110.0	*Residential*	*2103*						*611*	**611**			*724*	**724**
Level 5	3.2	106.8	*Residential*	*2674*		*620*	**620**			*726*	**726**			*724*	**724**
Level 4	3.2	103.6	*Residential*	*2939*		*620*	**620**			*726*	**726**		*189*	*535*	**724**
Level 3	3.2	100.4	*Residential*	*2944*		*724*	**724**		*107*	*619*	**726**		*189*	*535*	**724**
Level 2	3.2	97.2	*Residential*	*2944*	*161*	*563*	**724**		*107*	*619*	**726**		*189*	*535*	**724**
Level 1	3.2	94.0	*Residential*	*2944*	*354*	*369*	**723**		*107*	*619*	**726**		*100*	*555*	**655**
Ground Floor	3.2	90.8	*Residential*	*3130*	*354*	*369*	**723**		*107*	*619*	**726**		*17*	*679*	**696**
Level B01	3.2	87.6	*Parking |Services | Residential*	*3121*	*354*	*369*	**723**		*117*	*516*	**633**	**ARPARK LVL01/ COMM ROO**		*0*	**0**
Level B02	3.2	84.4	*Parking | Residential*	*3374*	*354*	*369*	**723**		*19*	*540*	**559**	**ARPARK LVL02 / COMM ROO**		*128*	**128**
Level B03	3.2	81.2	*Parking | Residential*	*3614*	*354*	*369*	**723**	**CARPARK LVL 03**				**CARPARK LVL 03**			
Level B04	3.2	78.0	*Parking | Residential*	*3012*	*16*	*672*	**688**	**ARPARK LVL04 / COMM ROO**		*58*	**58**	**CARPARK LVL 04**			
Level B05	3	75.0	*Parking*	*2018*	**CARPARK LVL 05**			**CARPARK LVL 05**				**CARPARK LVL 05**			
Level B06	3	72.0	*Parking*	*1544*	**CARPARK LVL 06**			**CARPARK LVL 06**							
Level B07	3	69.0	*Parking*	*1544*	**CARPARK LVL 07**										
Totals				36,513	1,948	5,043	**6,991**		565	6,263	**6,828**		684	6,377	**7,061**

Development Summary:	
Proposed Total GFA:	**20,702 sqm**
Proposed Total AFH GFA	**3,188 sqm**
Proposed FSR:	**3.17 :1**
TOD AFH GFA (2%)	**414 sqm**
SEPP IAH GFA	**2,774 sqm**
SEPP IAH % For Uplift	**13.40% ***
Bonus FSR Uplift Achieved	**0.67**
Max Permissible FSR	**3.17**
Max Permissible Building Height	**27.90 m**

Area Type [Resi]	**Percent**	**Amount**	**FSR**
GFA AFH	15.40%	3,188	
GFA BTS	85%	17,514	
GFA	100%	**20,702**	**3.17**

*Includes 15.4% of common area (corridors + Internal community room)

Note GFA:

- 1sqm/apt allowed for riser

Recent revision history			
#	Status	Description	Date
A		Issue For DA	17/04/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Project
Pockley Avenue

Client
Aqualand Prestige

Issuer
WOODS BAGOT

Project number
122021

Size check
25mm

Checked
Checker

Approved
Approver

Sheet size
A1

Scale

Sheet title
Area Schedule

Sheet number
DA-AR-B-80-051

Revision
A

Status

Date generated 17/04/2025 9:10:33 AM

Appendix D – Groundwater Seepage Analysis and Groundwater Level Monitoring Report

16 April 2025
E26491.G12_Rev1

Wayne Xiong
Aqualand Prestige 2 Pty Ltd
Level 37, 264 George Street,
SYDNEY 2000

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW 2009

ABN 42 909 129 957

E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

Groundwater Seepage Analysis
Proposed Residential Development
Site B, 2-16 Pockley Avenue, Roseville NSW

1. INTRODUCTION

At the request of Aqualand Prestige 2 Pty Ltd (the Client), EI Australia (EI) has prepared this Groundwater Seepage Analysis (GSA) for the proposed development at Site B, 2-16 Pockley Avenue, Roseville NSW (the Site).

The following documents provided by the Client were used to assist in the preparation of this analysis:

- Architectural drawings prepared by Woods Bagot, Project No. 122021, Sheet Nos. DA-ARB-22-094 to DA-AR-B-22-1.9, DA-AR-B-22-190 , DA-AR-B-32-001 to DA-AR-B-32-003, DAAR-B-32-101 to DA-AR-B-32-103, latest revision B, latest dated 9 April 2025; and
- Preliminary Survey drawings by Rygate & Company Pty Ltd, Plan Showing Details and Levels, Sheets 1 to 7, Rev. A, Dated 3 September 2024.

EI has previously prepared the following relevant reports for this site:

- Geotechnical Investigation (GI) Report, Report No. E26491.G03_Rev2, dated 16 April 2025; and
- Groundwater Level Monitoring Report No.1, Report No. E26491.G11.GW1, dated 28 March 2025.

Based on the provided documents, EI understands that the proposed development involves the demolition of the existing site structures and the construction of three multi-storey residential developments overlying a stepped shared basement. The lowest basement level is proposed to have a Finished Floor Level (FFL) RL 78.0m AHD at the north-eastern site boundary (adjacent to Larkin Street) and RL 69.0m AHD at the south-western site boundary (adjacent to Pockley Avenue). A Bulk Excavation Level (BEL) ranging between RL 68.7m AHD and 77.7m AHD is assumed, which includes allowance for the construction of the basement slab. To achieve the BEL, excavation depths from approximately 10m to 20m Below Existing Ground Level (BEGL) have been estimated. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches.

1.1. ASSESSMENT OBJECTIVES

The objective of this GSA is to provide an estimation of the groundwater take volumes that require pumping out during the construction and operational stages of the development with estimation of the groundwater drawdown and drawdown settlement as a result of the excavation dewatering.

2. SITE MODEL

2.1. MODELLED SECTIONS

One section was prepared and analysed as part of the GSA report to account for the sloping topography, the location of this section is shown in the attached **Figure 1**:

- **Section A-A:** Running through the excavation in north-east to south-west direction of the proposed basement, following the site topography.

2.2. SUBSURFACE CONDITIONS

The subsurface conditions outlined in our GI reports were utilised in this analysis to model the geological subsurface conditions for the modelled section.

A summary of the permeability values which were adopted for the assessment of groundwater take volumes is presented in **Table 1**.

Table 1 Summary of Subsurface Conditions and Adopted Design Parameters

Material [1]	Adopted RL of Top of Unit (m AHD) [2]		Adopted Permeability (m/s)	Anisotropy ky'/kx'
	Southwest	Northeast		
Fill [3]	78.7	97.0	1.0×10^{-5}	1.0
Residual Soil [3]	77.0	96.1	1.0×10^{-8}	1.0
Class V/IV Shale [4]	- [6]	93.0	5.0×10^{-8}	1.0
Class III/II Shale or Class IV/III/II Sandstone [5]	75.2	89.2	1.6×10^{-7}	0.5

Notes:

1 For more detailed descriptions of subsurface conditions reference should be made to our GI report.
2 Minor idealisations have been made to the adopted ground profile based on borehole logs.
3 Permeability value has been correlated for materials encountered during the GI using Look (2014).
4 Permeability value was adopted based on the calculated value of rising head tests carried out by EI encountered in BH1M.
5 Permeability value was adopted based on the average value of rising head tests carried out by EI encountered in BH2.1M, BH4M, and BH4.1M.
6 Class V/IV Shale does not encounter during the Geotechnical Investigation in the western site boundary.

2.3. GROUNDWATER LEVEL OBSERVATIONS

Rising Head tests were undertaken by EI on 21 February 2025 in the three monitoring wells and on 24 February 2025 in the two monitoring wells to estimate the rock mass hydraulic conductivity (or permeability). The test involves removing the water from the well and measuring the rise in water level within the well at regular time intervals. The data was then used to calculate the hydraulic conductivity of the material screened by each well using the Hvorslev method (results are presented graphically in **Appendix B**).

A summary of the rising head test results for each monitoring well are presented in **Table 2** Below.

Table 2 Summary of Monitoring Well Details and Rising Head Test Results

Monitoring Well ID	Total Well Depth (m BEGL)	Screen Length (m)	Screened Section	Date of Test	Approximate RL of Groundwater Level (m AHD)	Calculated Permeability (m/s)
BH1M	7.03	3	Class V/IV Shale	21 February 2025	87.89	4.63×10^{-8}
BH2.1M	18.00	6	Class III/II Shale or Class IV/III/II Sandstone	21 February 2025	84.16	4.68×10^{-8}
BH4M	7.00	3	Class IV and III Sandstone	21 February 2025 24 February 2025	76.22 76.80	1.91×10^{-7} 1.90×10^{-7}
BH4.1M	15.00	6	Class II Sandstone	21 February 2025	76.90	2.52×10^{-7}

The groundwater levels observed within all monitoring wells during various site visits are summarised in **Table 3**.

Table 3 Summary of Groundwater Levels

Monitoring Well ID	Date of Observation	Approximate Depth to Groundwater Level (m BEGL)	Approximate RL of Groundwater Level (m AHD)
BH1M	19 February 2025 21 February 2025	7.09 6.61	87.41 87.89
BH2M	19 February 2025 21 February 2025	6.78 6.11	91.22 91.89
BH2.1M	21 February 2025	13.84	84.16
BH4M	21 February 2025 24 February 2025	4.03 3.45	76.22 76.80
BH4.1M	21 February 2025	3.35	76.90

Long-term continuous groundwater monitoring was completed in BH1M, BH2M and BH2.1M from 18 December 2024 to 13 March 2025. A summary of the groundwater levels is provided in the **Table 4** below:

Table 4 Summary of Long-term Groundwater Monitoring

Monitoring Well ID	Average Groundwater RL (m AHD)	Highest Groundwater RL (m AHD)	Lowest Groundwater RL (m AHD)
BH1M	88.20	89.31	87.83
BH2M	91.90	92.01	91.71
BH2.1M	84.50	84.68	84.08

Based on groundwater levels observed on the site, the following design groundwater levels (GWL) for each section have been adopted for this analysis:

- **Section A-A**: At the site boundaries, design groundwater levels of RL 93.0m AHD and 77.9m AHD was adopted for the north-eastern and south-western ends, respectively, incorporating a 1m increase above the observed levels to account for possible seasonal variation. For the model, the groundwater levels are modelled 25m away from the basement boundaries at RL 97.0m AHD and 77.9m AHD for the north-eastern and south-western ends, respectively. The water levels beyond the site were linearly extrapolated matching the topography slope of about 16.0% beyond the north-eastern boundary, while the south-western end (located at the base of the slope) is assumed to continue horizontally beyond the site boundary.

2.4. SHORING SYSTEM

At the time of this analysis, no detailed structural design was available. However, the system was assumed to be soldier pile wall socketed below BEL. During excavation and in the long-term, seepage will be freely allowed to enter the basement.

This analysis does not assess the overall stability of the shoring system. Once the designs relating to the adopted shoring system are updated, this analysis should be revised accordingly.

3. GROUNDWATER TAKE ASSESSMENT

3.1. GROUNDWATER SEEPAGE VOLUMES DURING CONSTRUCTION PHASE

Groundwater seepage analysis for flow through and beneath the excavation face during construction has been undertaken using three sections of PLAXIS 2D (Version 2024.1.0.1060). PLAXIS 2D is a commercially available finite element package intended for the two dimensional analysis in geotechnical engineering. It is equipped with features to deal with various aspects of geotechnical structures and construction processes using robust and theoretically sound computational procedures. PLAXIS 2D estimates the seepage rate of water entering the excavation through and beneath excavation face. This model estimates the volume of water which will be required to be dewatered during the construction of the basement and until the dewatering is turned off.

For the purpose of this modelling, it has been assumed that:

- The subsurface conditions from **Table 1** were modelled horizontally beyond the site boundary to the southwest, and modelled to extrapolate linearly following the site topography beyond the northeast.
- The permeability values presented in **Table 1** above were adopted for each unit.
- The excavation face is assumed to be permeable and free to drain as per Section 2.4 of this report.
- The base of the basement excavation is assumed to be drained and temporary dewatering will be undertaken within the basement perimeter to the proposed BEL.
- The external design groundwater levels for each section were assumed to be constant at the specified distances from the excavation faces as provided in Section 2.3 of this report.
- Section A-A has a width of 36m in to the page.

The PLAXIS 2D models are presented in **Appendix A**. **Table 5** provides the estimated groundwater inflow rate into the proposed excavation and maximum drawdown depths.

Table 5 Summary of Analysis Results

Analysed Section	Inflow into excavation (m^3/day) per m length	Inflow into excavation (m^3/day)	Total Inflow per year (ML/year)
Section A-A	0.38	13.52	4.94

3.2. ASSESSMENT OF GROUNDWATER TAKE DURING OPERATIONAL PHASE

Based on the PLAXIS 2D results, the estimated total inflow during the operational phase of the development is expected to remain the same as during construction, at 4.94 ML per year. This estimate assumes a permeable shoring system with a drained basement, utilizing sub-soil drainage and a sump-and-pump system.

3.3. GROUNDWATER DRAWDOWN INDUCED SETTLEMENT

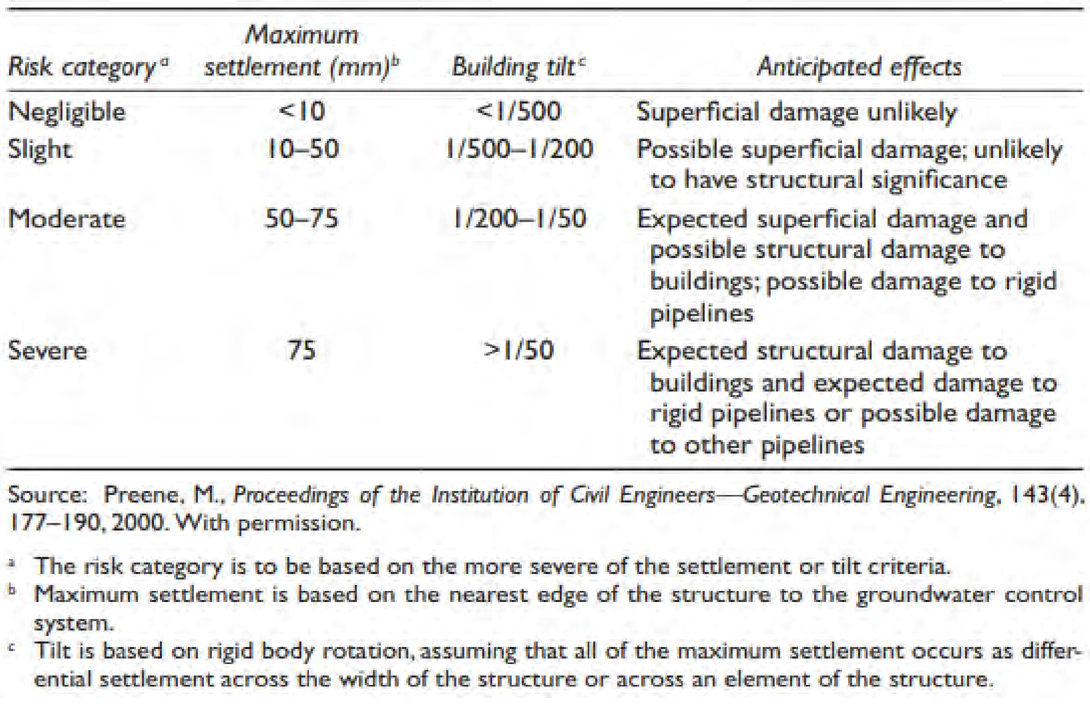
EI utilised PLAXIS 2D to estimate the potential drawdown-induced settlements as a result of dewatering. The maximum predicted groundwater drawdown and its associated maximum ground settlement surrounding the basement boundary is summarised in **Table 6**. It should be noted that these predicted settlements accounts **only for water drawdown** and does not consider other factors, such as shoring wall deflection, surcharge loading, relaxation of the bedrock or other construction-related influences. Figures illustrating the estimated drawdown-induced settlement are provided in **Appendix A**.

Table 6 Summary of Maximum Groundwater Drawdown and Associated Maximum Ground Settlement

Boundary	Maximum Drawdown	Maximum Ground Settlement (mm)
North-East (Larkin Street)	12.0	6
South-West (Pockley Avenue)	8.7	4

Based on the estimated settlements, the ground outside the shoring wall is expected to experience a maximum settlement of up to 6mm, which gradually decreased to be negligible at a distance of approximately 25m from the shoring wall. This level of settlement is considered to pose a 'negligible' risk in terms of the category of damage risk due to dewatering, as defined by Cashman and Preene (2021), as shown in the excerpt in **Plate 1**.

Although the PLAXIS modelling provides predicted drawdown-induced ground settlement values, it would be prudent for a thorough assessment of potential risks posed on neighbouring structures to be completed by a qualified and experienced structural engineer.



Risk category[a]	*Maximum settlement (mm)*[b]	*Building tilt*[c]	*Anticipated effects*
Negligible	<10	<1/500	Superficial damage unlikely
Slight	10–50	1/500–1/200	Possible superficial damage; unlikely to have structural significance
Moderate	50–75	1/200–1/50	Expected superficial damage and possible structural damage to buildings; possible damage to rigid pipelines
Severe	75	>1/50	Expected structural damage to buildings and expected damage to rigid pipelines or possible damage to other pipelines

Source: Preene, M., *Proceedings of the Institution of Civil Engineers—Geotechnical Engineering*, 143(4), 177–190, 2000. With permission.

[a] The risk category is to be based on the more severe of the settlement or tilt criteria.
[b] Maximum settlement is based on the nearest edge of the structure to the groundwater control system.
[c] Tilt is based on rigid body rotation, assuming that all of the maximum settlement occurs as differential settlement across the width of the structure or across an element of the structure.

Plate 1 Excerpt from Cashman and Preene (2021)

4. CONCLUSIONS AND COMMENTS

Based on the findings of this report and within the limitations of available data, EI concludes that:

- The groundwater take during the construction and operational phases is estimated to be approximately 4.94ML per year.
- The above estimate is based on the following assumptions:
  - The modelled excavation is fully permeable to the BEL.
  - Continuous dewatering in order to maintain the groundwater at BEL during construction and operational phases.
  - This assessment does not take into consideration any excavation that may be required for landscape, footings, lift overrun pits, crane pads, and service trenches. This additional excavation, if required, is not expected to affect the retention or the dewatering system.
- Due to the predicted water drawdown occurring within the bedrock, EI is of the opinion that the drawdown settlement resulting from dewatering of the site will have a negligible effect, however, drawdown induced settlement behind the shoring wall within the soil profile outside the excavation outline was predicted in the order of up to 6mm. These settlements fall within the ‘negligible’ risk category of damage risk resulting from ground settlement due to dewatering, as per Cashman and Preene (2021). It would be prudent for potential risks to neighbouring structures to be assessed by a qualified and experienced structural engineer.
- Based on our assessment, the groundwater volumes expected per year appear to be manageable using a drained basement system for its lifetime. Hence in our opinion “tanking” of the basement is unwarranted for this development.
- Should any design or construction conditions differ from that adopted in this report; this GSA should be reviewed and updated as required.

5. LIMITATIONS

This report has been prepared for the exclusive use of Aqualand Prestige 2 Pty Ltd who is the only intended beneficiary of EI's work. The scope of the inspections carried out for the purpose of this report is limited to those agreed with Aqualand Prestige 2 Pty Ltd.

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

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

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

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

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

6. CLOSURE

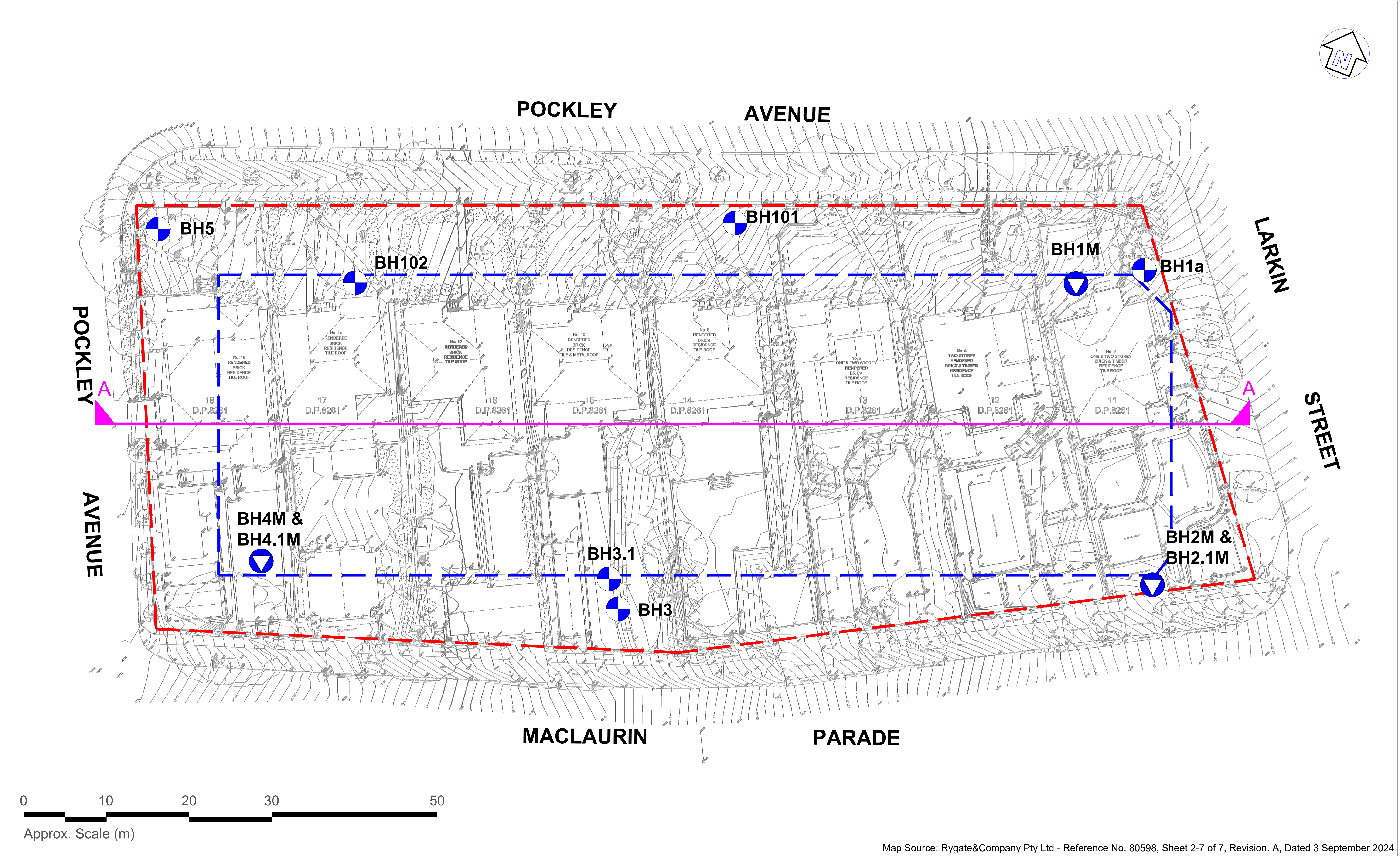
Please do not hesitate to contact the undersigned should you have any questions.

For and on behalf of
EI Australia

Author	Technical Reviewer
Kiengseng Pung	James Brooker
Geotechnical Engineer	Senior Geotechnical Engineer

APPENDICES:
Figure 1 – Analysed Sections Plan
Appendix A – PLAXIS 2D Model and Results (Section A-A)
Appendix B – Rising Head Permeability Tests
Appendix C – Groundwater Level Monitoring Report No.1
Appendix D – Important Information
Appendix E – SEARs Requirement Declaration Form

Figures



Map Source: Rygate&Company Pty Ltd - Reference No. 80598, Sheet 2-7 of 7, Revision. A, Dated 3 September 2024

LEGEND (All Locations are Approximate)

— — —	Site boundary
— — —	Basement outline
◕	Borehole location
▼	Monitoring well location

eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	K.P.
Approved:	S.K.
Date:	15-04-25

Aqualand Prestige Pty Ltd
Groundwater Seepage Analysis
Site B, 2-16 Pockley Aveue, Roseville, NSW
Analysed Section Plan

Figure:
1

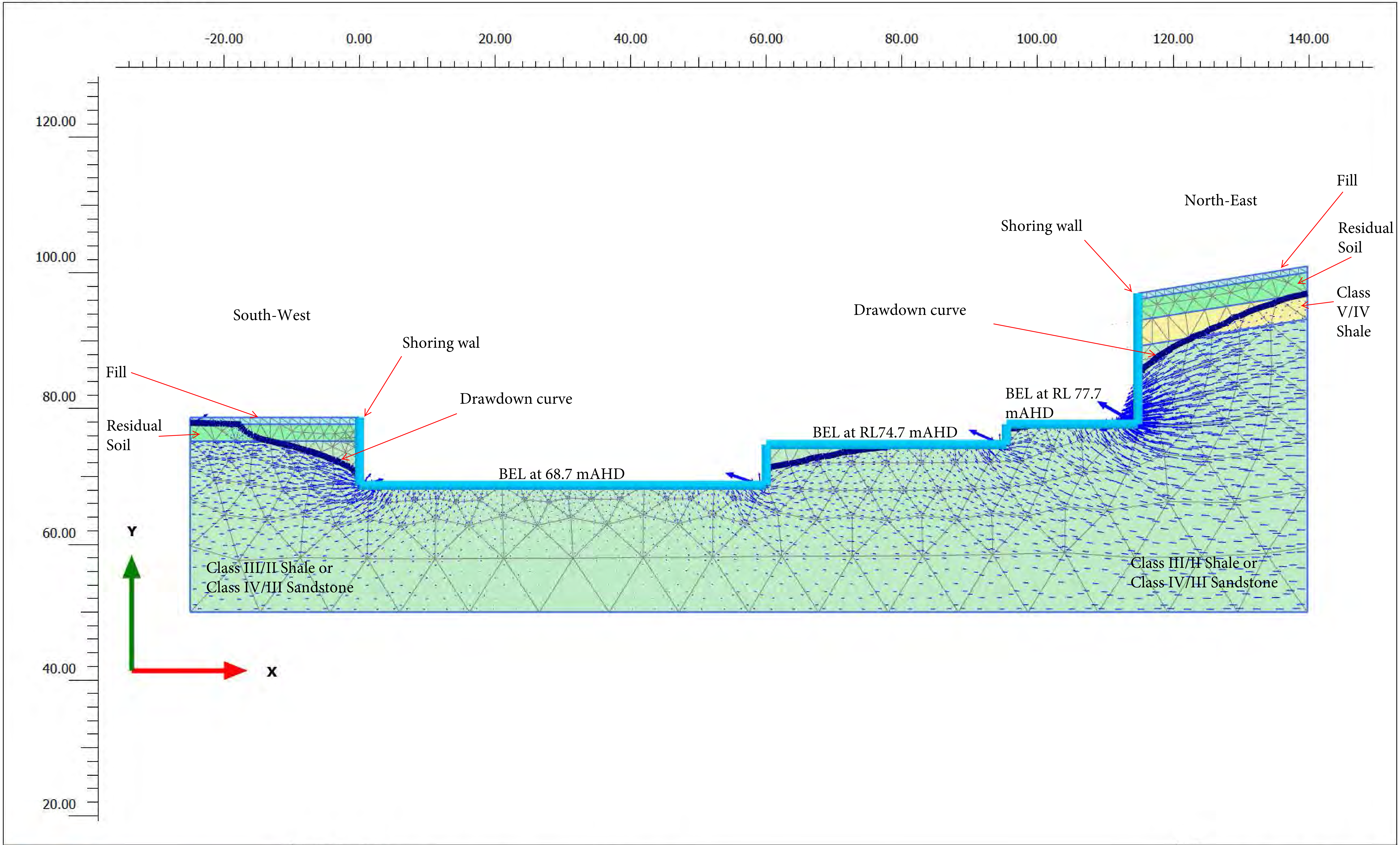
Project: E26491.G12_Rev1

GSA Report

Appendix A – PLAXIS 2D Model and Results

(Section A-A)

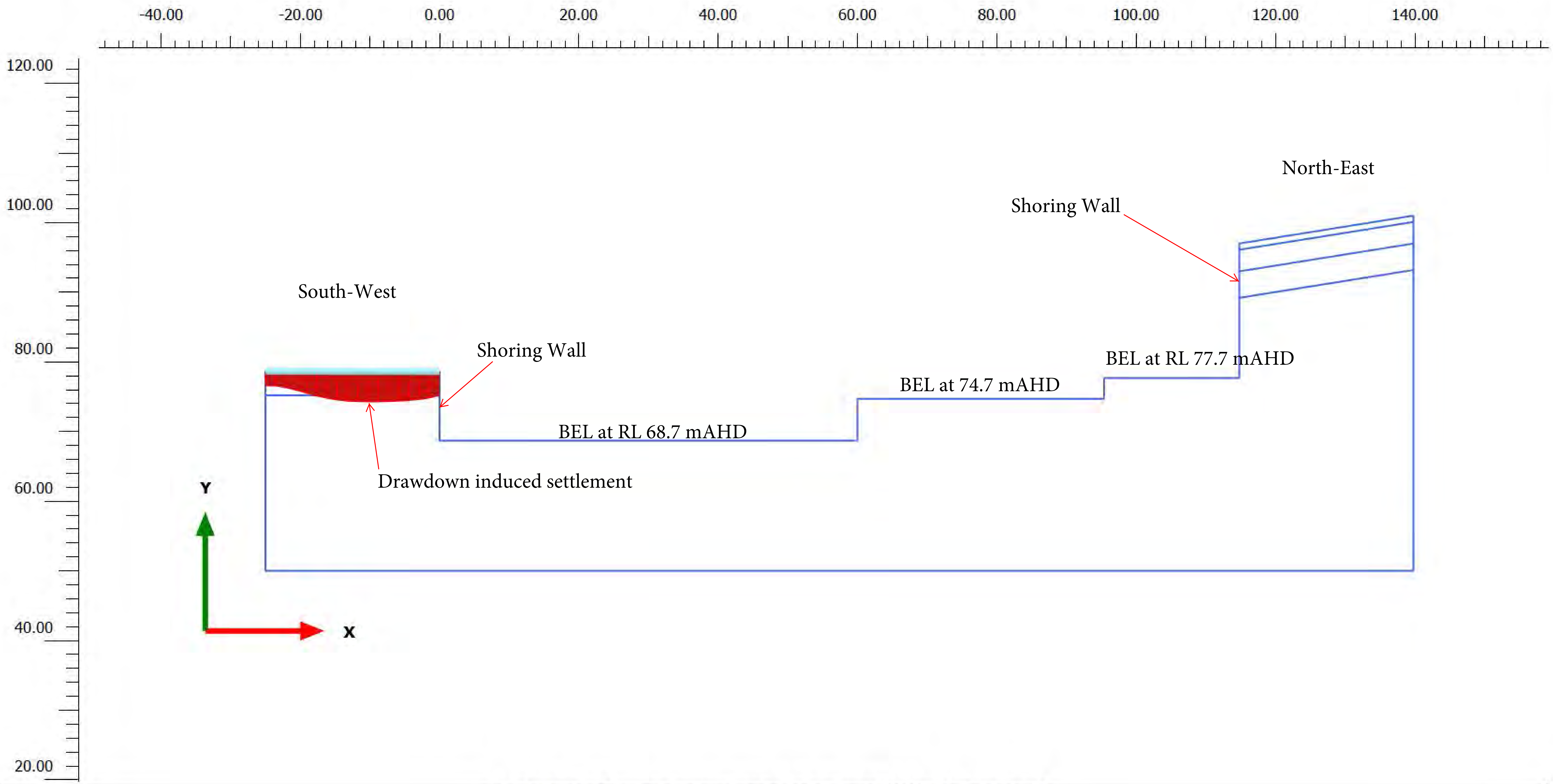
Output Version 2024.2.0.1144



Project description 2-16 Pockley Avenue, NSW	Predicted Drawdown results	*Date* 15/04/2025

Project filename E26491.G12_Rev1_Rosevill ...	*Step* 8	*Company* EI Australia

\\Pah\ei-au$\07 - Projects\E26491_AL Prestige_Roseville_GI\04_Working Docs\Data Analysis\G12\E26491.G12_Rev1_Roseville_Section A-A - v1 DS Edit.p2dxdat\



Total displacements u_y (scaled up $1.00*10^3$ times)

Maximum value = $-2.081*10^{-3}$ m

Minimum value = $-4.369*10^{-3}$ m

PLAXIS® 2D

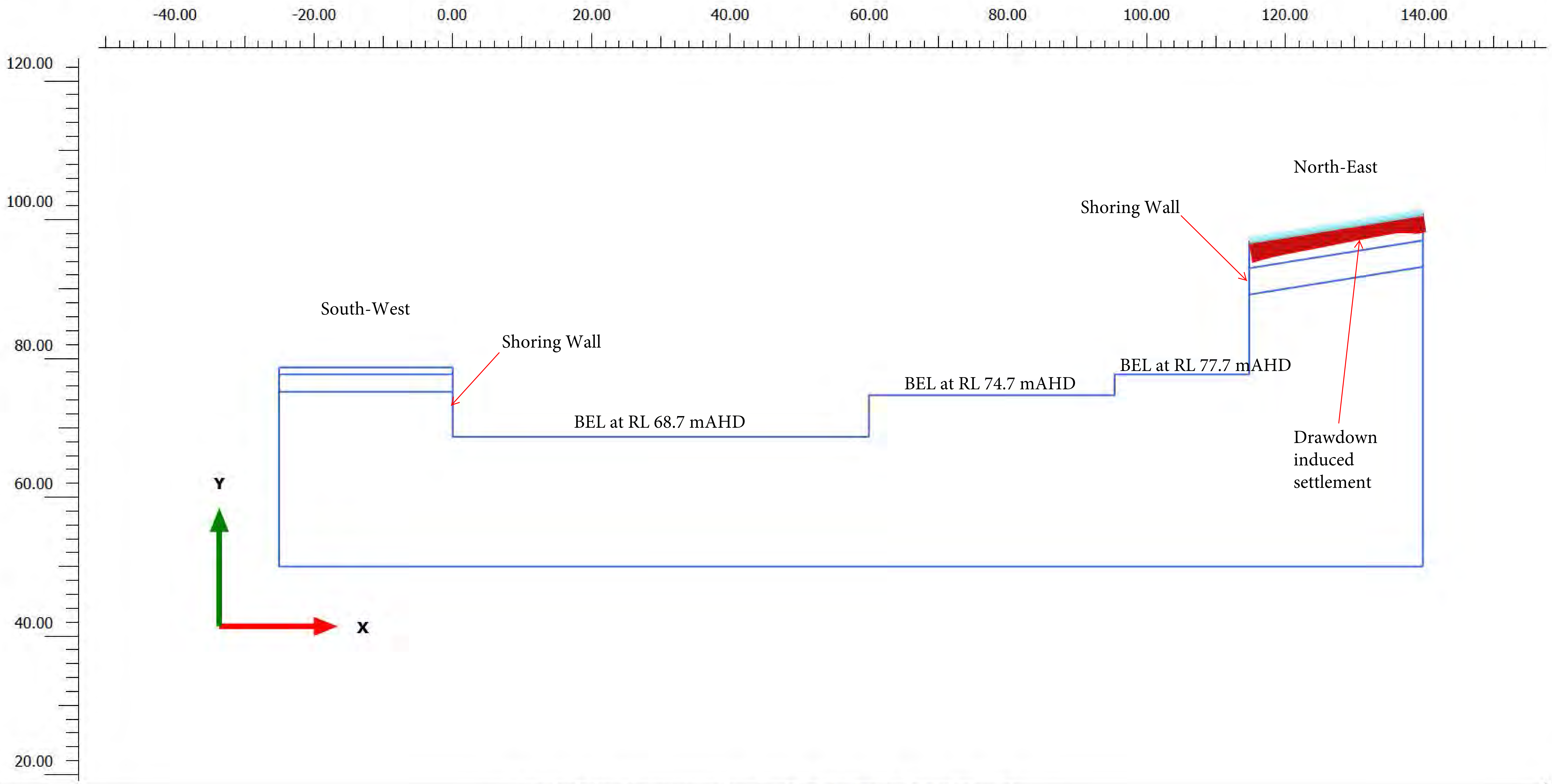
Project description
2-16 Pockley Avenue, NSW
Induced Drawdown Settlement at South-West Shoring Wall

Date
15/04/2025

Project filename
E26491.G12_Rev1_Rosevill ...

Step
8

Company
EI Australia



Total displacements u_y (scaled up 500 times)

Maximum value = -4.551×10^{-3} m

Minimum value = -6.382×10^{-3} m

PLAXIS® 2D

Project description 2-16 Pockley Avenue, NSW	Induced Drawdown Settlement at North-East Shoring Wall		*Date* 15/04/2025
Project filename E26491.G12_Rev1_Rosevill ...	*Step* 8	*Company* EI Australia	

GSA Report

Appendix B – Rising Head Permeability Tests

Rising Head Permeability Test

EI Job No.	E26491.G12		Test Date	21/02/2025
By	JO		Location	2-16 Pockley Ave, Roseville, NSW

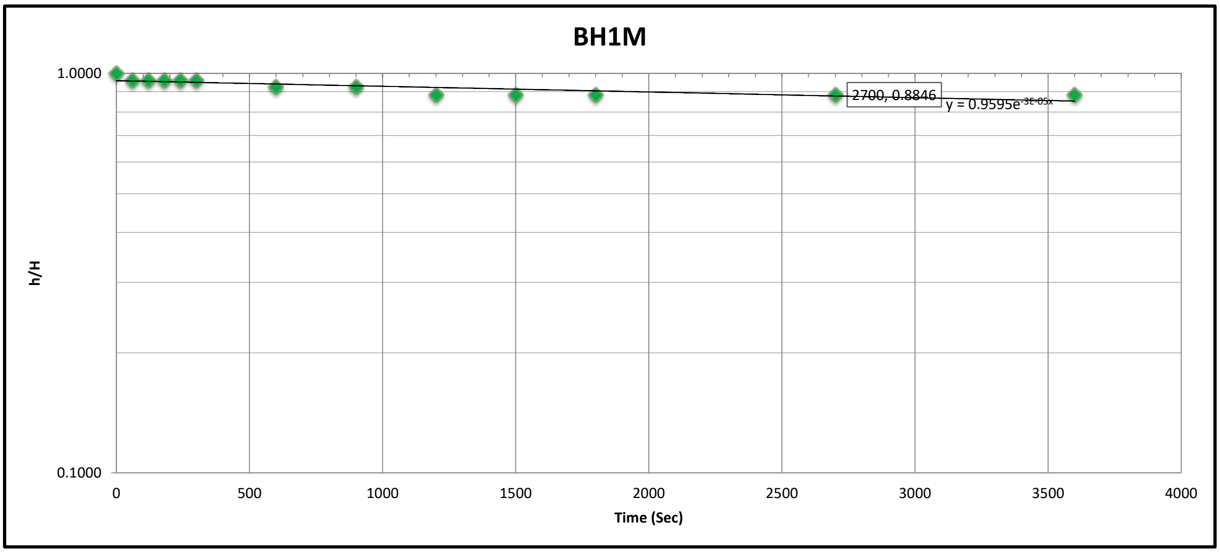
Borehole Detail

BH No.	BH1M	
Casing Stick-up (m)	-0.16	
Effective Piezo Screen Length (m)	0.58	
Piezo Radius r (m)	0.025	
Bore radium (Auger Radius) (m)	0.038	
Depth of the piezometer (m BGL)	7.03	
Static Water Level (m BToC)	6.45	
Lag time T0 (sec)	31738.74	
Calculated Permeability k	**4.63E-08**	m/sec

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			6.45		
0	0		6.71	0.26	1.0000
1	60		6.7	0.25	0.9615
2	120		6.7	0.25	0.9615
3	180		6.7	0.25	0.9615
4	240		6.7	0.25	0.9615
5	300		6.7	0.25	0.9615
10	600		6.69	0.24	0.9231
15	900		6.69	0.24	0.9231
20	1200		6.68	0.23	0.8846
25	1500		6.68	0.23	0.8846
30	1800		6.68	0.23	0.8846
45	2700		6.68	0.23	0.8846
60	3600		6.68	0.23	0.8846



Rising Head Permeability Test

EI Job No.	E26491.G12		Test Date	21/02/2025
By	JO		Location	2-16 Pockley Ave, Roseville, NSW

Borehole Detail

BH No.	BH2.1M
Casing Stick-up (m)	-0.09
Effective Piezo Screen Length (m)	4.25
Piezo Radius r (m)	0.025
Bore radium (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	18
Static Water Level (m BToC)	13.75

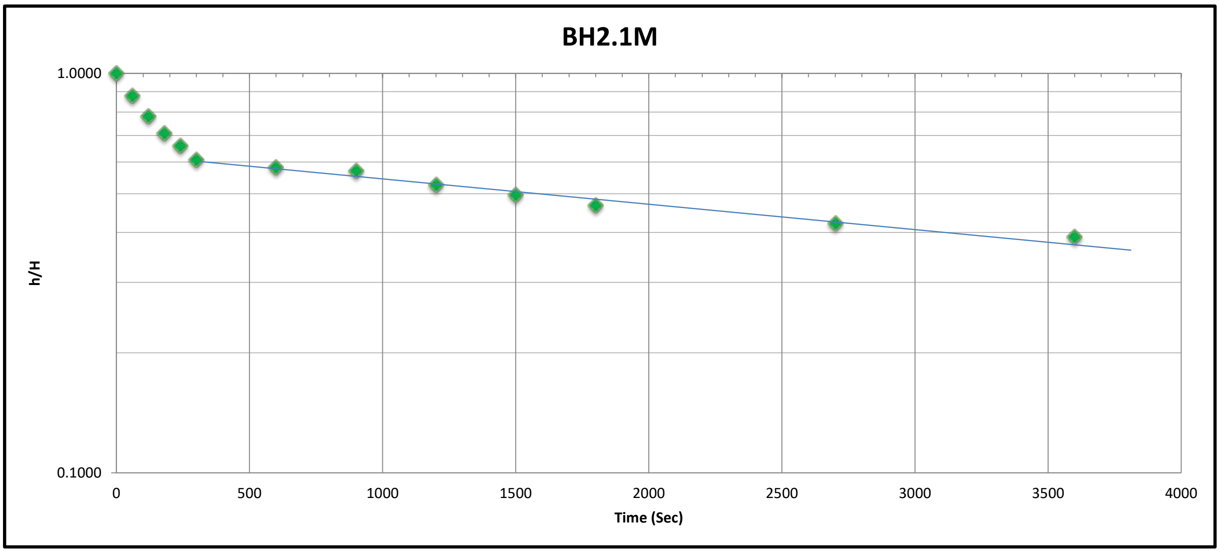
Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

t1	300
t2	3600
h1	0.6080
h2	0.3893

Calculated Permeability k	**4.68E-08**

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			13.75		
0	0		17.5	3.75	1.0000
1	60		17.04	3.29	0.8773
2	120		16.68	2.93	0.7813
3	180		16.4	2.65	0.7067
4	240		16.22	2.47	0.6587
5	300		16.03	2.28	0.6080
10	600		15.93	2.18	0.5813
15	900		15.89	2.14	0.5707
20	1200		15.72	1.97	0.5253
25	1500		15.61	1.86	0.4960
30	1800		15.5	1.75	0.4667
45	2700		15.33	1.58	0.4213
60	3600		15.21	1.46	0.3893



Rising Head Permeability Test

eiaustralia
Contamination | Remediation | Geotechnical

EI Job No.	E26491.G12		Test Date	21/02/2025
By	JO		Location	2-16 Pockley Ave, Roseville, NSW

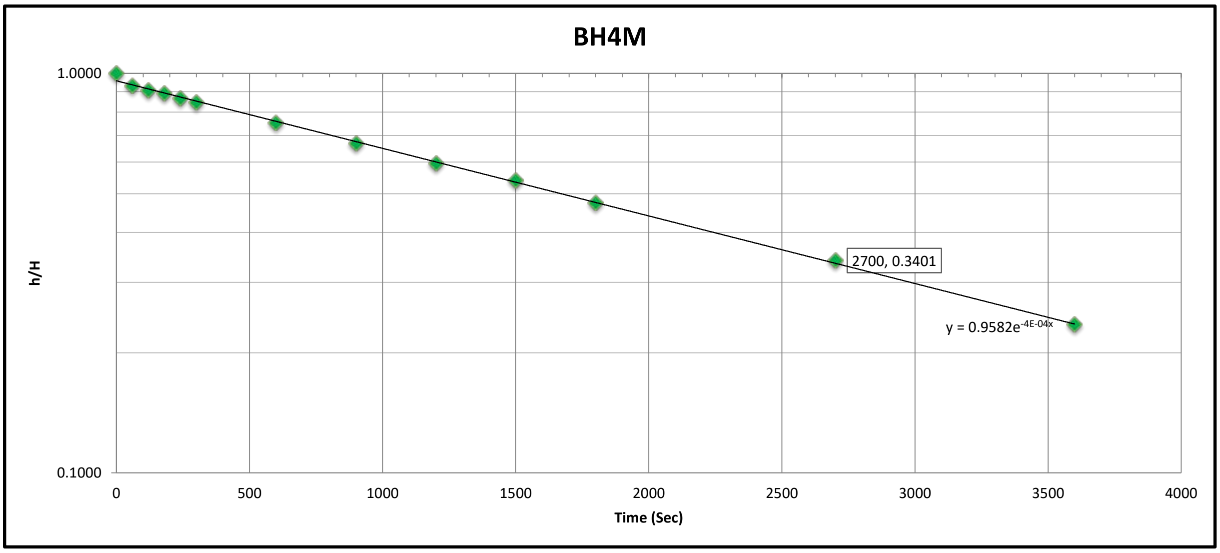
Borehole Detail

BH No.	BH4M
Casing Stick-up (m)	-0.13
Effective Piezo Screen Length (m)	3
Piezo Radius r (m)	0.025
Bore radium (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	7
Static Water Level (m BToC)	3.9
Lag time T0 (sec)	2382.54
Calculated Permeability k	**1.91E-07**

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			3.90		
0	0		6.37	2.47	1.0000
1	60		6.2	2.30	0.9312
2	120		6.14	2.24	0.9069
3	180		6.1	2.20	0.8907
4	240		6.04	2.14	0.8664
5	300		5.99	2.09	0.8462
10	600		5.76	1.86	0.7530
15	900		5.55	1.65	0.6680
20	1200		5.37	1.47	0.5951
25	1500		5.23	1.33	0.5385
30	1800		5.07	1.17	0.4737
45	2700		4.74	0.84	0.3401
60	3600		4.48	0.58	0.2348



Rising Head Permeability Test

EI Job No.	E26491.G12		Test Date	21/02/2025
By	JO		Location	2-16 Pockley Ave, Roseville, NSW

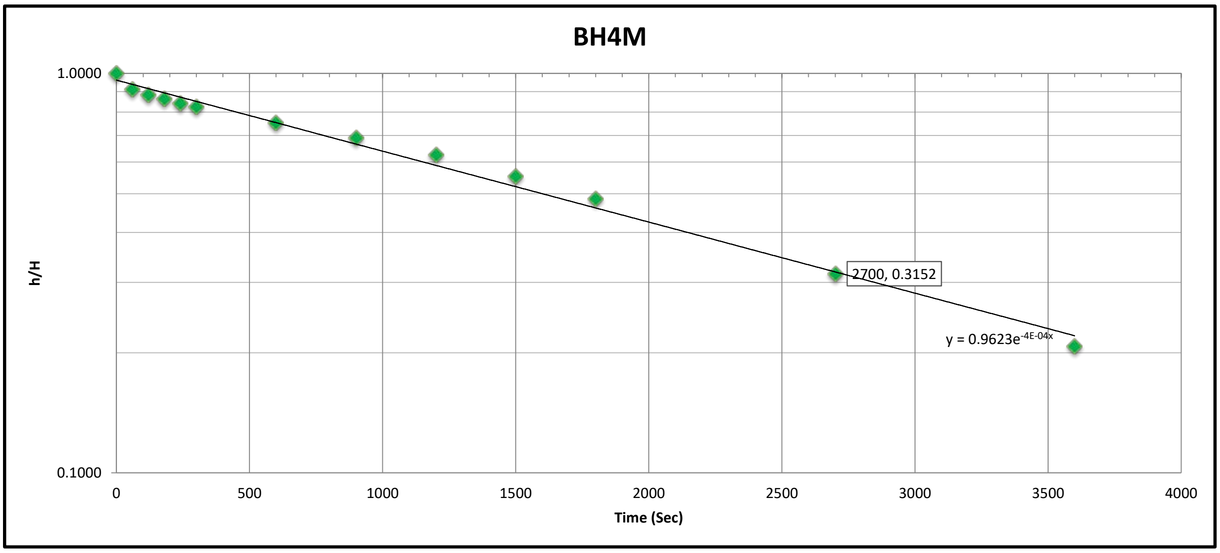
Borehole Detail

BH No.	BH4M
Casing Stick-up (m)	-0.13
Effective Piezo Screen Length (m)	3
Piezo Radius r (m)	0.025
Bore radium (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	7
Static Water Level (m BToC)	3.32
Lag time T0 (sec)	2389.58
Calculated Permeability k	**1.90E-07**

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			3.32		
0	0	21.45	6.54	3.22	1.0000
1	60	20.52	6.25	2.93	0.9119
2	120	20.2	6.16	2.84	0.8816
3	180	20	6.10	2.78	0.8627
4	240	19.77	6.03	2.71	0.8409
5	300	19.6	5.97	2.65	0.8248
10	600	18.84	5.74	2.42	0.7528
15	900	18.18	5.54	2.22	0.6903
20	1200	17.5	5.33	2.01	0.6259
25	1500	16.72	5.10	1.78	0.5520
30	1800	16.01	4.88	1.56	0.4847
45	2700	14.22	4.33	1.01	0.3152
60	3600	13.08	3.99	0.67	0.2072



Rising Head Permeability Test

eiaustralia
Contamination | Remediation | Geotechnical

EI Job No.	E26491.G12		Test Date	21/02/2025
By	JO		Location	2-16 Pockley Ave, Roseville, NSW

Borehole Detail

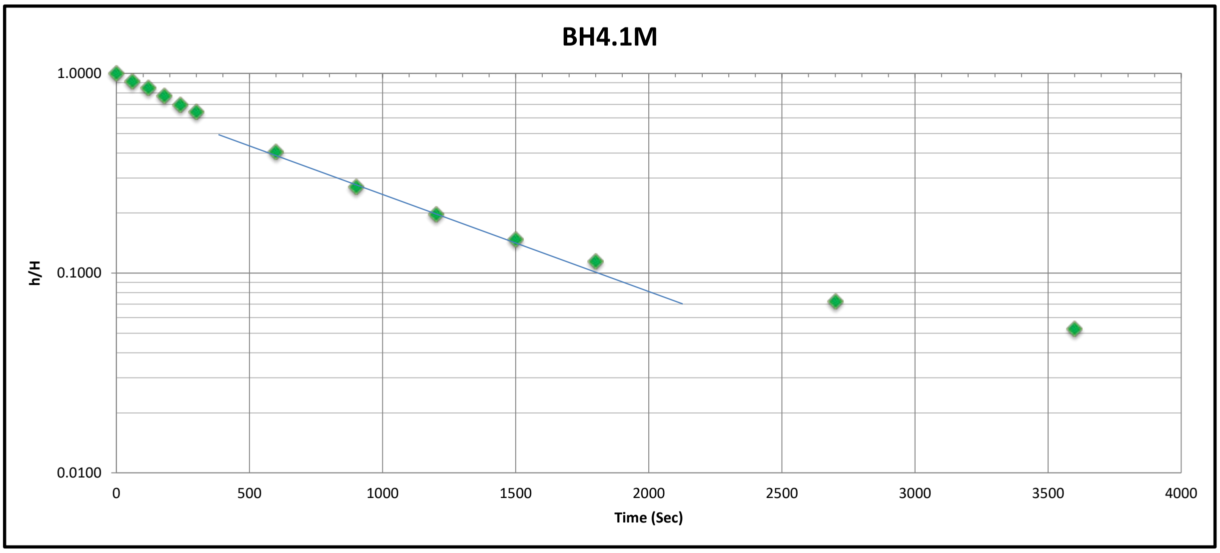
BH No.	BH4M
Casing Stick-up (m)	-0.18
Effective Piezo Screen Length (m)	6
Piezo Radius r (m)	0.025
Bore radium (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	15
Static Water Level (m BToC)	3.17
Lag time T0 (sec)	836.65
Calculated Permeability k	**3.03E-07**

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

t1	300
t2	1800
h1	0.6432
h2	0.1145

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			3.17		
0	0	45.6	13.90	10.73	1.0000
1	60	42.55	12.97	9.80	0.9134
2	120	40.07	12.21	9.04	0.8429
3	180	37.6	11.46	8.29	0.7727
4	240	34.95	10.65	7.48	0.6974
5	300	33.04	10.07	6.90	0.6432
10	600	24.65	7.51	4.34	0.4048
15	900	19.94	6.08	2.91	0.2710
20	1200	17.34	5.29	2.12	0.1972
25	1500	15.59	4.75	1.58	0.1474
30	1800	14.43	4.40	1.23	0.1145
45	2700	12.93	3.94	0.77	0.0719
60	3600	12.25	3.73	0.56	0.0525



Appendix C – Groundwater Level Monitoring Report No.1

eiaustralia
Suite 6.01, 55 Miller Street
PYRMONT NSW 2009
www.eiaustralia.com.au
02 9516 0722

28 March 2025
E26491.G11.GW01

Wayne Xiong
Aqualand Prestige 2 Pty Ltd
Level 37, 264 George Street
SYDNEY NSW 2000

Groundwater Level Monitoring Report No. 1
Site B, 2-16 Pockley Avenue, Roseville, NSW

EI Australia (EI) has been engaged to prepare this factual letter report to provide continual groundwater levels at the above site. The monitoring period in this report is from Wednesday 18 December 2024 to Thursday 13 March 2025.

Groundwater levels were collected remotely during the monitoring period using data loggers installed within monitoring wells. The data logger / monitoring well details and the groundwater levels observed during the monitoring period are summarised in Table 1 & 2 below.

Table 1 Summary of Data Logger & Well Installation Details

Monitoring Well ID	Top of Well RL (mAHD)	Existing Ground RL (mAHD)	Well Stickup (m)	Well Depth Below Ground (m) [1]	Sensor RL (mAHD)
BH1M	94.64	94.80	-0.16	7.03	87.91
BH2.1M	97.91	98.00	-0.09	18.00	82.04
BH2M	97.94	98.00	-0.06	8.00	91.15
BH4M	80.12	80.25	-0.13	7.00	73.32
BH4.1M	80.07	80.25	-0.18	15.00	73.27

Note 1: The level of the bottom of the well is based on manual measurements after the well installation. The measurement accounts for any variation of the well depth caused by infilling of material through the well screen.

Table 2 Summary of Groundwater Levels

Monitoring Well ID	Average Groundwater RL (mAHD)	Highest Groundwater RL (mAHD)	Lowest Groundwater RL (mAHD)	Highest Groundwater Depth (m Below Ground)	Lowest Groundwater Depth (m Below Ground)
BH1M	88.20	89.31	87.83	5.49	6.97
BH2.1M	84.50	84.68	84.04	13.32	13.96
BH2M	91.90	92.01	91.71	5.99	6.29
BH4M [1]	N/A	N/A	N/A	N/A	N/A
BH4.1M [1]	N/A	N/A	N/A	N/A	N/A

Note 1: Data loggers were not collected for BH4M and BH4.1M at the time of writing. Manual groundwater dips for BH4M and BH4.1M are presented in GI report.

During our site visit on 21 February 2025, the data logger from monitoring BH2M was discountinued and the data logger was relocated to BH2.1M on the same day for the continuation of monitoring groundwater within the site.
During our site visit on 24 February 2025, the data logger from monitoring BH4M was discountinued and the data logger was relocated to BH4.1M on the same day for the continuation of monitoring groundwater within the site.

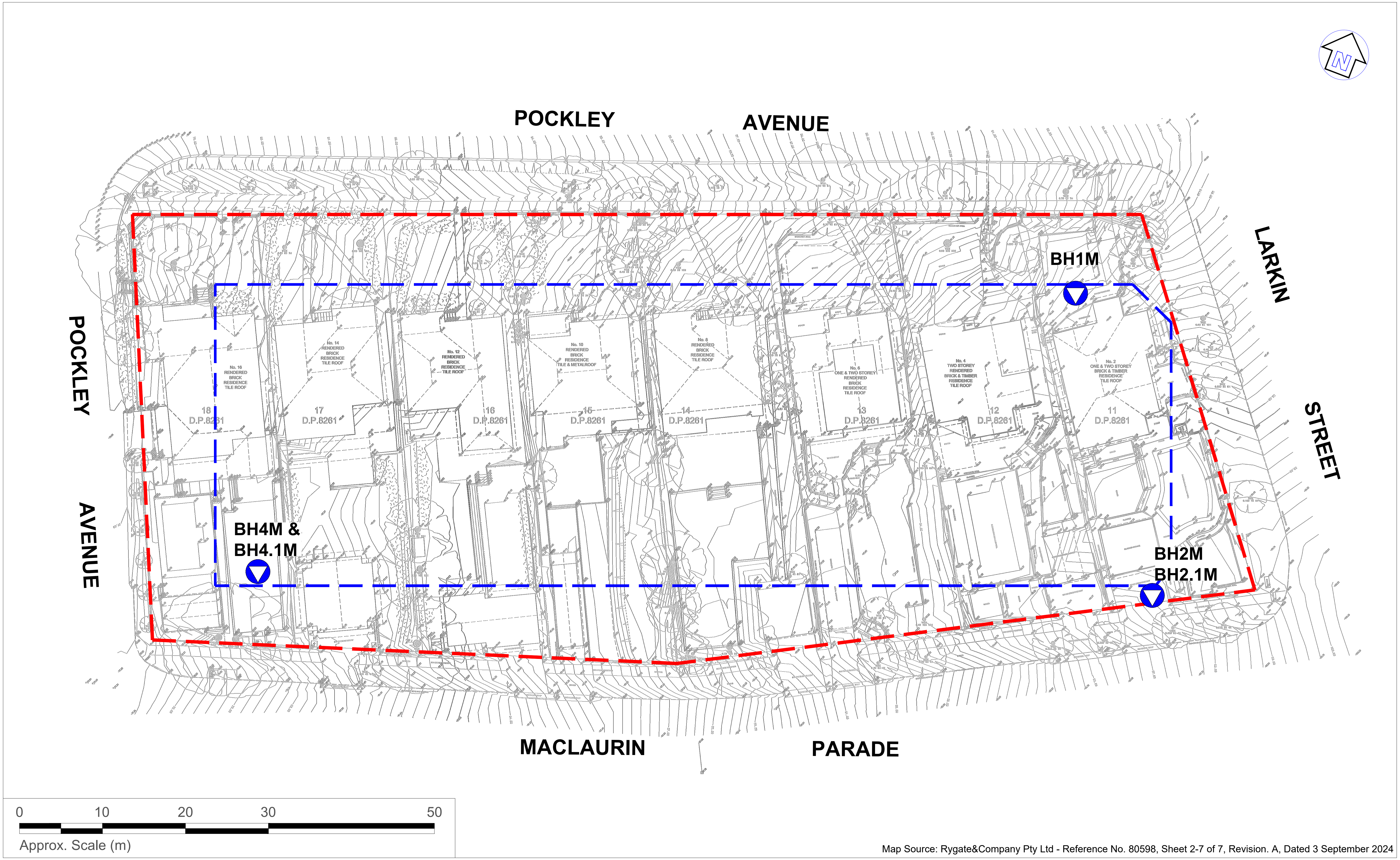
Please do not hesitate to contact the undersigned should you have any questions.

For and on behalf of:

EI AUSTRALIA

Author	Reviewer
Kiengseng Pung	**James Brooker**
Geotechnical Engineer	Senior Geotechnical Engineer

Attachments:	Figure 1:	Data Logger Location Plan
	Figure 2-4:	Groundwater Level, Daily Rainfall vs. Time From 18 December 2024 to 13 March 2025
	Important Information	



Map Source: Rygate&Company Pty Ltd - Reference No. 80598, Sheet 2-7 of 7, Revision. A, Dated 3 September 2024

LEGEND (All Locations are Approximate)

— — —	Site boundary
— — —	Basement outline
▼	Data logger location plan

eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

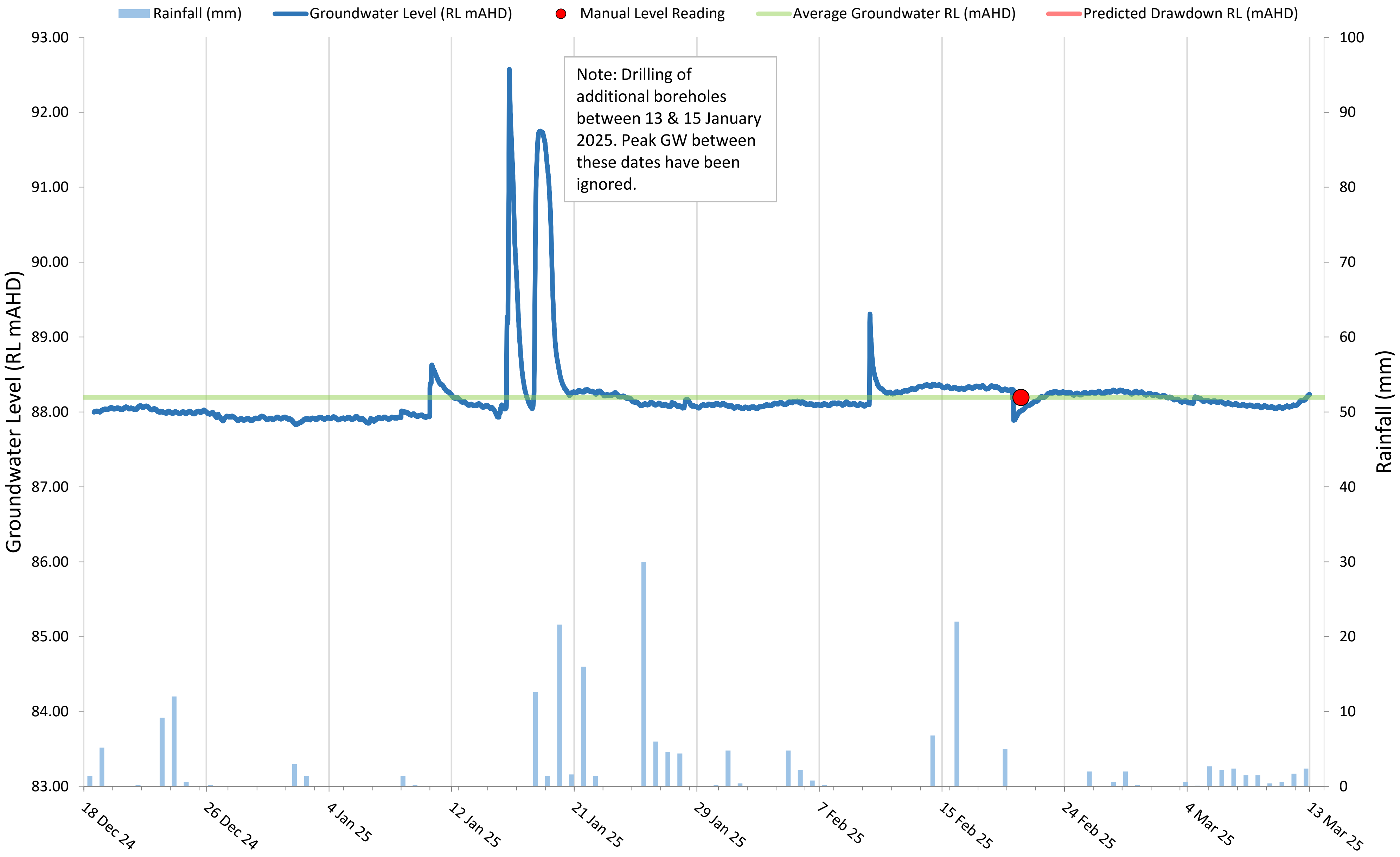
Drawn:	K.P.
Approved:	J.B.
Date:	28-03-2025

Aqualand Prestige 2 Pty Ltd
Groundwater Monitoring
Site B, 2-16 Pockley Aveue, Roseville, NSW

Data Logger Location Plan

Figure:
1

Project: E26491.G11.GW1



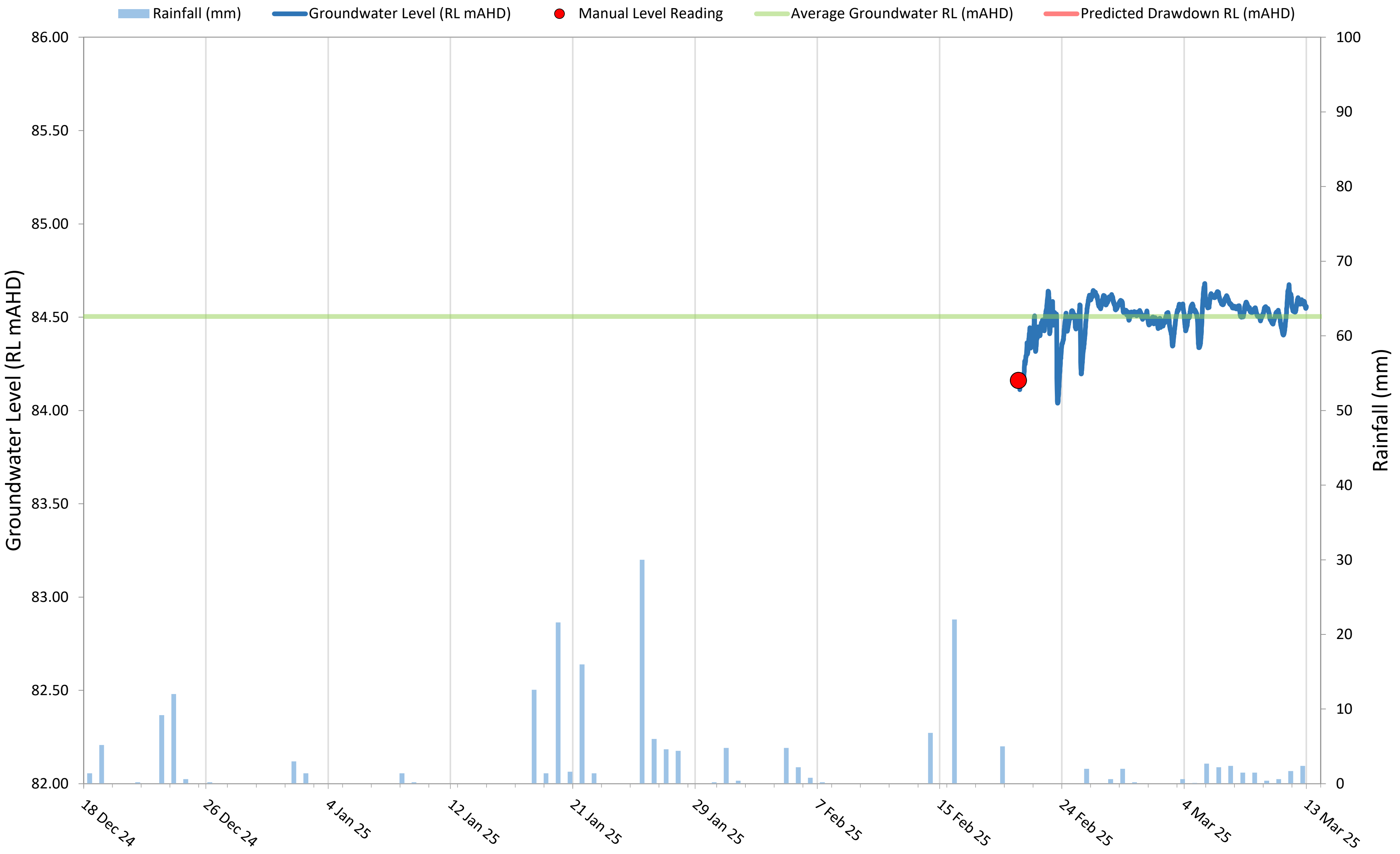
Note: Drilling of additional boreholes between 13 & 15 January 2025. Peak GW between these dates have been ignored.

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph. (02) 9516 0722 Fax (02) 9518 5088

Drawn:	KP
Approved:	JB
Date:	28/03/2025

Aqualand Prestige 2 Pty Ltd
Groundwater Level Monitoring
Site B, 2-16 Pockley Avenue, Roseville, NSW
BH1M

Figure:
2
Project: E26491.G11.GW01



eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph. (02) 9516 0722 Fax (02) 9518 5088

Drawn:	KP
Approved:	JB
Date:	28/03/2025

Aqualand Prestige 2 Pty Ltd

Groundwater Level Monitoring

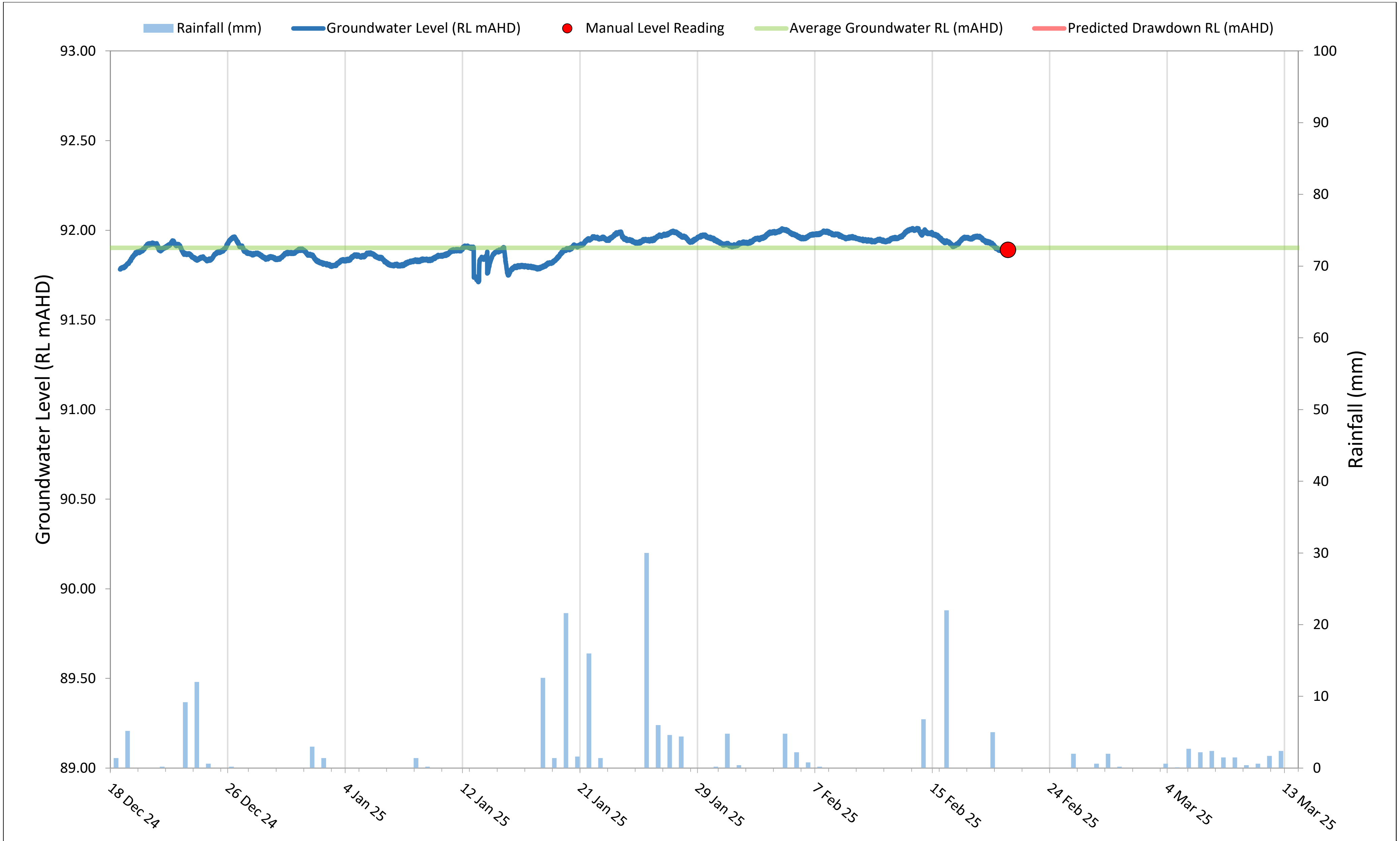
Site B, 2-16 Pockley Avenue, Roseville, NSW

BH2.1M

Figure:

3

Project: E26491.G11.GW01



eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph. (02) 9516 0722 Fax (02) 9518 5088

Drawn:	KP
Approved:	JB
Date:	28/03/2025

Aqualand Prestige 2 Pty Ltd

Groundwater Level Monitoring

Site B, 2-16 Pockley Avenue, Roseville, NSW

BH2M

Figure:

4

Project: E26491.G11.GW01

Important Information

eiaustralia

SCOPE OF SERVICES

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

RELIANCE ON DATA

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

GEOTECHNICAL ENGINEERING

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

LIMITATIONS OF SITE INVESTIGATION

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

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

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

VERIFICATION OF SITE CONDITIONS

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

REPRODUCTION OF REPORTS

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

REPORT FOR BENEFIT OF CLIENT

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

OTHER LIMITATIONS

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

GSA Report

Appendix D – Important Information

Important Information

SCOPE OF SERVICES

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

RELIANCE ON DATA

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

GEOTECHNICAL ENGINEERING

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

LIMITATIONS OF SITE INVESTIGATION

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

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

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

VERIFICATION OF SITE CONDITIONS

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

REPRODUCTION OF REPORTS

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

REPORT FOR BENEFIT OF CLIENT

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

OTHER LIMITATIONS

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

GSA Report

Appendix E – SEARs Requirement Declaration Form

SEARs Requirements Declaration: Larkin Street

Declaration		
Name	Stephen Kim	James Brooker
Qualifications	Senior Geotechnical Engineer BEng (Hons), MEng (structural)	Senior Geotechnical Engineer BEng (Civil)
	The undersigned declares that this E26491.G12_Rev1 Groundwater Seepage Analysis Report has been prepared in response to the following SEARs requirements issued for the Project on 15/11/2025 for SSD-77825469:	

SEARs item no.	SEARs Requirement	Relevant Section of this Report
13. Ground and Water Conditions (partial)	This report addresses part of: - Assess potential impacts on related infrastructure. - Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on related infrastructure and groundwater resources in accordance with the relevant Groundwater Guidelines.	All sections

Signed		
Dated	16/04/2025	16/04/2025

Appendix E – Monitoring Bore Logs

BOREHOLE LOG

BH ID: BH1M

Location	2-16 Pockley Avenue Roseville	**Started**	23 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	26 August 2024
Sheets	1 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈94.80 m (AHD)	**Northing**	6260071.3470 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331170.4570 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	DCP BLOWS (0 5 10 15 20 25 30)	MATERIAL ORIGIN & OBSERVATIONS
HA	GWNE			0.00		94.80	FILL: Silty CLAY: dark grey, with rootlets, tiles, brick pavers, concrete	M	-	1 2 1 2 10/80mm	FILL
		BH1M_2.40-2.50	■	1.50		93.30	Silty CLAY: high plasticity, pale grey, grading in to weathered rock with depth	M < PL	-		RESIDUAL SOIL
				2.53		92.27	*Log continued on next page.*				

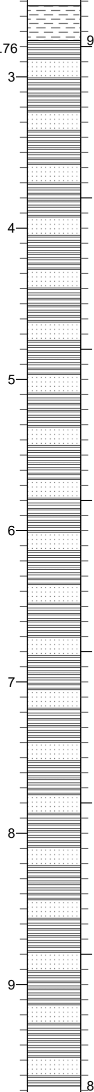
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH1M

Location	2-16 Pockley Avenue Roseville	**Started**	23 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	26 August 2024
Sheets	2 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈94.80 m (AHD)	**Northing**	6260071.3470 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331170.4570 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral VL 0-1 L 0-3 M 1 H 3 VH 10 EH	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING 30 100 300 1000 3000
				0			*Log continued from previous page.*				
NMLC	80-70%						Silty CLAY: high plasticity, pale grey, grading into weathered rock.	RS			
		100 100 100 100 100	0 0 0 18 0	2.76		92.04	LAMINITE: dark grey, red-brown, siltstone interbedded with shale, very thinly bedded to thinly bedded, with ironstaining	HW DW	▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼	2.81-2.88: FS 2.91-2.94: FS 3.01: JT 80° PR VR 3.05-3.10: FS 3.20: JT 80° PR RO SN 3.28: JT 30-0° CU RO SN 3.58: JT 50° CU VR SN 3.70: JT 50° ST VR SN 4.10: JT 80° IR VR 4.20-4.21: XWS Clay Infilled 4.32-4.33: XWS Clay Infilled 4.49-4.50: XWS Clay Infilled 4.52: JT 70° IR VR Clay Infilled 4.75-4.76: XWS Fe SN 4.82: JT 75° IR VR 4.88: JT 10° ST VR SN 5.02: JT 20° PR RO CL 5.08: JT 60° PR VR Fe SN 5.12-5.20: FS 5.12: JT 50° PR VR Fe SN 5.35: JT 5° CU RO SN 5.52: JT 80° PR VR Fe SN 5.57: JT 45° PR VR Fe SN 5.74: JT 5-45° CU VR Fe SN 5.80: JT 20° CU VR Clay Infilled 6.52: JT 30° PR CL 6.56: JT 55° PR CL 6.76: JT 20° ST VR SN 6.78: JT 0-20° IR VR SN 6.88: JT 0° ST VR 7.22: JT 20° PR Fe SN 7.26: JT 0° ST VR Fe SN 7.29: JT 0° ST VR CN 7.33: JT 10° PR RO Fe SN 7.37: JT 40° PR Fe SN 7.42: JT 35° CU CL 7.70: JT 65° PR VR 7.78: JT CU Clay Infilled 7.98: JT 90° PR SM CN 8.33: JT 0° ST VR SN 8.35: JT 45° PR Fe SN 8.66: JT 10° ST VR 8.71: JT 35° PR RO 9.04: JT 75° PR CL 9.11: JT 80° PR CL 9.51: JT 90° PR CL	
				10		85.13	Terminated at 9.67m. Target Depth Reached.				

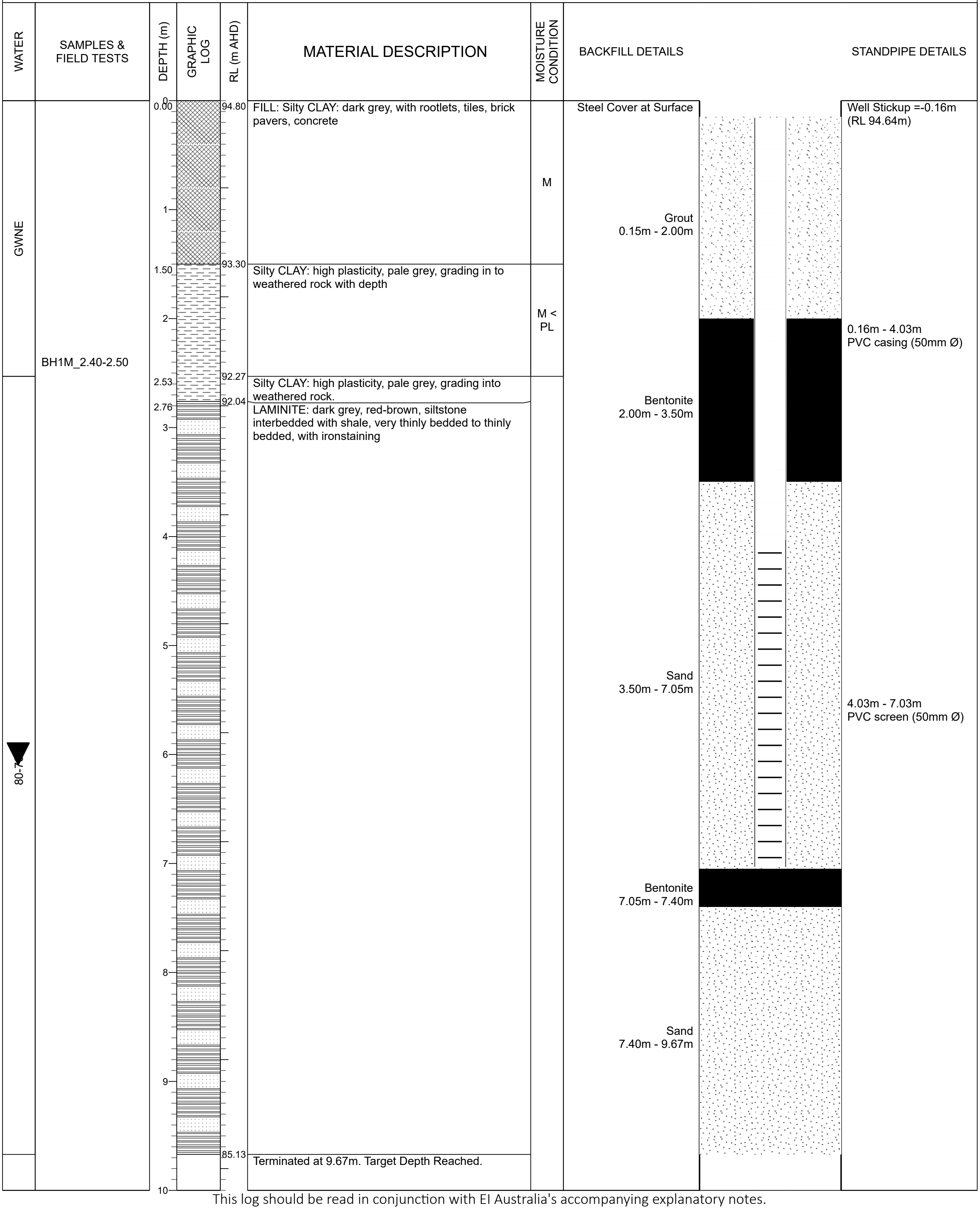
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

MONITORING WELL LOG

BH ID: BH1M

Location	2-16 Pockley Avenue Roseville	**Started**	23 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	26 August 2024
Sheets	1 of 1	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈94.80 m (AHD)	**Northing**	6260071.3470 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331170.4570 (MGA 2020 Zone 56)



DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
0.00	94.80	FILL: Silty CLAY: dark grey, with rootlets, tiles, brick pavers, concrete	M
1.50	93.30	Silty CLAY: high plasticity, pale grey, grading in to weathered rock with depth	M < PL
2.53	92.27	Silty CLAY: high plasticity, pale grey, grading into weathered rock.	
2.76	92.04	LAMINITE: dark grey, red-brown, siltstone interbedded with shale, very thinly bedded to thinly bedded, with ironstaining	
	85.13	Terminated at 9.67m. Target Depth Reached.	

SAMPLES & FIELD TESTS: BH1M_2.40-2.50

BACKFILL DETAILS	STANDPIPE DETAILS
Steel Cover at Surface	Well Stickup =-0.16m (RL 94.64m)
Grout 0.15m - 2.00m	
Bentonite 2.00m - 3.50m	0.16m - 4.03m PVC casing (50mm Ø)
Sand 3.50m - 7.05m	4.03m - 7.03m PVC screen (50mm Ø)
Bentonite 7.05m - 7.40m	
Sand 7.40m - 9.67m	

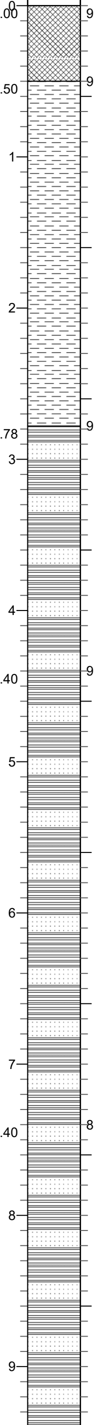
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE LOG

BH ID: BH1a

Location	2-16 Pockley Avenue Roseville	**Started**	03 December 2024		
Client	AL Prestige Pty Ltd	**Completed**	04 December 2024		
Job No.	E26491.G03	**Logged By**	DS	**Date**	04 December 2024
Sheets	1 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Macquarie Geotech	**Surface RL**	≈95.60 m (AHD)	**Northing**	6260068.0340 (MGA 2020 Zone 56)
Plant	Comacchio Geo 305	**Inclination**	90°	**Easting**	331177.1700 (MGA 2020 Zone 56)



METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE			0.00	95.60	TOPSOIL: Silty SAND: fine to medium grained, brown, with rootlets	M	-	TOPSOIL
				0.50	95.10	Silty CLAY: medium plasticity, red-brown, extremely weathered material	M > PL D		RESIDUAL SOIL
RR				2.78	92.82	LAMINITE: pale grey / red-brown, distinctly weathered, very low strength, with low strength bands and clay seams.	-		BEDROCK
				4.40	91.20	From 4.40m, dark grey / red-brown, low strength, distinctly weathered, with ironstaining			
				7.40	88.20	From 7.40m, grey / dark grey, medium strength, slightly weathered			
				9.43	86.17	*Log continued on next page.*			

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

BORHOLE CORE LOG

BH ID: BH1a

Location	2-16 Pockley Avenue Roseville	**Started**	03 December 2024		
Client	AL Prestige Pty Ltd	**Completed**	04 December 2024		
Job No.	E26491.G03	**Logged By**	DS	**Date**	04 December 2024
Sheets	2 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Macquarie Geotech	**Surface RL**	≈95.60 m (AHD)	**Northing**	6260068.0340 (MGA 2020 Zone 56)
Plant	Comacchio Geo 305	**Inclination**	90°	**Easting**	331177.1700 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0			*Log continued from previous page.*				
				1							
				2							
				3							
				4							
				5							
				6							
				7							
				8							
				9							
	95% Polymer				▤		LAMINITE: grey / dark grey, laminated to very thinnly bedded		H ▼		1000
				10							

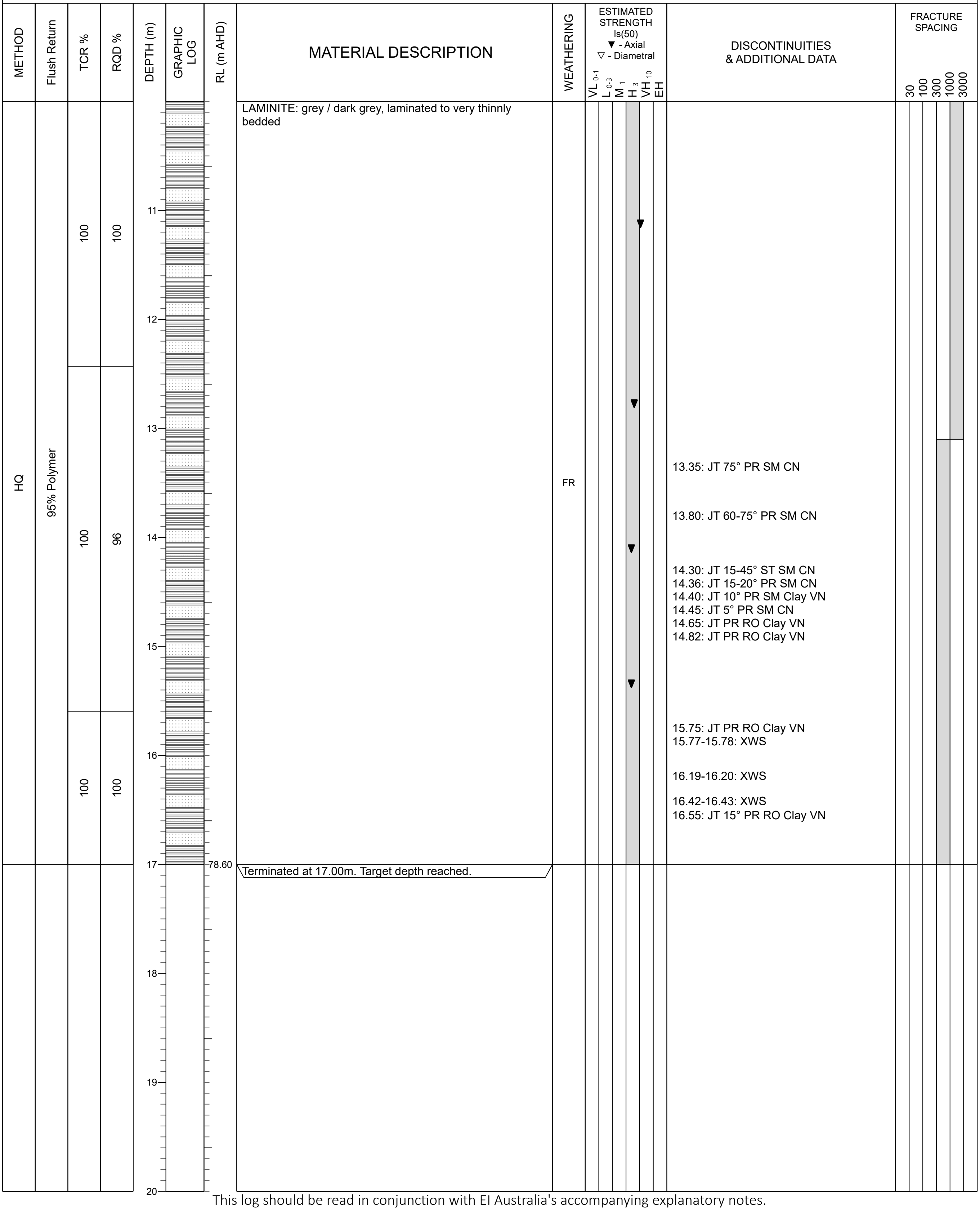
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH1a

Location	2-16 Pockley Avenue Roseville	**Started**	03 December 2024		
Client	AL Prestige Pty Ltd	**Completed**	04 December 2024		
Job No.	E26491.G03	**Logged By**	DS	**Date**	04 December 2024
Sheets	3 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Macquarie Geotech	**Surface RL**	≈95.60 m (AHD)	**Northing**	6260068.0340 (MGA 2020 Zone 56)
Plant	Comacchio Geo 305	**Inclination**	90°	**Easting**	331177.1700 (MGA 2020 Zone 56)



LAMINITE: grey / dark grey, laminated to very thinly bedded

13.35: JT 75° PR SM CN
13.80: JT 60-75° PR SM CN
14.30: JT 15-45° ST SM CN
14.36: JT 15-20° PR SM CN
14.40: JT 10° PR SM Clay VN
14.45: JT 5° PR SM CN
14.65: JT PR RO Clay VN
14.82: JT PR RO Clay VN
15.75: JT PR RO Clay VN
15.77-15.78: XWS
16.19-16.20: XWS
16.42-16.43: XWS
16.55: JT 15° PR RO Clay VN

Terminated at 17.00m. Target depth reached.

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

eiaustralia

BOREHOLE LOG

BH ID: BH2M

Location	2-16 Pockley Avenue Roseville	**Started**	26 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024		
Job No.	E26491.G03	**Logged By**	PS	**Date**	26 August 2024
Sheets	1 of 3	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7620 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4250 (MGA 2020 Zone 56)

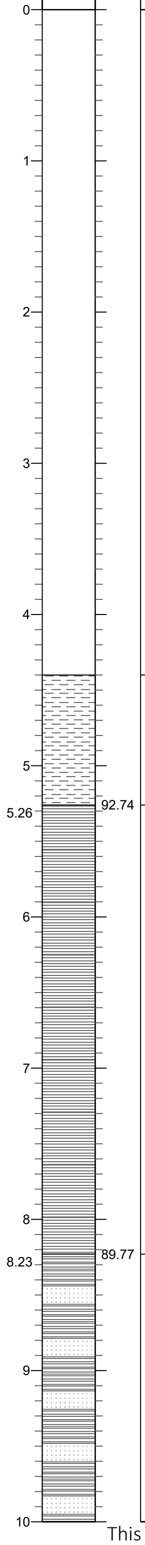
METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE		0.00	98.00	CONCRETE: 80mm thick	-		CONCRETE
		BH2M_0.50-0.95 SPT 0.50-0.95 3,3,6 N=9	0.08	97.92	FILL: Gravelly CLAY: low plasticity, brown to dark grey with gravel	M ≈ PL	-	FILL
			0.90	97.10	CLAY: medium to high plasticity, pale grey		St	RESIDUAL SOIL
		BH2M_1.50-1.95 SPT 1.50-1.95 7,8,19 N=27	1.55	96.45	From 1.55m, becoming friable, low to medium plasticity	M < PL	VSt	
			1.90	96.10	From 1.90m, grading to extremely weathered shale			
		BH2M_3.00-3.09 SPT 3.00-3.09 5/90 mm HB N=R					-	
			4.40	93.60	*Log continued on next page.*			

BOREHOLE CORE LOG

BH ID: BH2M

Location	2-16 Pockley Avenue Roseville	**Started**	26 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024		
Job No.	E26491.G03	**Logged By**	PS	**Date**	26 August 2024
Sheets	2 of 3	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7620 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4250 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0			*Log continued from previous page.*				
NMLC	95% GWNE	100	37				Silty CLAY: medium to high plasticity, pale grey with very low to low strength claystone.	XW	▼	5.15: XWS RO Clay VN	
				5.26		92.74	CLAYSTONE: grey to pale grey with very thin laminations of siltstone	HW - DW	▼ ▼ ▼ ▼	5.80: XWS RO Clay VN 6.57-6.62: XWS RO Clay VN 7.43-7.46: CS VR Infilled 7.66-7.74: CZ 7.78-7.80: CS 7.93: JT 15° SM Clay VN 8.02-8.07: CS VR Infilled 8.13-8.19: FS SM CL	
		100	40								
				8.23		89.77	LAMINITE: pale grey	SW	▼	8.29: JT 5° RO Fe SN 8.55: JT 10° CU SM Fe SN 8.84: JT 5° RO Fe SN 9.12: JT 45° PR RO CN 9.24: JT 30° RO Fe SN	
								DW		9.49: JT 30° PR RO SN 9.58-9.60: SS VR CN 9.66-9.68: SS	
				10							

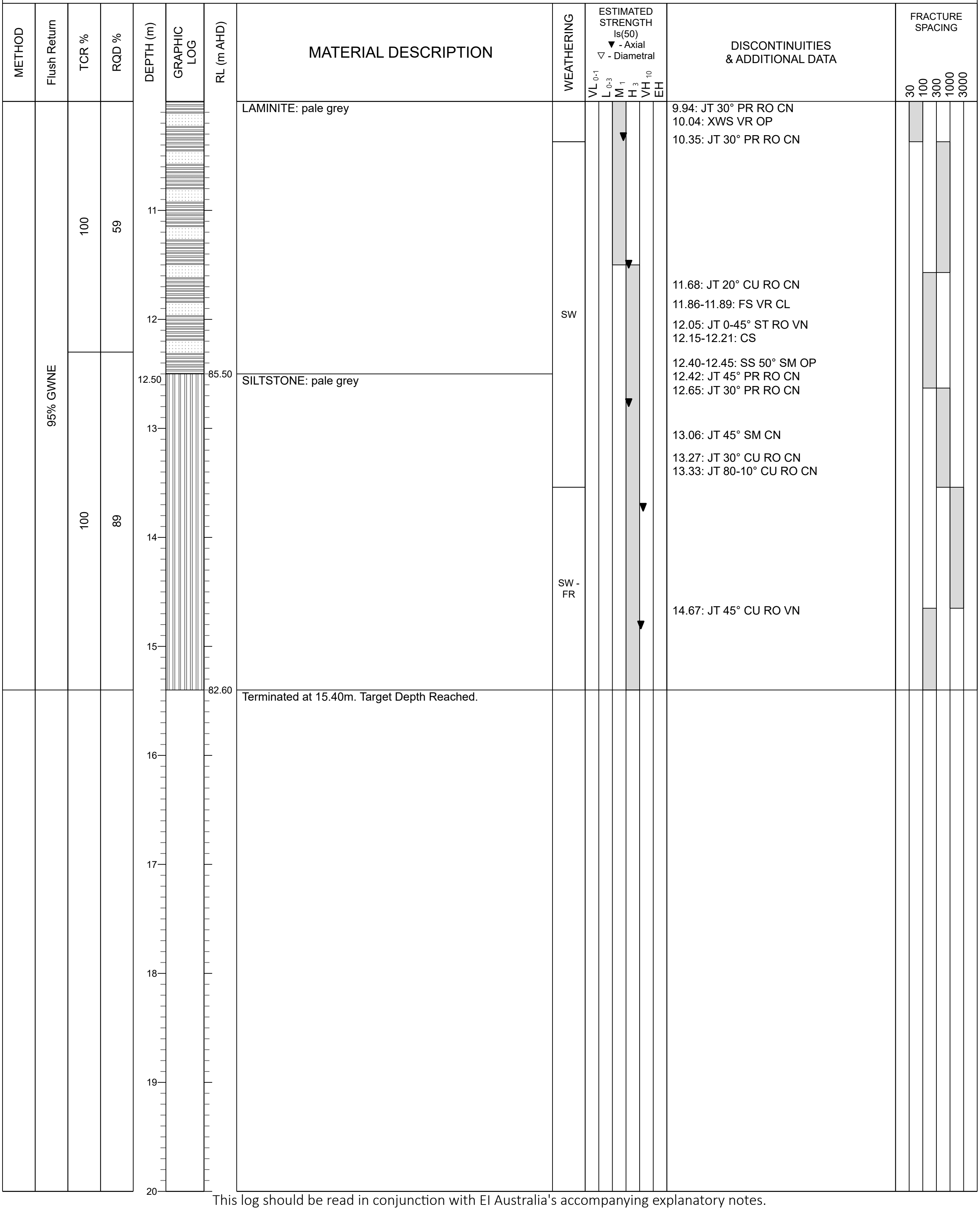
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH2M

Location	2-16 Pockley Avenue Roseville	**Started**	26 August 2024
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024
Job No.	E26491.G03	**Logged By**	PS **Date** 26 August 2024
Sheets	3 of 3	**Review By**	AC **Date** 06 September 2024

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7620 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4250 (MGA 2020 Zone 56)



LAMINITE: pale grey

SILTSTONE: pale grey

Terminated at 15.40m. Target Depth Reached.

9.94: JT 30° PR RO CN
10.04: XWS VR OP
10.35: JT 30° PR RO CN
11.68: JT 20° CU RO CN
11.86-11.89: FS VR CL
12.05: JT 0-45° ST RO VN
12.15-12.21: CS
12.40-12.45: SS 50° SM OP
12.42: JT 45° PR RO CN
12.65: JT 30° PR RO CN
13.06: JT 45° SM CN
13.27: JT 30° CU RO CN
13.33: JT 80-10° CU RO CN
14.67: JT 45° CU RO VN

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

MONITORING WELL LOG

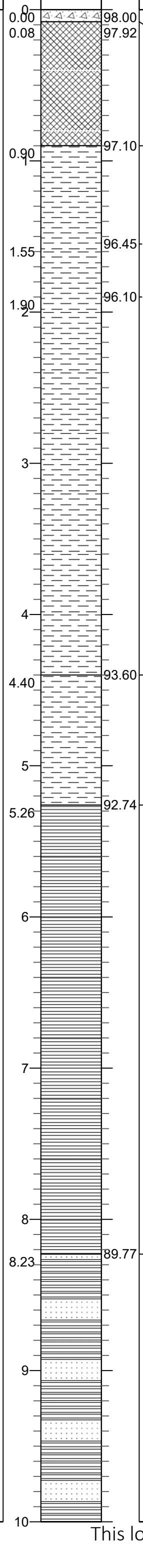
BH ID: BH2M

Location	2-16 Pockley Avenue Roseville	**Started**	26 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024		
Job No.	E26491.G03	**Logged By**	PS	**Date**	26 August 2024
Sheets	1 of 2	**Review By**	AC	**Date**	06 September 2024

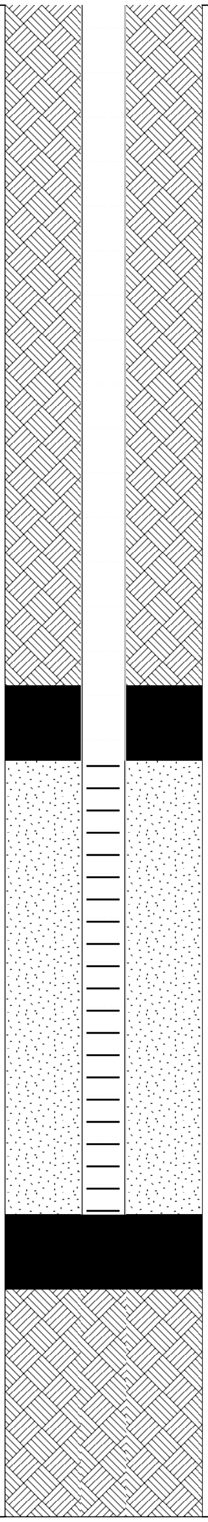
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7620 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4250 (MGA 2020 Zone 56)

WATER: GWNE

SAMPLES & FIELD TESTS
BH2M_0.50-0.95 SPT 0.50-0.95 3,3,6 N=9
BH2M_1.50-1.95 SPT 1.50-1.95 7,8,19 N=27
BH2M_3.00-3.09 SPT 3.00-3.09 5/90 mm HB N=R



DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
0.00	98.00	CONCRETE: 80mm thick	-
0.08	97.92	FILL: Gravelly CLAY: low plasticity, brown to dark grey with gravel	M ≈ PL
0.90	97.10	CLAY: medium to high plasticity, pale grey	
1.55	96.45	From 1.55m, becoming friable, low to medium plasticity	M < PL
1.90	96.10	From 1.90m, grading to extremely weathered shale	
4.40	93.60	Silty CLAY: medium to high plasticity, pale grey with very low to low strength claystone.	
5.26	92.74	CLAYSTONE: grey to pale grey with very thin laminations of siltstone	
8.23	89.77	LAMINITE: pale grey	



BACKFILL DETAILS
Cuttings 0.00m - 4.50m
Bentonite 4.50m - 5.00m
Sand 5.00m - 8.00m
Bentonite 8.00m - 8.50m

STANDPIPE DETAILS
Well Stickup =0.0m (RL 98.0m)
0.0m - 5.0m PVC casing (50mm Ø)
5.0m - 8.0m PVC screen (50mm Ø)

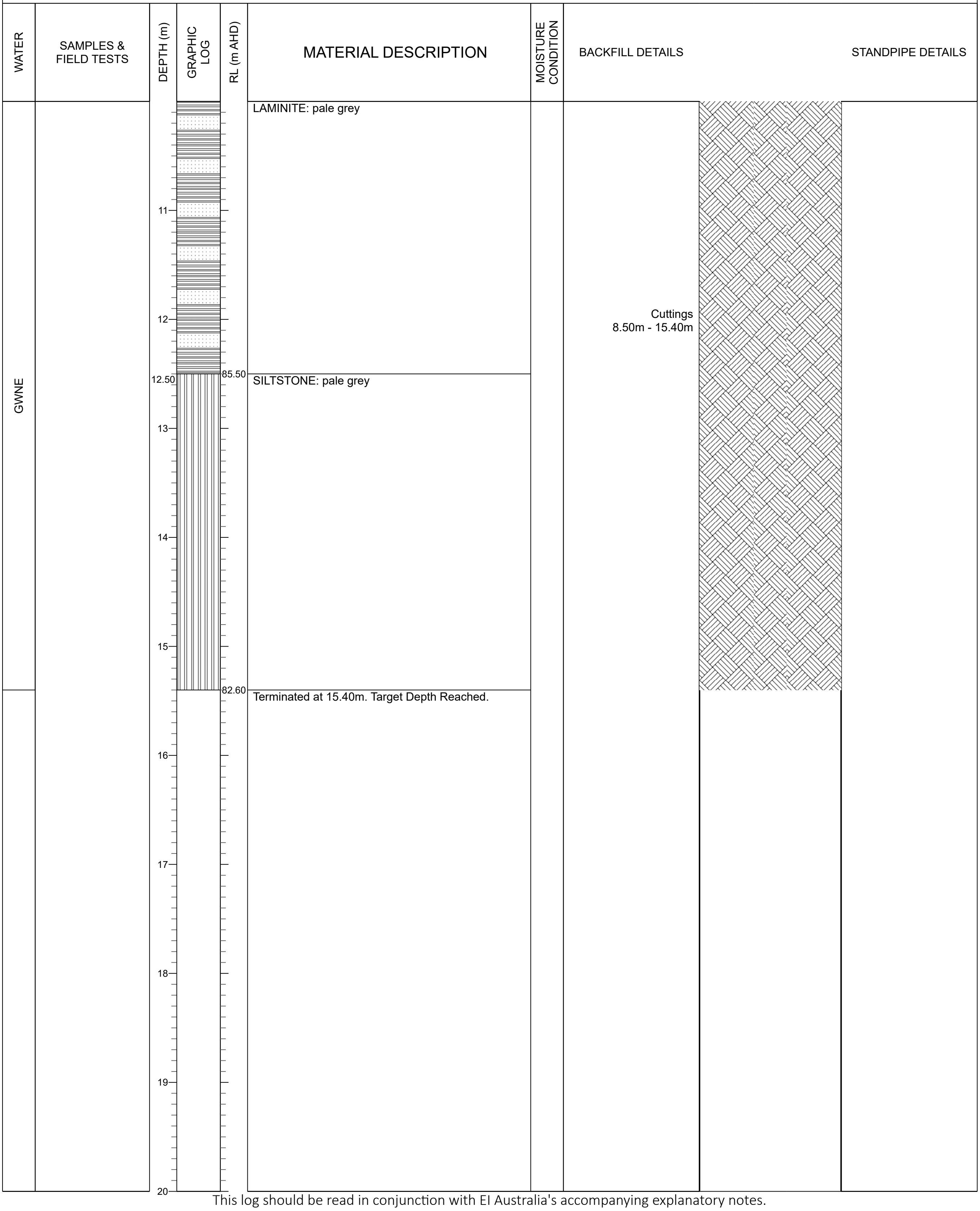
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

MONITORING WELL LOG

BH ID: BH2M

Location	2-16 Pockley Avenue Roseville	**Started**	26 August 2024
Client	AL Prestige Pty Ltd	**Completed**	26 August 2024
Job No.	E26491.G03	**Logged By**	PS **Date** 26 August 2024
Sheets	2 of 2	**Review By**	AC **Date** 06 September 2024

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7620 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4250 (MGA 2020 Zone 56)



DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	BACKFILL DETAILS
		LAMINITE: pale grey	Cuttings 8.50m - 15.40m
12.50	85.50	SILTSTONE: pale grey	
	82.60	Terminated at 15.40m. Target Depth Reached.	

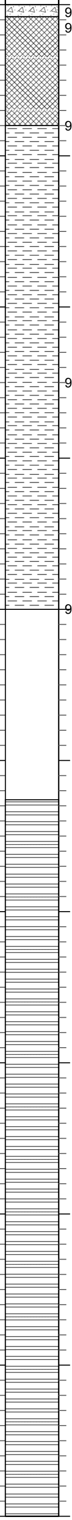
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025			
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025			
Job No.	E26491.G03	**Logged By**	PS	**Date**	13 January 2025	
Sheets	1 of 5	**Review By**	JB	**Date**	14 February 2025	

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)



METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
DT				0.00		98.00	CONCRETE: 80mm thick	-		CONCRETE
AD/T	GWNE			0.08		97.92	FILL: Sandy CLAY: medium plasticity, dark grey to brown with small gravels	M ≈ PL		FILL
				0.80		97.20	Silty CLAY: medium plasticity, pale grey			RESIDUAL SOIL
				2.50		95.50	From 2.50m, becoming friable with fragments of shale			
				4.00		94.00	*Log continued on next page.*			

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

BOREHOLE CORE LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025
Job No.	E26491.G03	**Logged By**	PS **Date** 13 January 2025
Sheets	2 of 5	**Review By**	JB **Date** 14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0			*Log continued from previous page.*				
				4			SHALE: Inferred shale, extremely weathered				
				5.26		92.74	SHALE: No description due to drilling method				
				10							

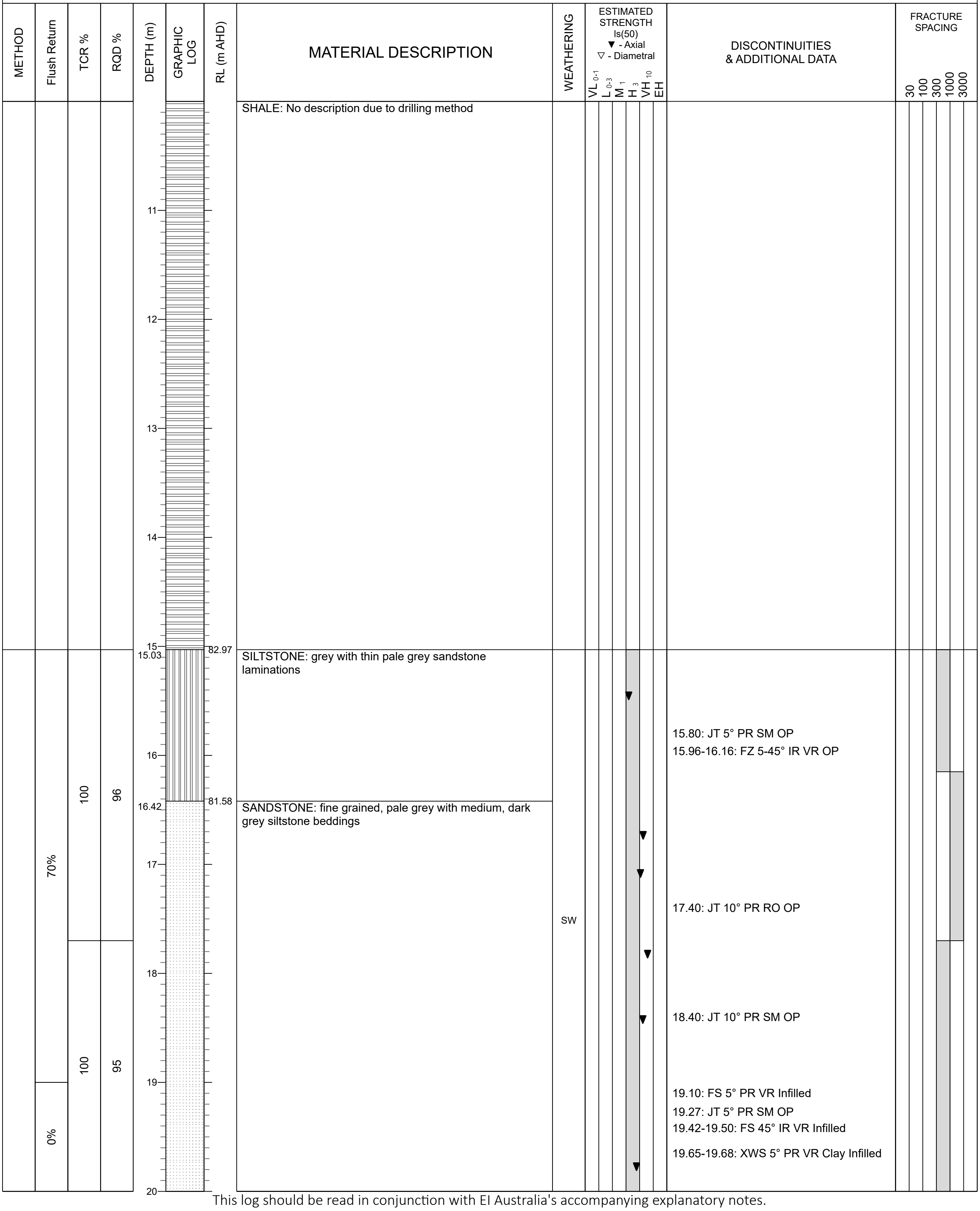
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	13 January 2025
Sheets	3 of 5	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)



Depth (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	DISCONTINUITIES & ADDITIONAL DATA
– 15.03	82.97	SHALE: No description due to drilling method		
15.03 – 16.42	81.58	SILTSTONE: grey with thin pale grey sandstone laminations	SW	15.80: JT 5° PR SM OP 15.96-16.16: FZ 5-45° IR VR OP
16.42 – 20		SANDSTONE: fine grained, pale grey with medium, dark grey siltstone beddings	SW	17.40: JT 10° PR RO OP 18.40: JT 10° PR SM OP 19.10: FS 5° PR VR Infilled 19.27: JT 5° PR SM OP 19.42-19.50: FS 45° IR VR Infilled 19.65-19.68: XWS 5° PR VR Clay Infilled

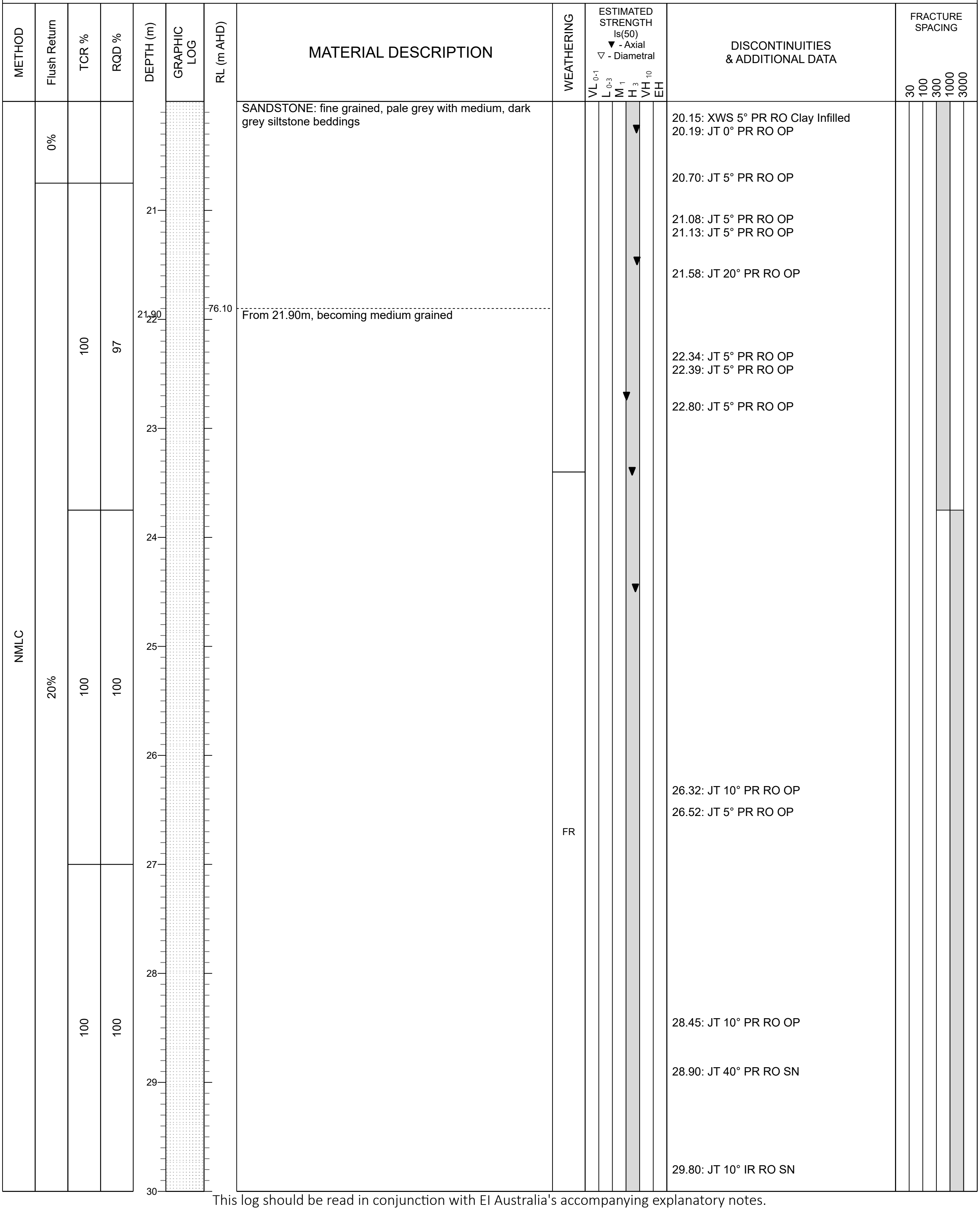
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025
Job No.	E26491.G03	**Logged By**	PS — **Date** 13 January 2025
Sheets	4 of 5	**Review By**	JB — **Date** 14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING
NMLC	0%			20.00		SANDSTONE: fine grained, pale grey with medium, dark grey siltstone beddings	
	20%	100	97				
				21.90	76.10	From 21.90m, becoming medium grained	
		100	100				FR
		100	100				

DISCONTINUITIES & ADDITIONAL DATA

20.15: XWS 5° PR RO Clay Infilled
20.19: JT 0° PR RO OP
20.70: JT 5° PR RO OP
21.08: JT 5° PR RO OP
21.13: JT 5° PR RO OP
21.58: JT 20° PR RO OP
22.34: JT 5° PR RO OP
22.39: JT 5° PR RO OP
22.80: JT 5° PR RO OP
26.32: JT 10° PR RO OP
26.52: JT 5° PR RO OP
28.45: JT 10° PR RO OP
28.90: JT 40° PR RO SN
29.80: JT 10° IR RO SN

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

BOREHOLE CORE LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	13 January 2025
Sheets	5 of 5	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral VL 0·1 L 0·3 M 1 H 3 VH 10 EH	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING 30 100 300 1000 3000
						67.95	From 21.90m, becoming medium grained Terminated at 30.05m. Target Depth Reached.				
				31							
				32							
				33							
				34							
				35							
				36							
				37							
				38							
				39							
				40							

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

MONITORING WELL LOG

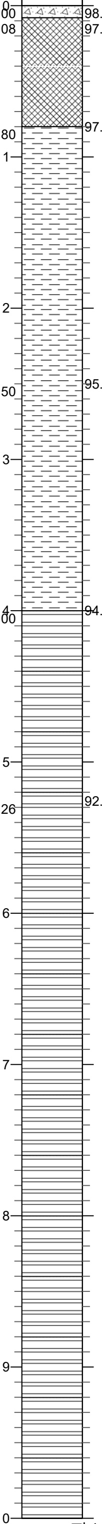
BH ID: BH2.1M

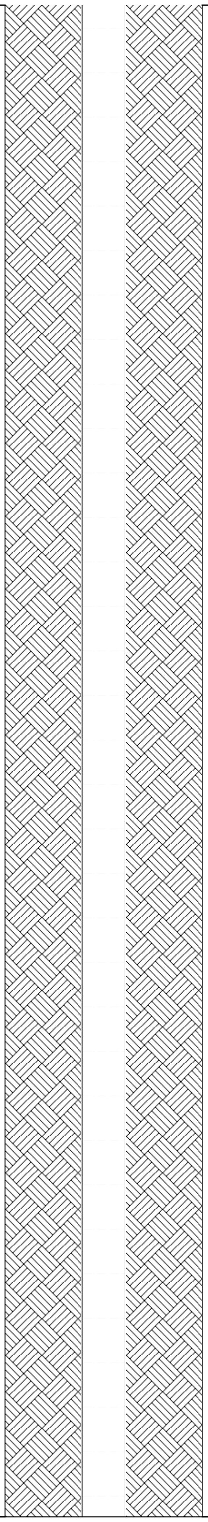
Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	13 January 2025
Sheets	1 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
GWNE		0.00	98.00	CONCRETE: 80mm thick	-
		0.08	97.92	FILL: Sandy CLAY: medium plasticity, dark grey to brown with small gravels	M ≈ PL
		0.80	97.20	Silty CLAY: medium plasticity, pale grey	
		2.50	95.50	From 2.50m, becoming friable with fragments of shale	
		4.00	94.00	SHALE: Inferred shale, extremely weathered	
		5.26	92.74	SHALE: No description due to drilling method	

BACKFILL DETAILS	STANDPIPE DETAILS
Cuttings 0.00m - 10.00m	Well Stickup =0.0m (RL 98.0m)
	0.0m - 12.0m PVC casing (50mm Ø)





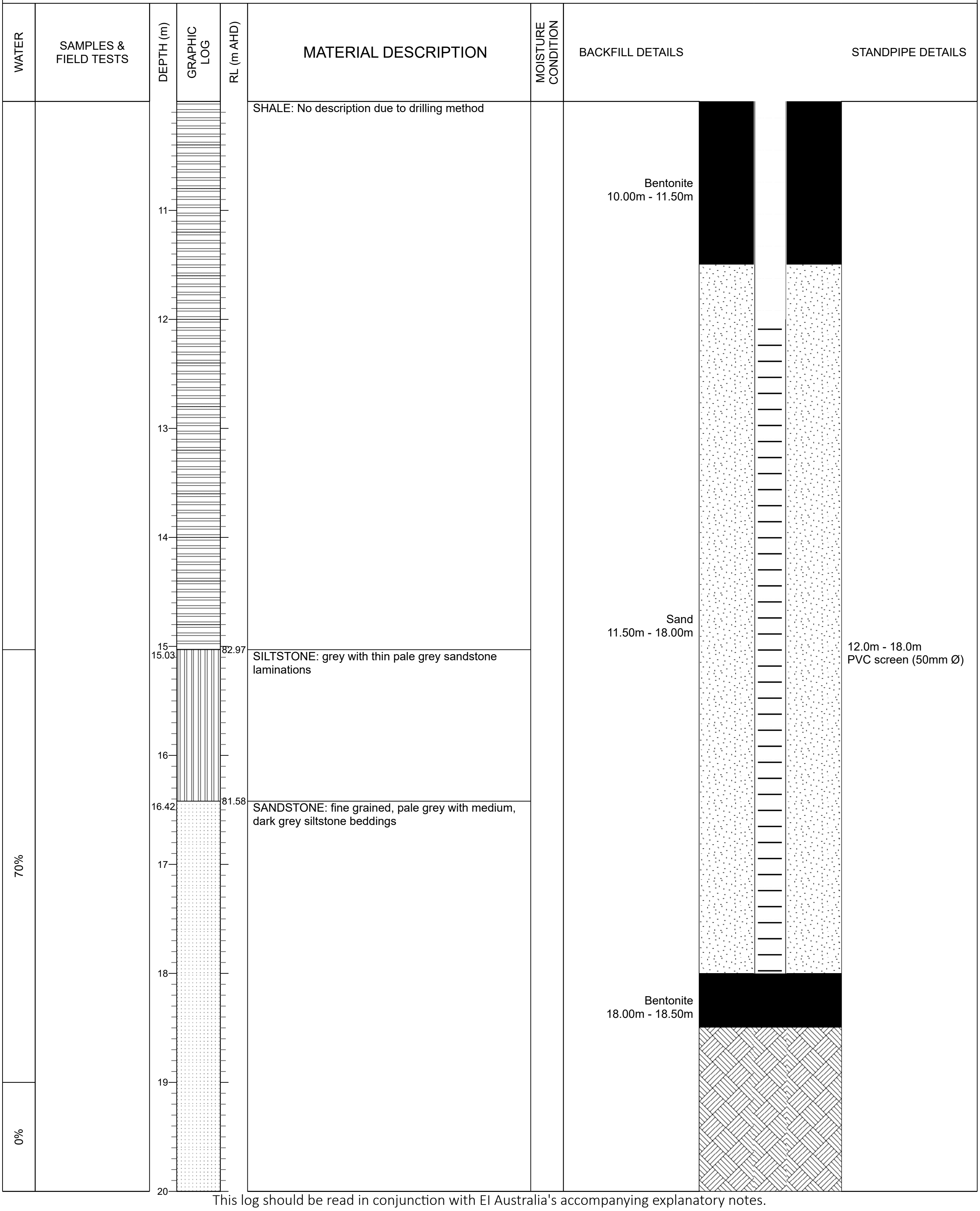
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

MONITORING WELL LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	13 January 2025
Sheets	2 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)



SHALE: No description due to drilling method

SILTSTONE: grey with thin pale grey sandstone laminations

SANDSTONE: fine grained, pale grey with medium, dark grey siltstone beddings

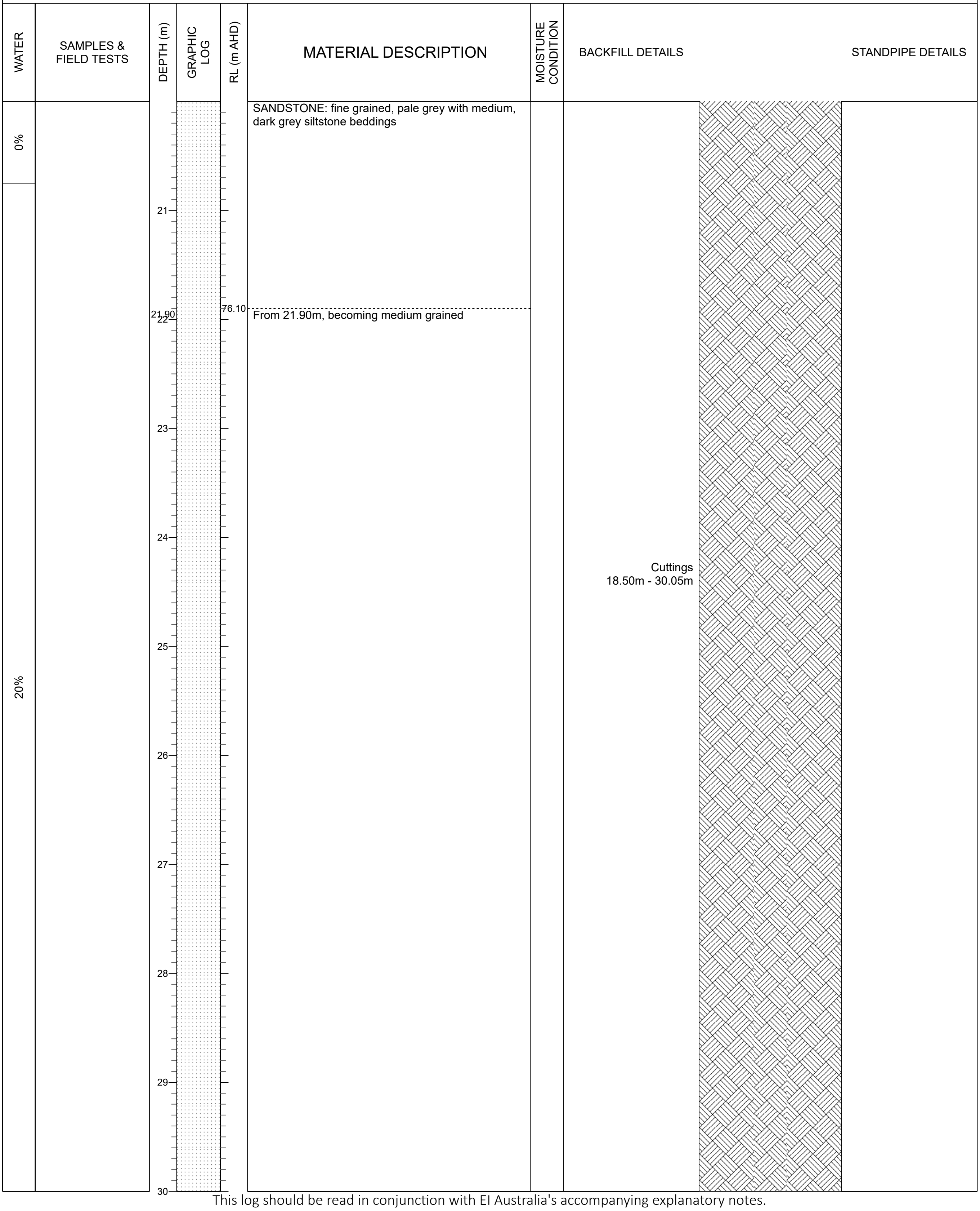
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

MONITORING WELL LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025
Job No.	E26491.G03	**Logged By**	PS **Date** 13 January 2025
Sheets	3 of 4	**Review By**	JB **Date** 14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)



SANDSTONE: fine grained, pale grey with medium, dark grey siltstone beddings

From 21.90m, becoming medium grained

Cuttings
18.50m - 30.05m

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

MONITORING WELL LOG

BH ID: BH2.1M

Location	2-16 Pockley Avenue Roseville	**Started**	13 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	13 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	13 January 2025
Sheets	4 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈98.00 m (AHD)	**Northing**	6260034.7860 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331192.4370 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
				67.95	From 21.90m, becoming medium grained Terminated at 30.05m. Target Depth Reached.			
		31						
		32						
		33						
		34						
		35						
		36						
		37						
		38						
		39						
		40						

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

BOREHOLE LOG

BH ID: BH3

Location	2-16 Pockley Avenue Roseville	**Started**	22 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	23 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	23 August 2024
Sheets	1 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260002.9149 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331132.6459 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	DCP BLOWS (0 5 10 15 20 25 30)	MATERIAL ORIGIN & OBSERVATIONS
HA	GWNE			0.00		86.60	FILL: Silty CLAY: dark grey, with rootlets trace medium grained sand	M	-	2 2 2 4 3 5	FILL
		BH3_0.80-0.90		0.60		86.00	Silty CLAY: medium plasticity, orange, mottled red, with trace of indurated ironstained gravels.	M > PL	St	3 4 3 4 3 8/60mm	RESIDUAL SOIL
				1.35		85.25	*Log continued on next page.*				

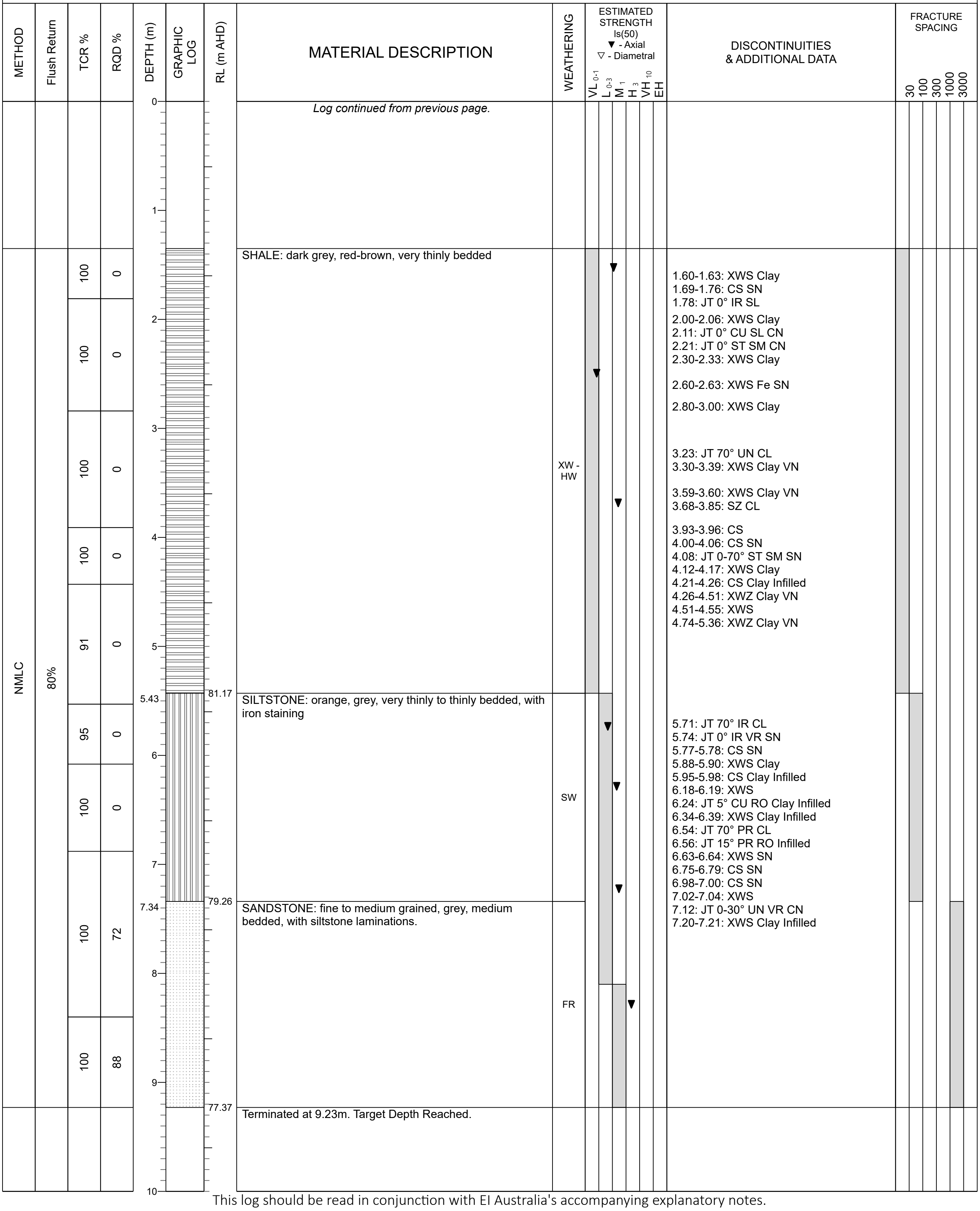
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH3

Location	2-16 Pockley Avenue Roseville	**Started**	22 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	23 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	23 August 2024
Sheets	2 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260002.9149 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331132.6459 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	DISCONTINUITIES & ADDITIONAL DATA
						Log continued from previous page.		
NMLC	80%	100 100 100 100 91	0 0 0 0 0	5.43	81.17	SHALE: dark grey, red-brown, very thinly bedded	XW - HW	1.60-1.63: XWS Clay 1.69-1.76: CS SN 1.78: JT 0° IR SL 2.00-2.06: XWS Clay 2.11: JT 0° CU SL CN 2.21: JT 0° ST SM CN 2.30-2.33: XWS Clay 2.60-2.63: XWS Fe SN 2.80-3.00: XWS Clay 3.23: JT 70° UN CL 3.30-3.39: XWS Clay VN 3.59-3.60: XWS Clay VN 3.68-3.85: SZ CL 3.93-3.96: CS 4.00-4.06: CS SN 4.08: JT 0-70° ST SM SN 4.12-4.17: XWS Clay 4.21-4.26: CS Clay Infilled 4.26-4.51: XWZ Clay VN 4.51-4.55: XWS 4.74-5.36: XWZ Clay VN
		95 100	0 0	7.34	79.26	SILTSTONE: orange, grey, very thinly to thinly bedded, with iron staining	SW	5.71: JT 70° IR CL 5.74: JT 0° IR VR SN 5.77-5.78: CS SN 5.88-5.90: XWS Clay 5.95-5.98: CS Clay Infilled 6.18-6.19: XWS 6.24: JT 5° CU RO Clay Infilled 6.34-6.39: XWS Clay Infilled 6.54: JT 70° PR CL 6.56: JT 15° PR RO Infilled 6.63-6.64: XWS SN 6.75-6.79: CS SN 6.98-7.00: CS SN 7.02-7.04: XWS 7.12: JT 0-30° UN VR CN 7.20-7.21: XWS Clay Infilled
		100 100	72 88		77.37	SANDSTONE: fine to medium grained, grey, medium bedded, with siltstone laminations.	FR	
						Terminated at 9.23m. Target Depth Reached.		

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

BOREHOLE LOG

BH ID: BH3.1

Location	2-16 Pockley Avenue Roseville	**Started**	14 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	14 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	14 January 2025
Sheets	1 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260009.3200 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331134.3520 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH3.1M_0.50-0.95 SPT 0.50-0.95 3,4,4 N=8	0.00	▩	86.60	FILL: Sandy SILT: low to medium plasticity, pale grey to brown with rootlets	M ≈ PL	-	FILL
			0.90	▤	85.70	Silty CLAY: medium to high plasticity, pale brown to red brown		F - H	RESIDUAL SOIL
			1.20	▤	85.40	From 1.20m, becoming pale grey, friable, trace of shale fragments			
			1.35		85.25				

Log continued on next page.

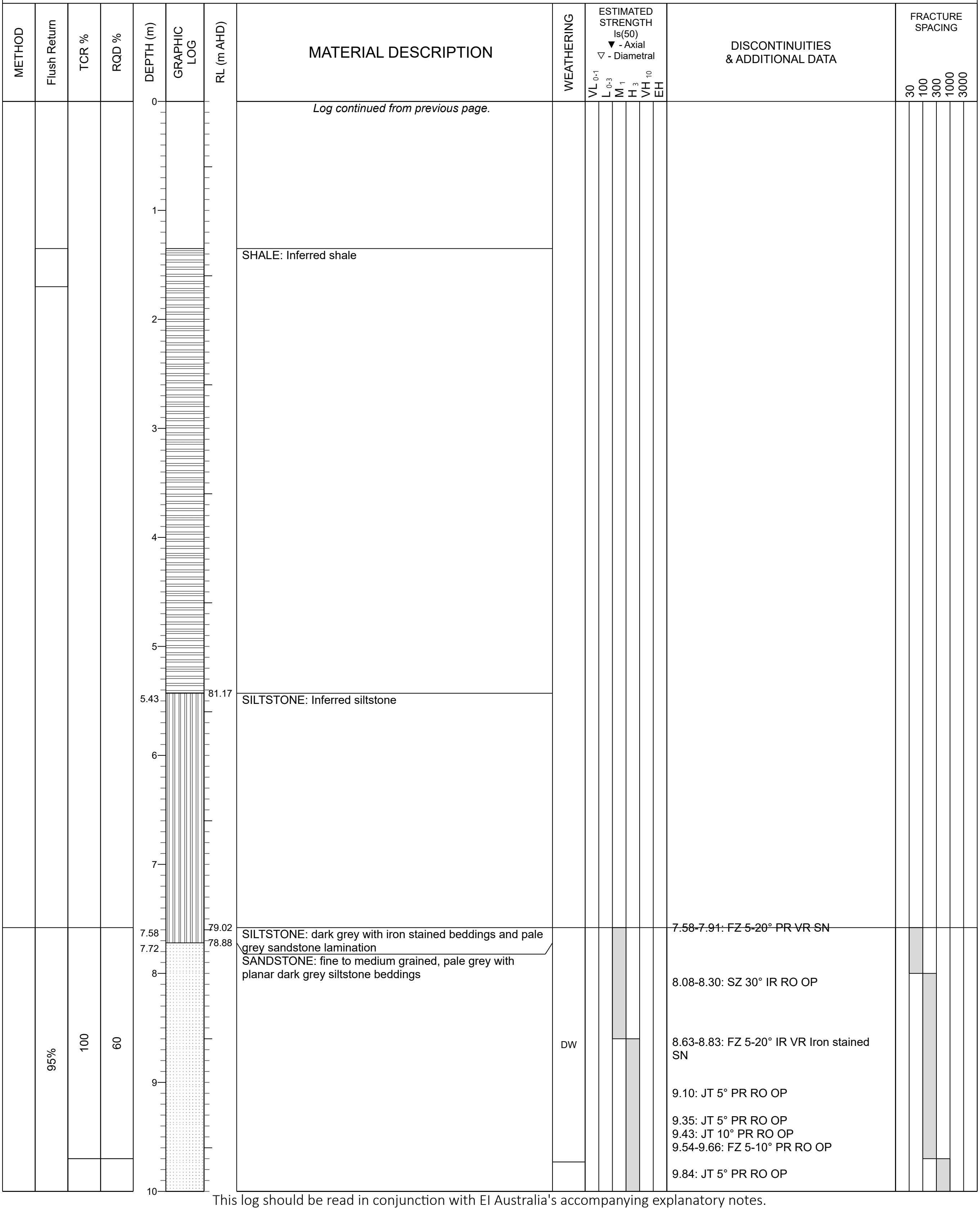
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH3.1

Location	2-16 Pockley Avenue Roseville	**Started**	14 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	14 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	14 January 2025
Sheets	2 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260009.3200 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331134.3520 (MGA 2020 Zone 56)



Log continued from previous page.

SHALE: Inferred shale

5.43 m (81.17 m AHD) SILTSTONE: Inferred siltstone

7.58 m (79.02 m AHD) SILTSTONE: dark grey with iron stained beddings and pale grey sandstone lamination

7.72 m (78.88 m AHD) SANDSTONE: fine to medium grained, pale grey with planar dark grey siltstone beddings

~~7.58-7.91: FZ 5-20° PR VR SN~~

8.08-8.30: SZ 30° IR RO OP

8.63-8.83: FZ 5-20° IR VR Iron stained SN

9.10: JT 5° PR RO OP

9.35: JT 5° PR RO OP
9.43: JT 10° PR RO OP
9.54-9.66: FZ 5-10° PR RO OP

9.84: JT 5° PR RO OP

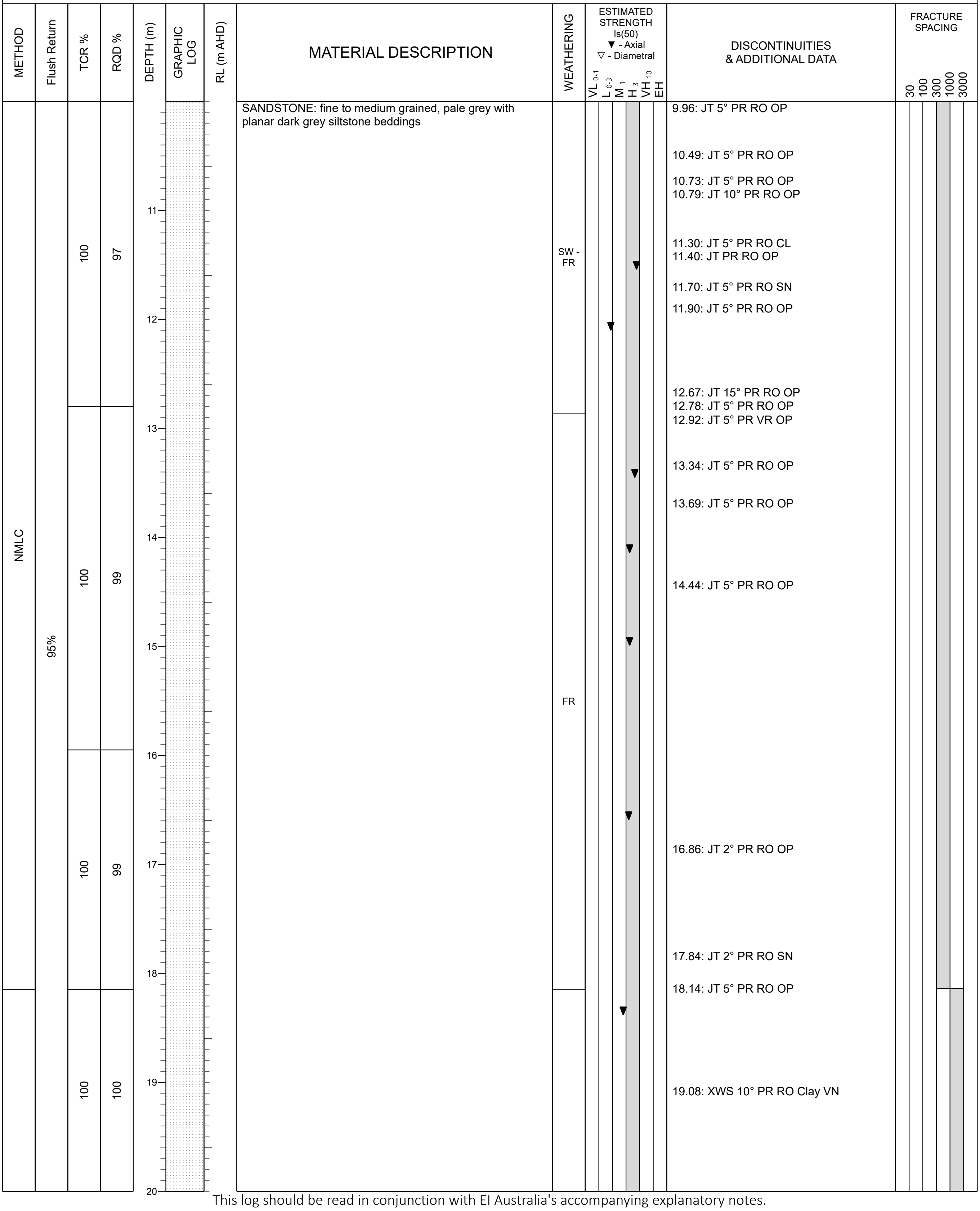
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH3.1

Location	2-16 Pockley Avenue Roseville	**Started**	14 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	14 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	14 January 2025
Sheets	3 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260009.3200 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331134.3520 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	WEATHERING
NMLC	95%	100	97	SW - FR
		100	99	FR
		100	99	
		100	100	

MATERIAL DESCRIPTION

SANDSTONE: fine to medium grained, pale grey with planar dark grey siltstone beddings

DISCONTINUITIES & ADDITIONAL DATA

9.96: JT 5° PR RO OP

10.49: JT 5° PR RO OP

10.73: JT 5° PR RO OP
10.79: JT 10° PR RO OP

11.30: JT 5° PR RO CL
11.40: JT PR RO OP

11.70: JT 5° PR RO SN

11.90: JT 5° PR RO OP

12.67: JT 15° PR RO OP
12.78: JT 5° PR RO OP
12.92: JT 5° PR VR OP

13.34: JT 5° PR RO OP

13.69: JT 5° PR RO OP

14.44: JT 5° PR RO OP

16.86: JT 2° PR RO OP

17.84: JT 2° PR RO SN

18.14: JT 5° PR RO OP

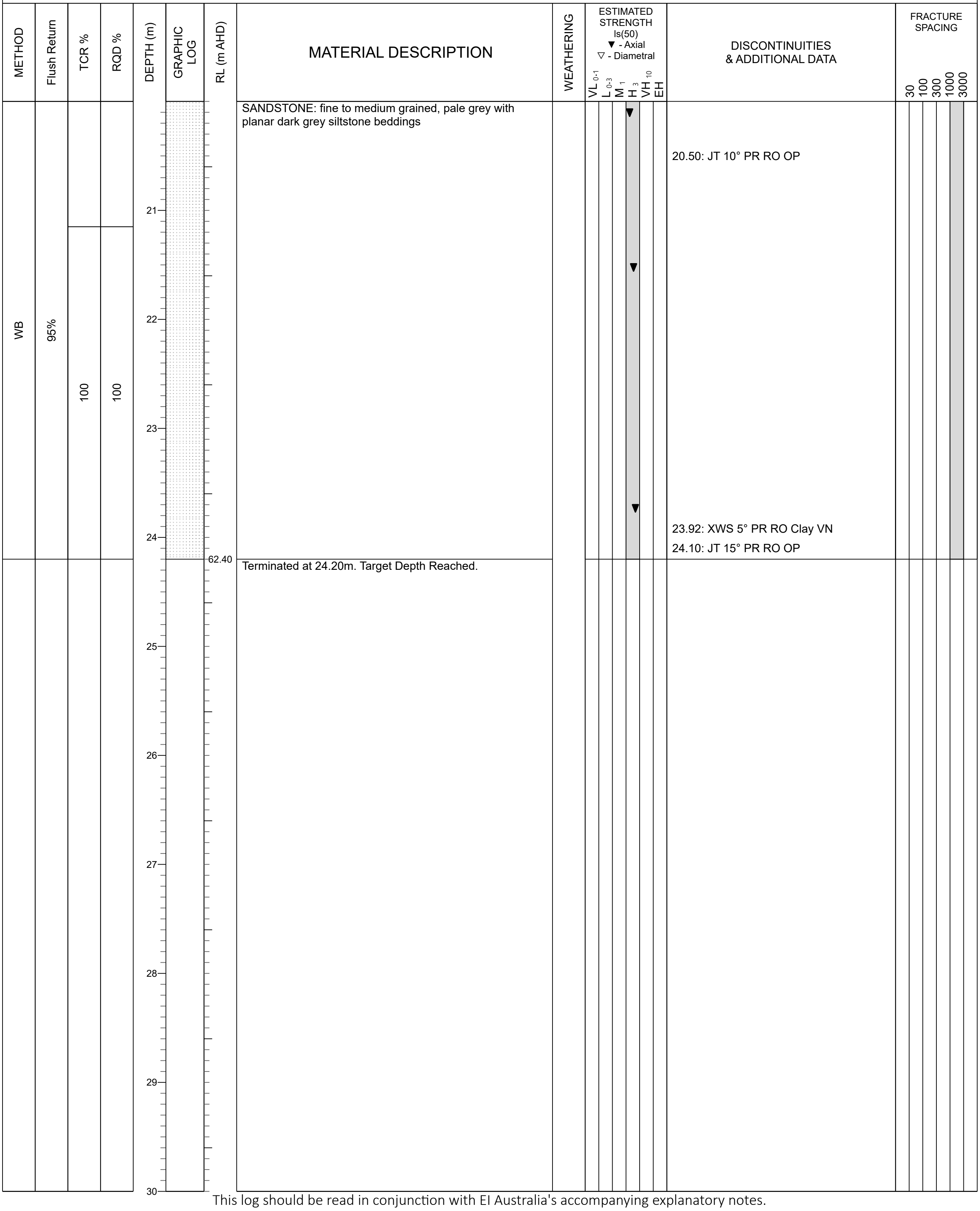
19.08: XWS 10° PR RO Clay VN

BOREHOLE CORE LOG

BH ID: BH3.1

Location	2-16 Pockley Avenue Roseville	**Started**	14 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	14 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	14 January 2025
Sheets	4 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260009.3200 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331134.3520 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	MATERIAL DESCRIPTION	DISCONTINUITIES & ADDITIONAL DATA
WB	95%			SANDSTONE: fine to medium grained, pale grey with planar dark grey siltstone beddings	20.50: JT 10° PR RO OP
		100	100		23.92: XWS 5° PR RO Clay VN 24.10: JT 15° PR RO OP
				Terminated at 24.20m. Target Depth Reached.	

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

BOREHOLE LOG

BH ID: BH4M

Location 2-16 Pockley Avenue Roseville
Client AL Prestige Pty Ltd
Job No. E26491.G03
Sheets 1 of 2

Started 27 August 2024
Completed 27 August 2024
Logged By GP **Date** 27 August 2024
Review By AC **Date** 06 September 2024

Drilling Contractor Tightsite Geotechnical & Environmental Drilling
Plant Hand Portable Rig
Surface RL ≈80.25 m (AHD)
Inclination 90°
Northing 6259991.7256 (MGA 2020 Zone 56)
Easting 331098.3968 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	DCP BLOWS (0 5 10 15 20 25 30)	MATERIAL ORIGIN & OBSERVATIONS
HA	GWNE			0.00	▨	80.25	FILL: Sandy SILT: dark grey, with medium grained sand, rootlets, concrete fragments, brick	M	-	1 1 4 3 7 4 7	FILL
		BH4M_1.20-1.30	■	0.70	▤	79.55	Silty CLAY: low plasticity, mottled red, orange trace of sand and indurated ironstained gravels.	M > PL	St	4 4 5 3 5 4 9/20mm	RESIDUAL SOIL
				1.51		78.74	*Log continued on next page.*				

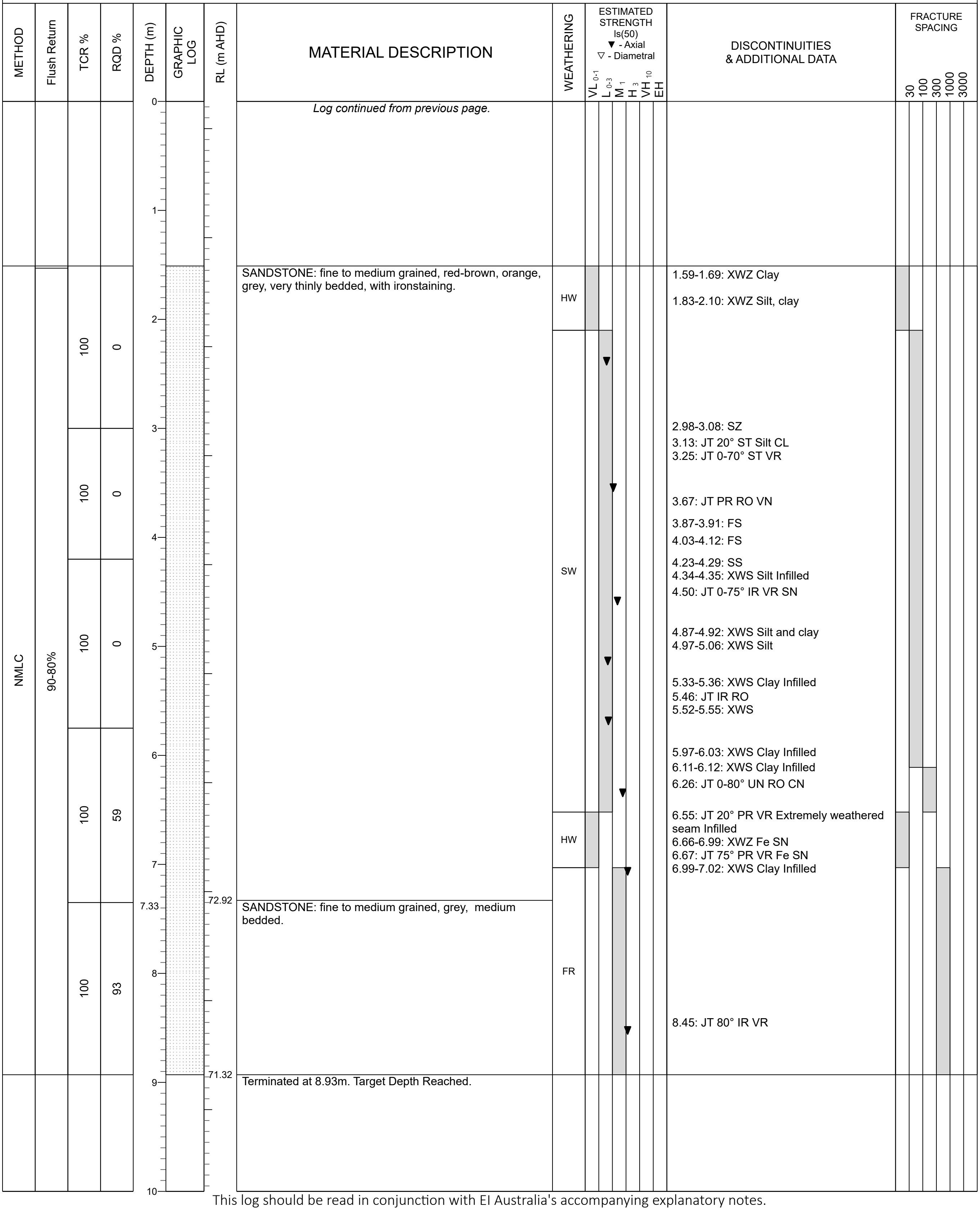
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH4M

Location	2-16 Pockley Avenue Roseville	**Started**	27 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	27 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	27 August 2024
Sheets	2 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.7256 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331098.3968 (MGA 2020 Zone 56)



Log continued from previous page.

SANDSTONE: fine to medium grained, red-brown, orange, grey, very thinly bedded, with ironstaining.

1.59-1.69: XWZ Clay
1.83-2.10: XWZ Silt, clay
2.98-3.08: SZ
3.13: JT 20° ST Silt CL
3.25: JT 0-70° ST VR
3.67: JT PR RO VN
3.87-3.91: FS
4.03-4.12: FS
4.23-4.29: SS
4.34-4.35: XWS Silt Infilled
4.50: JT 0-75° IR VR SN
4.87-4.92: XWS Silt and clay
4.97-5.06: XWS Silt
5.33-5.36: XWS Clay Infilled
5.46: JT IR RO
5.52-5.55: XWS
5.97-6.03: XWS Clay Infilled
6.11-6.12: XWS Clay Infilled
6.26: JT 0-80° UN RO CN
6.55: JT 20° PR VR Extremely weathered seam Infilled
6.66-6.99: XWZ Fe SN
6.67: JT 75° PR VR Fe SN
6.99-7.02: XWS Clay Infilled

SANDSTONE: fine to medium grained, grey, medium bedded.

8.45: JT 80° IR VR

Terminated at 8.93m. Target Depth Reached.

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

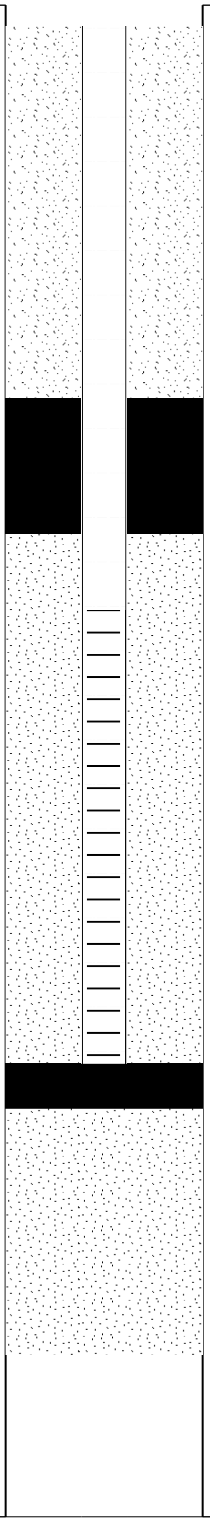
MONITORING WELL LOG

BH ID: BH4M

Location	2-16 Pockley Avenue Roseville	**Started**	27 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	27 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	27 August 2024
Sheets	1 of 1	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.7256 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331098.3968 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
GWNE		0.00	80.25	FILL: Sandy SILT: dark grey, with medium grained sand, rootlets, concrete fragments, brick	M
	BH4M_1.20-1.30	0.70	79.55	Silty CLAY: low plasticity, mottled red, orange trace of sand and indurated ironstained gravels.	M > PL
90-80% ▼		1.51	78.74	SANDSTONE: fine to medium grained, red-brown, orange, grey, very thinly bedded, with ironstaining.	
		7.33	72.92	SANDSTONE: fine to medium grained, grey, medium bedded.	
			71.32	Terminated at 8.93m. Target Depth Reached.	



BACKFILL DETAILS	STANDPIPE DETAILS
Steel Cover at Surface	Well Stickup =-0.14m (RL 80.11m)
Grout 0.14m - 2.60m	0.14m - 4.0m PVC casing (50mm Ø)
Bentonite 2.60m - 3.50m	
Sand 3.50m - 7.00m	4.0m - 7.0m PVC screen (50mm Ø)
Bentonite 7.00m - 7.30m	
Sand 7.30m - 8.93m	

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

BOREHOLE LOG

BH ID: BH4.1M

Location 2-16 Pockley Avenue Roseville
Client AL Prestige Pty Ltd
Job No. E26491.G03
Sheets 1 of 4

Started 15 January 2025
Completed 15 January 2025
Logged By PS **Date** 15 January 2025
Review By JB **Date** 14 February 2025

Drilling Contractor Geosense Drilling Engineers
Plant Comacchio Geo 205
Surface RL ≈80.25 m (AHD)
Inclination 90°
Northing 6259991.8429 (MGA 2020 Zone 56)
Easting 331099.9372 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE			0.00		80.25	FILL: Gravelly CLAY: low to medium plasticity, medium gravel, dark grey to brown with rootlets	M ≈ PL	-	FILL
				0.50		79.75	Silty CLAY: medium to high plasticity, pale brown to reddish brown			RESIDUAL SOIL
				1.00		79.25	From 1.00m, grading to extremely weathered sandstone			
				1.00			SANDSTONE: extremely weathered to silghty weathered, no further description due to drilling method			
				1.51		78.74	SANDSTONE: Inferred sandstone			
RR										
				7.30		72.95	*Log continued on next page.*			

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

eiaustralia

BOREHOLE CORE LOG

BH ID: BH4.1M

Location	2-16 Pockley Avenue Roseville	**Started**	15 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	15 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	15 January 2025
Sheets	2 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.8429 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331099.9372 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0		*Log continued from previous page.*				
	80% GWNE	100	100			SANDSTONE: medium grained, pale grey with dark grey planar siltstone bedding	FR	H ▼		▨
				8.54	71.71	NO CORE: 100mm thick	-			
				8.64	71.61	SANDSTONE: medium grained, pale grey to planar dark grey siltstone bedding		H ▼	8.64-8.67: CS IR VR SN	▨
									9.80: JT 10° PR RO SN	
				10						

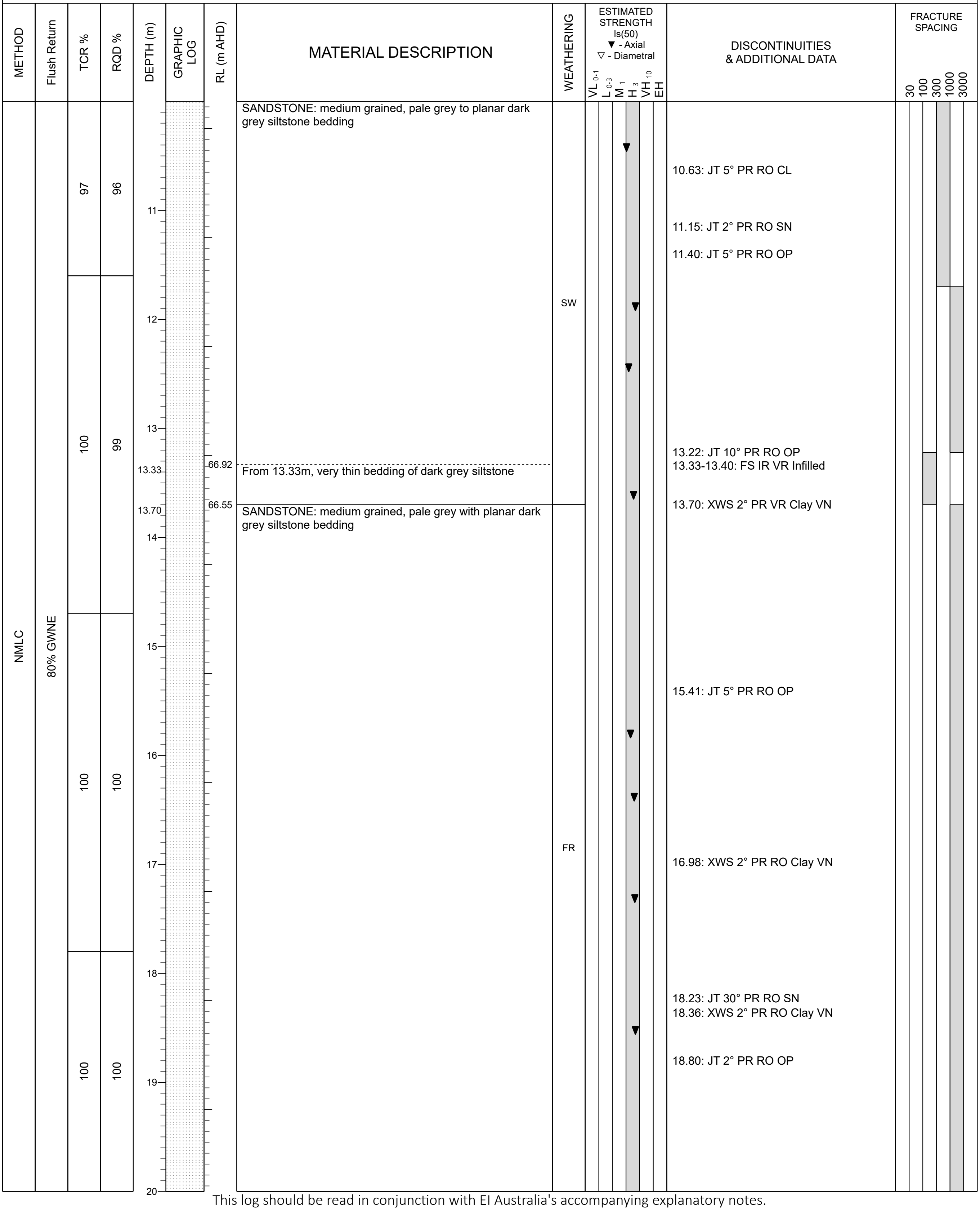
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH4.1M

Location	2-16 Pockley Avenue Roseville	**Started**	15 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	15 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	15 January 2025
Sheets	3 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.8429 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331099.9372 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %
NMLC	80% GWNE	97	96
		100	99
		100	100
		100	100

DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING
		SANDSTONE: medium grained, pale grey to planar dark grey siltstone bedding	SW
13.33	66.92	From 13.33m, very thin bedding of dark grey siltstone	
13.70	66.55	SANDSTONE: medium grained, pale grey with planar dark grey siltstone bedding	FR

DISCONTINUITIES & ADDITIONAL DATA

10.63: JT 5° PR RO CL

11.15: JT 2° PR RO SN

11.40: JT 5° PR RO OP

13.22: JT 10° PR RO OP

13.33-13.40: FS IR VR Infilled

13.70: XWS 2° PR VR Clay VN

15.41: JT 5° PR RO OP

16.98: XWS 2° PR RO Clay VN

18.23: JT 30° PR RO SN

18.36: XWS 2° PR RO Clay VN

18.80: JT 2° PR RO OP

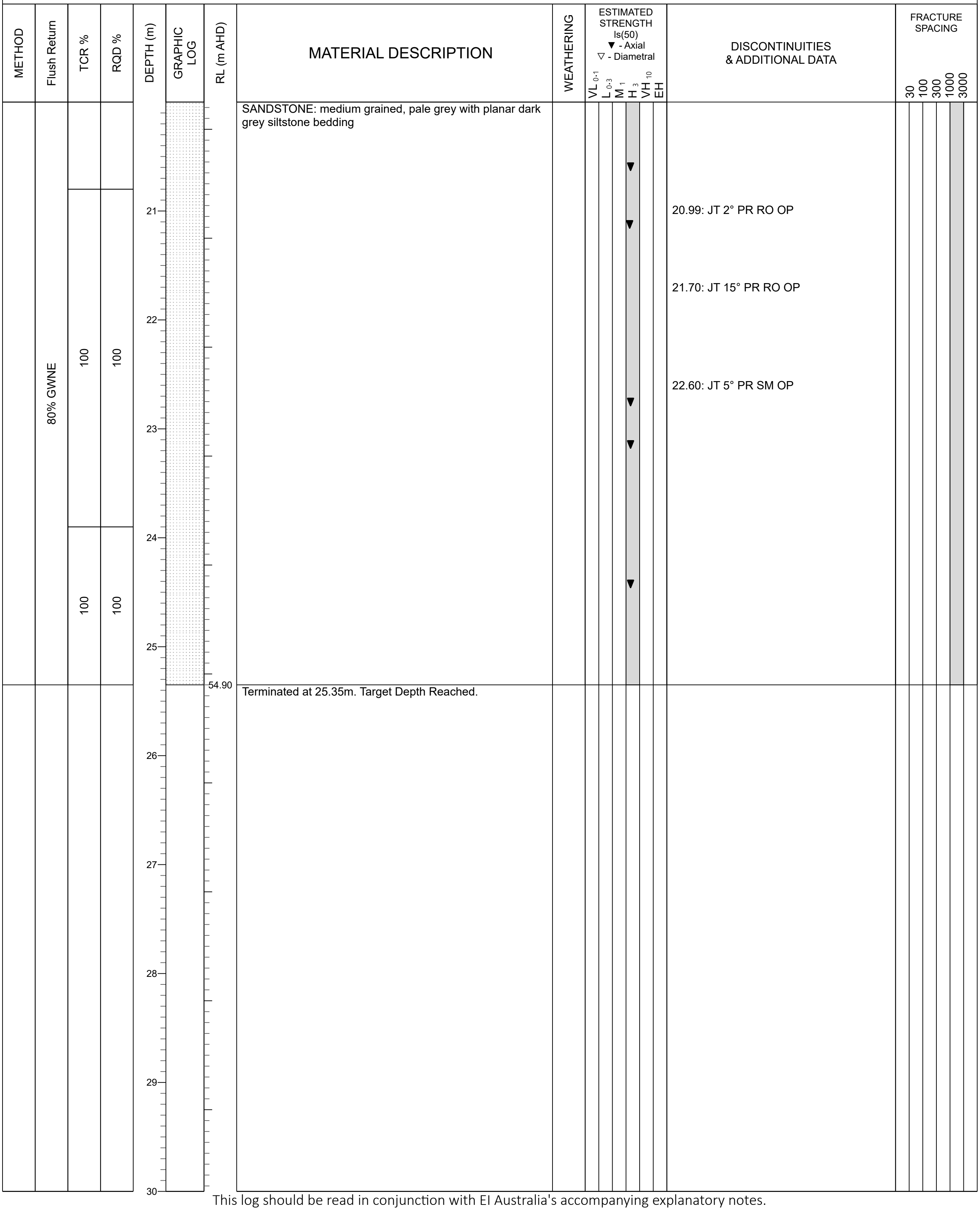
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH4.1M

Location	2-16 Pockley Avenue Roseville	**Started**	15 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	15 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	15 January 2025
Sheets	4 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.8429 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331099.9372 (MGA 2020 Zone 56)



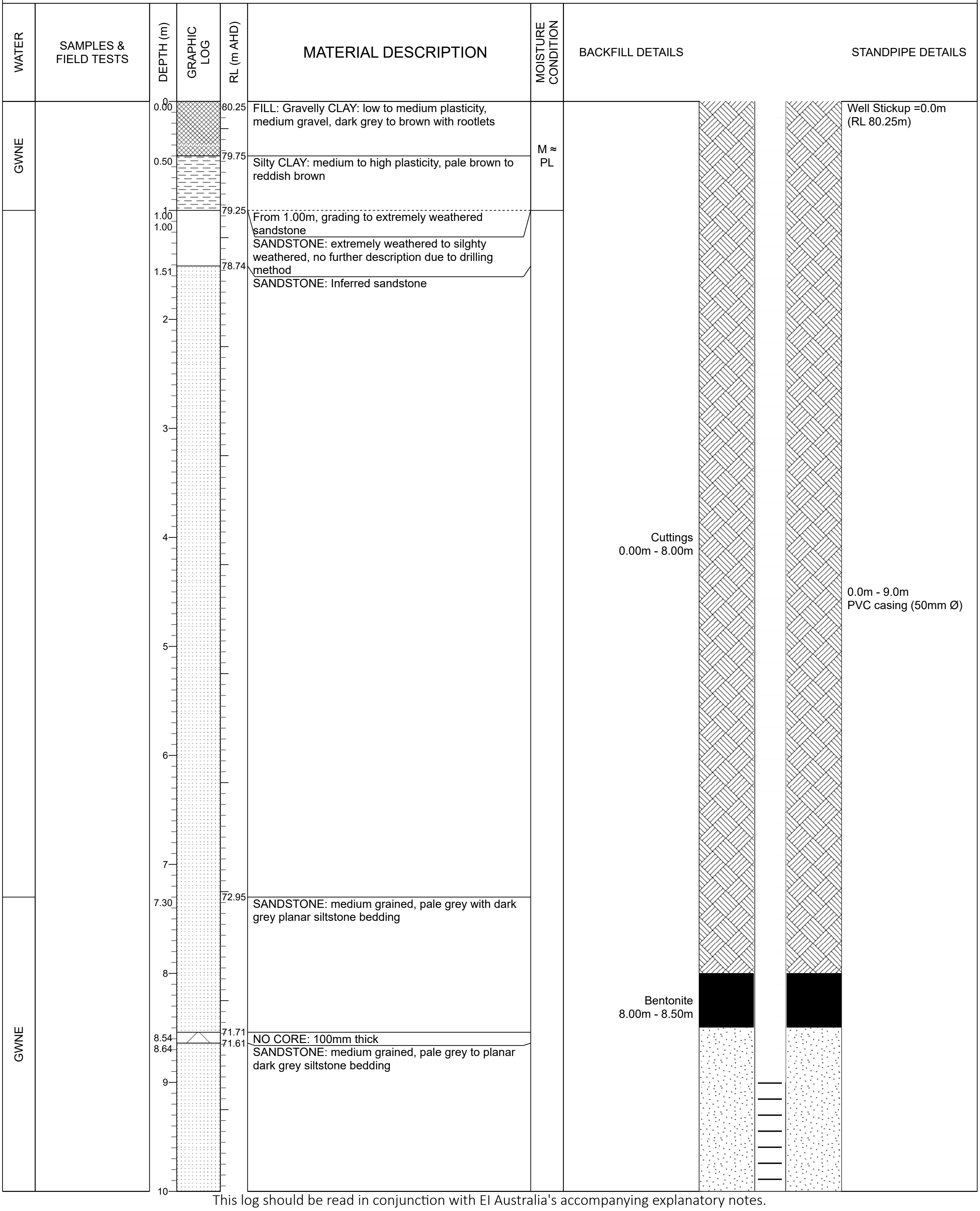
METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
	80% GWNE	100 100	100 100			54.90	SANDSTONE: medium grained, pale grey with planar dark grey siltstone bedding		▼ ▼ ▼ ▼ ▼	20.99: JT 2° PR RO OP 21.70: JT 15° PR RO OP 22.60: JT 5° PR SM OP	
							Terminated at 25.35m. Target Depth Reached.				

MONITORING WELL LOG

BH ID: BH4.1M

Location	2-16 Pockley Avenue Roseville	**Started**	15 January 2025
Client	AL Prestige Pty Ltd	**Completed**	15 January 2025
Job No.	E26491.G03	**Logged By**	PS **Date** 15 January 2025
Sheets	1 of 3	**Review By**	JB **Date** 14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.8429 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331099.9372 (MGA 2020 Zone 56)



WATER	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
GWNE	0.00	80.25	FILL: Gravelly CLAY: low to medium plasticity, medium gravel, dark grey to brown with rootlets	M ≈ PL
	0.50	79.75	Silty CLAY: medium to high plasticity, pale brown to reddish brown	
	1.00	79.25	From 1.00m, grading to extremely weathered sandstone	
	1.00		SANDSTONE: extremely weathered to silghty weathered, no further description due to drilling method	
	1.51	78.74	SANDSTONE: Inferred sandstone	
GWNE	7.30	72.95	SANDSTONE: medium grained, pale grey with dark grey planar siltstone bedding	
	8.54	71.71	NO CORE: 100mm thick	
	8.64	71.61	SANDSTONE: medium grained, pale grey to planar dark grey siltstone bedding	

BACKFILL DETAILS

Cuttings
0.00m - 8.00m

Bentonite
8.00m - 8.50m

STANDPIPE DETAILS

Well Stickup =0.0m
(RL 80.25m)

0.0m - 9.0m
PVC casing (50mm Ø)

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

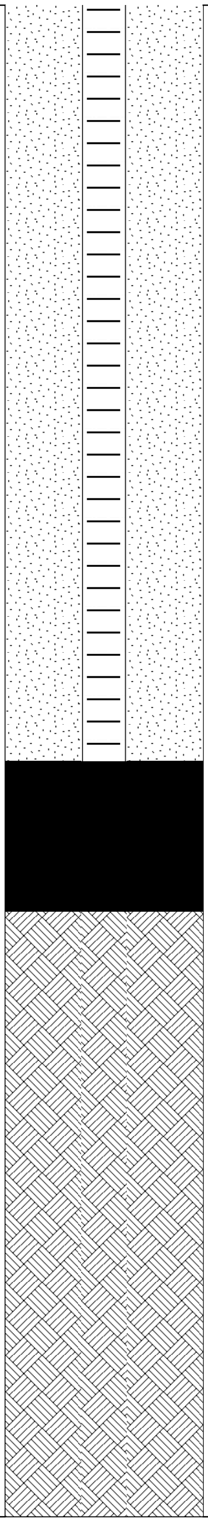
MONITORING WELL LOG

BH ID: BH4.1M

Location	2-16 Pockley Avenue Roseville	**Started**	15 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	15 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	15 January 2025
Sheets	2 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.8429 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331099.9372 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
GWNE					SANDSTONE: medium grained, pale grey to planar dark grey siltstone bedding		Sand 8.50m - 15.00m	9.0m - 15.0m PVC screen (50mm Ø)
		11						
		12						
		13						
		13.33		66.92	From 13.33m, very thin bedding of dark grey siltstone			
		13.70		66.55	SANDSTONE: medium grained, pale grey with planar dark grey siltstone bedding			
		14						
		15					Bentonite 15.00m - 16.00m	
		16						
		17						
		18						
		19						
		20						

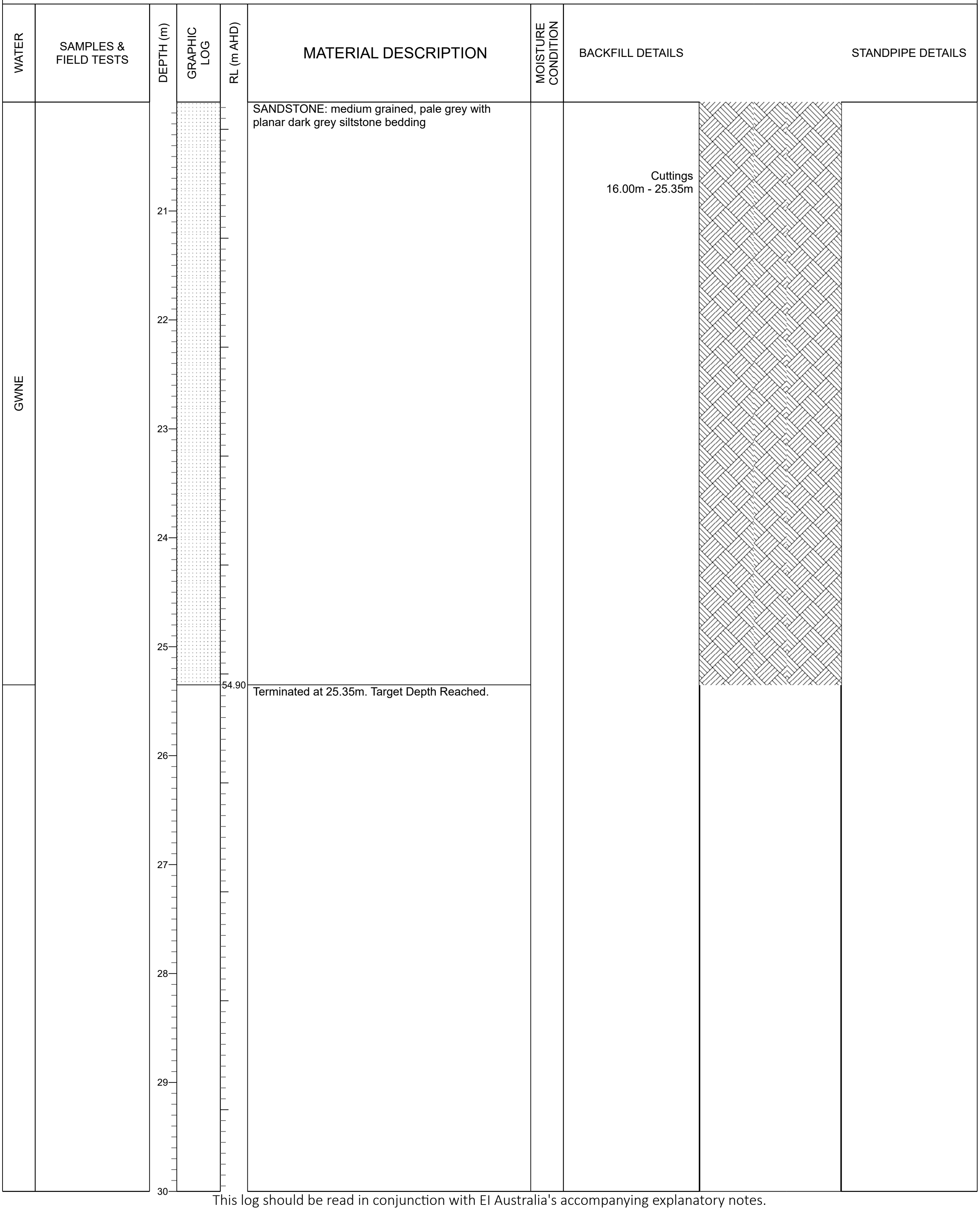


MONITORING WELL LOG

BH ID: BH4.1M

Location	2-16 Pockley Avenue Roseville	**Started**	15 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	15 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	15 January 2025
Sheets	3 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.25 m (AHD)	**Northing**	6259991.8429 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331099.9372 (MGA 2020 Zone 56)



WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
GWNE					SANDSTONE: medium grained, pale grey with planar dark grey siltstone bedding		Cuttings 16.00m - 25.35m	
				54.90	Terminated at 25.35m. Target Depth Reached.			

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

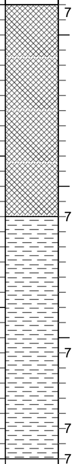
BOREHOLE LOG

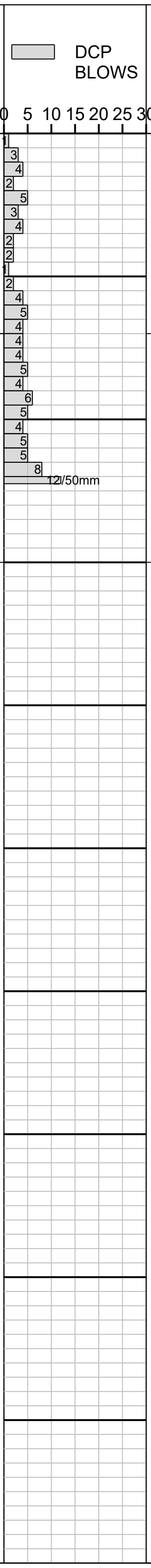
BH ID: BH5

Location	2-16 Pockley Avenue Roseville	**Started**	28 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	28 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	28 August 2024
Sheets	1 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈78.20 m (AHD)	**Northing**	6260031.6290 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331067.6230 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
HA	GWNE			0.00	78.20	FILL: Silty CLAY: dark grey, with rootlets and medium grained sand	M	-	FILL
		BH5_1.40-1.60	■	1.40	76.80	Silty CLAY: low plasticity, orange	M < PL	St	RESIDUAL SOIL
		BH5_2.10-2.20	■						
				2.30	75.90	From 2.30m, medium to high plasticity, mottled red, orange, with indurated iron stained gravels.	M ≈ PL		
				2.80	75.40	From 2.80m, grading into weathered rock with depth.			
				3.00	75.20	*Log continued on next page.*			



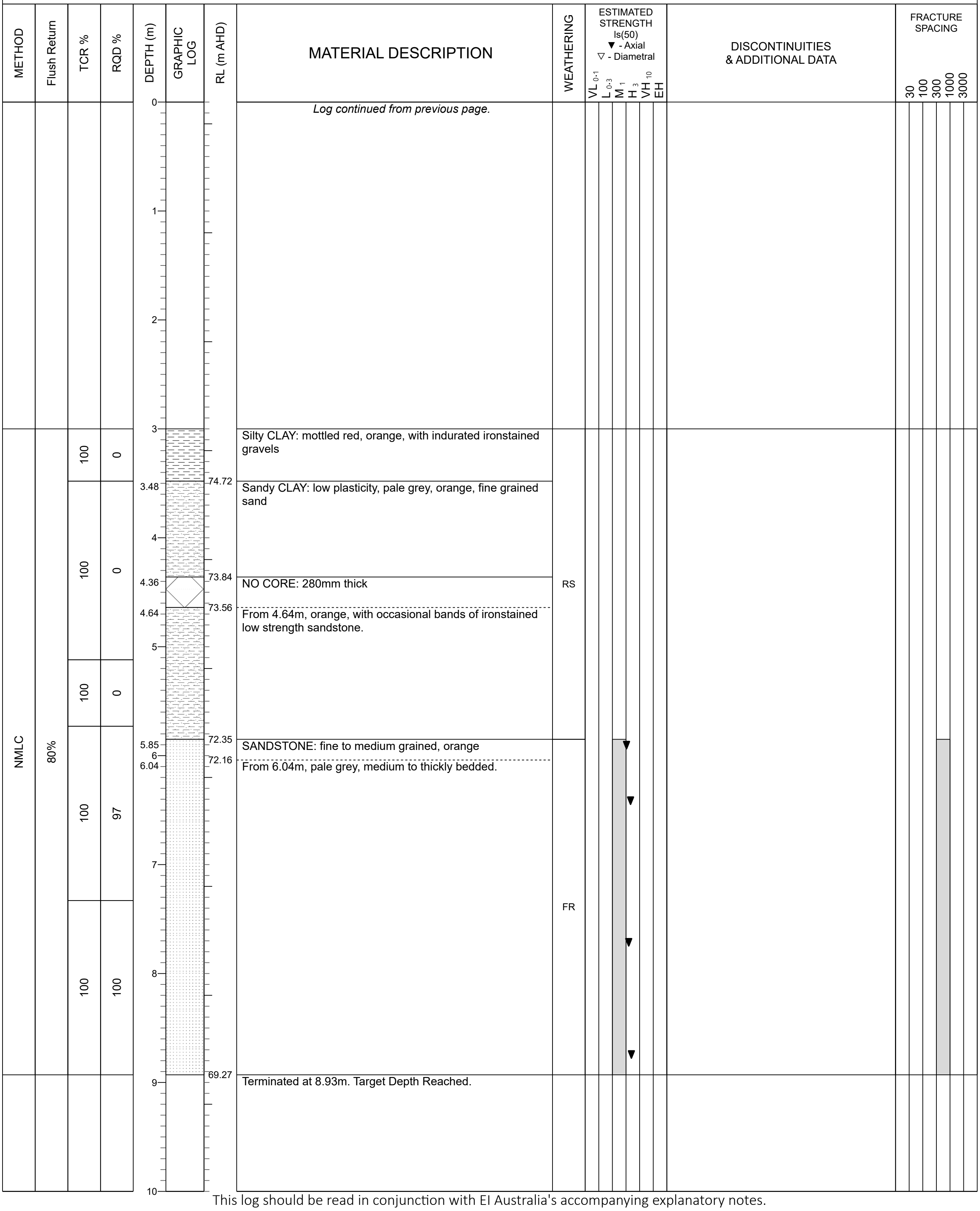


BOREHOLE CORE LOG

BH ID: BH5

Location	2-16 Pockley Avenue Roseville	**Started**	28 August 2024		
Client	AL Prestige Pty Ltd	**Completed**	28 August 2024		
Job No.	E26491.G03	**Logged By**	GP	**Date**	28 August 2024
Sheets	2 of 2	**Review By**	AC	**Date**	06 September 2024

Drilling Contractor	Tightsite Geotechnical & Environmental Drilling	**Surface RL**	≈78.20 m (AHD)	**Northing**	6260031.6290 (MGA 2020 Zone 56)
Plant	Hand Portable Rig	**Inclination**	90°	**Easting**	331067.6230 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING
				0		*Log continued from previous page.*	
NMLC	80%	100	0	3		Silty CLAY: mottled red, orange, with indurated ironstained gravels	RS
		100	0	3.48	74.72	Sandy CLAY: low plasticity, pale grey, orange, fine grained sand	
				4.36	73.84	NO CORE: 280mm thick	
				4.64	73.56	From 4.64m, orange, with occasional bands of ironstained low strength sandstone.	
		100	0				
		100	97	5.85	72.35	SANDSTONE: fine to medium grained, orange	FR
				6.04	72.16	From 6.04m, pale grey, medium to thickly bedded.	
		100	100				
				8.93	69.27	Terminated at 8.93m. Target Depth Reached.	

BOREHOLE LOG

BH ID: BH101

Location	2-16 Pockley Avenue Roseville	**Started**	17 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	17 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	17 January 2025
Sheets	1 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260046.7119 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331128.9804 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T				0.00	▩	86.60	FILL: Sandy CLAY: medium plasticity, dark grey to dark brown with rootlets, No odour	M ≈ PL	-	FILL
				0.70	▤	85.90	Silty CLAY: high plasticity, reddish brown to brown, No odour			RESIDUAL SOIL
				2.00	▤	84.60	From 2.00m, becoming red brown to pale grey			
	▷ ▷			2.80	▤	83.80	From 2.80m, becoming friable with fragments of shale			
	▷			7.30	▤	79.30	From 7.30m, becoming extremely weathered			
				8.45		78.15	*Log continued on next page.*			

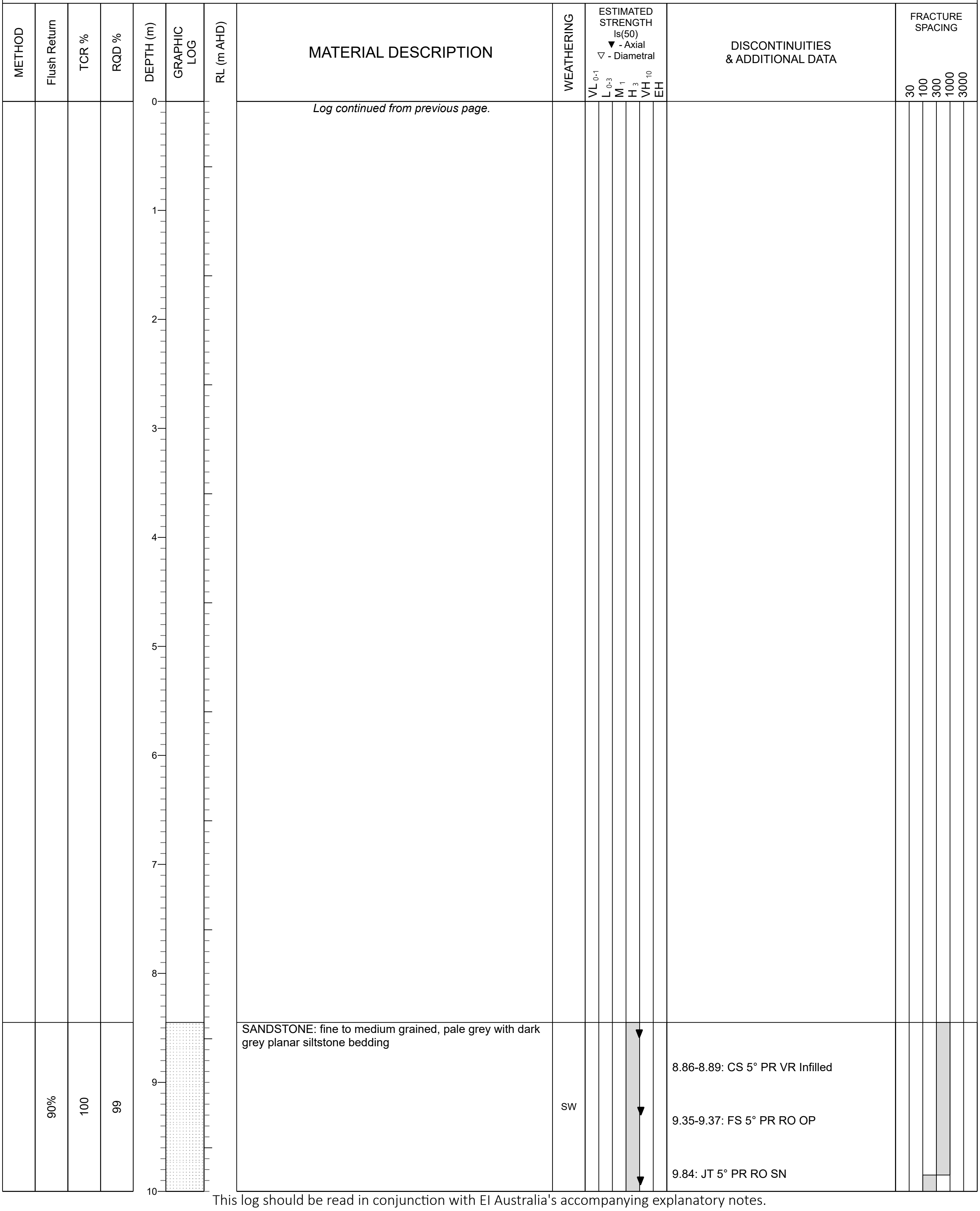
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH101

Location	2-16 Pockley Avenue Roseville	**Started**	17 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	17 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	17 January 2025
Sheets	2 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260046.7119 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331128.9804 (MGA 2020 Zone 56)



METHOD	Flush Return	TCR %	RQD %	MATERIAL DESCRIPTION	WEATHERING	DISCONTINUITIES & ADDITIONAL DATA
				Log continued from previous page.		
	90%	100	99	SANDSTONE: fine to medium grained, pale grey with dark grey planar siltstone bedding	SW	8.86-8.89: CS 5° PR VR Infilled 9.35-9.37: FS 5° PR RO OP 9.84: JT 5° PR RO SN

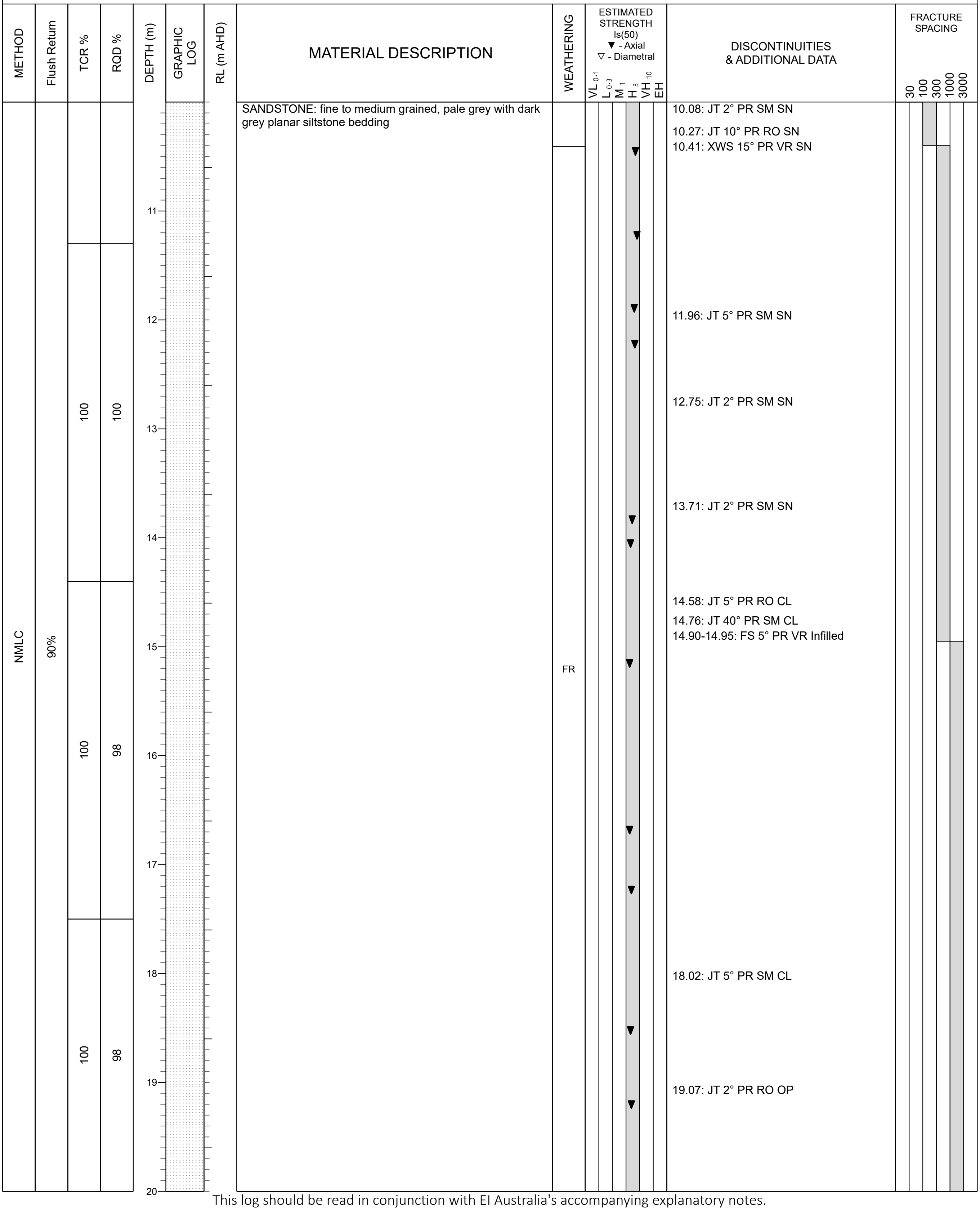
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH101

Location	2-16 Pockley Avenue Roseville	**Started**	17 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	17 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	17 January 2025
Sheets	3 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260046.7119 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331128.9804 (MGA 2020 Zone 56)



NMLC

90%

TCR %	RQD %
100	100
100	98
100	98

SANDSTONE: fine to medium grained, pale grey with dark grey planar siltstone bedding

FR

10.08: JT 2° PR SM SN
10.27: JT 10° PR RO SN
10.41: XWS 15° PR VR SN
11.96: JT 5° PR SM SN
12.75: JT 2° PR SM SN
13.71: JT 2° PR SM SN
14.58: JT 5° PR RO CL
14.76: JT 40° PR SM CL
14.90-14.95: FS 5° PR VR Infilled
18.02: JT 5° PR SM CL
19.07: JT 2° PR RO OP

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

BOREHOLE CORE LOG

BH ID: BH101

Location	2-16 Pockley Avenue Roseville	**Started**	17 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	17 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	17 January 2025
Sheets	4 of 4	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈86.60 m (AHD)	**Northing**	6260046.7119 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331128.9804 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
	90%	100	100	21			SANDSTONE: fine to medium grained, pale grey with dark grey planar siltstone bedding		▼ H ▼ H	19.95-20.00: FS 5° PR VR Infilled 20.80: JT 40° PR RO OP	1000–3000
				22		64.60	Terminated at 22.00m. Target Depth Reached.				
				23							
				24							
				25							
				26							
				27							
				28							
				29							
				30							

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

BOREHOLE LOG

BH ID: BH102

Location	2-16 Pockley Avenue Roseville	**Started**	10 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	10 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	10 January 2025
Sheets	1 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.80 m (AHD)	**Northing**	6260040.1776 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331076.9665 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T				0.00	▩	80.80	TOPSOIL: Sandy CLAY: low to medium plasticity, dark brown to dark grey with rootlets and gravels	M ≈ PL	-	TOPSOIL
				1.00	▤	79.80	Silty CLAY: medium plasticity, brown to red brown			RESIDUAL SOIL
				1.50	▤	79.30	From 1.50m, trace iron stained gravels			
				2.00	▤	78.80	From 2.00m, becoming pale grey to red brown			
				3.00	▤	77.80	From 3.00m, becoming friable	M < PL - M ≈ PL		
	▽			4.00	▤	76.80	From 4.00m, increase in moisture content	W ≈ PL - W > PL		
				5.50	▤	75.30	From 5.50m, becoming pale brown to brown, trace sand			
				6.00	▤	74.80	From 6.00m, becoming pale grey trace fragments of siltstone	M < PL		
				6.56		74.24	*Log continued on next page.*			

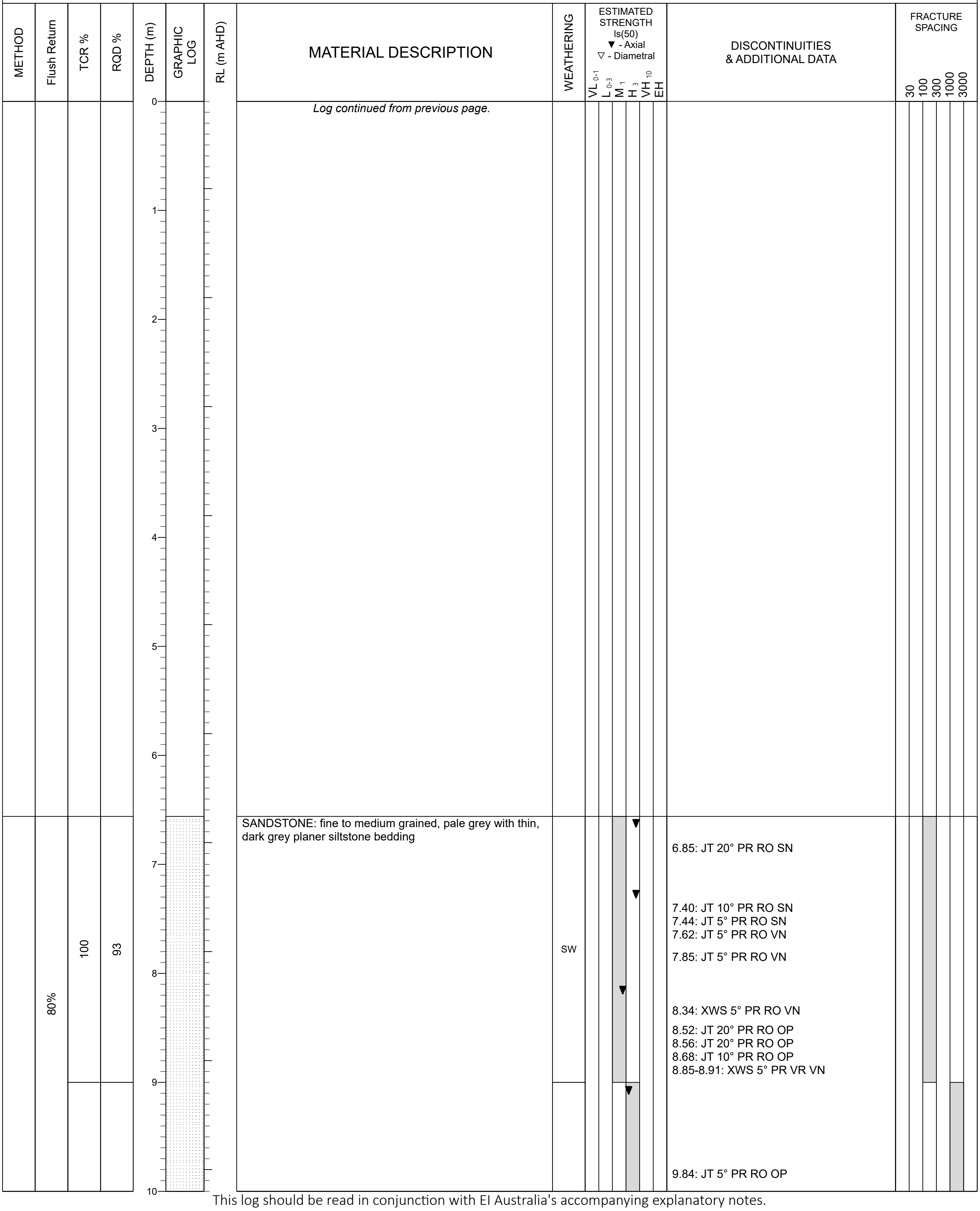
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH102

Location	2-16 Pockley Avenue Roseville	**Started**	10 January 2025
Client	AL Prestige Pty Ltd	**Completed**	10 January 2025
Job No.	E26491.G03	**Logged By**	PS **Date** 10 January 2025
Sheets	2 of 3	**Review By**	JB **Date** 14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.80 m (AHD)	**Northing**	6260040.1776 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331076.9665 (MGA 2020 Zone 56)



Log continued from previous page.

SANDSTONE: fine to medium grained, pale grey with thin, dark grey planer siltstone bedding

6.85: JT 20° PR RO SN
7.40: JT 10° PR RO SN
7.44: JT 5° PR RO SN
7.62: JT 5° PR RO VN
7.85: JT 5° PR RO VN
8.34: XWS 5° PR RO VN
8.52: JT 20° PR RO OP
8.56: JT 20° PR RO OP
8.68: JT 10° PR RO OP
8.85-8.91: XWS 5° PR VR VN
9.84: JT 5° PR RO OP

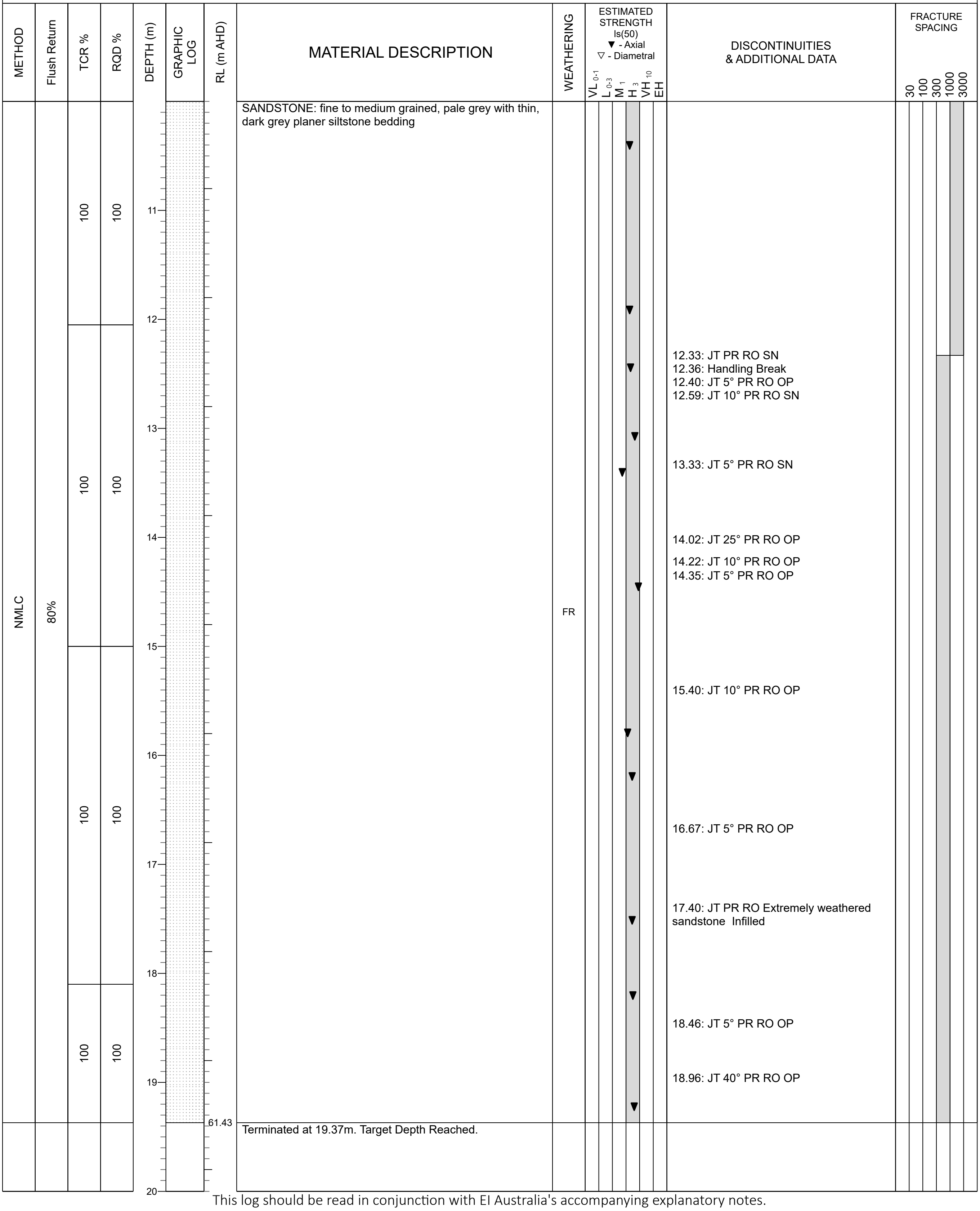
This log should be read in conjunction with EI Australia's accompanying explanatory notes.

BOREHOLE CORE LOG

BH ID: BH102

Location	2-16 Pockley Avenue Roseville	**Started**	10 January 2025		
Client	AL Prestige Pty Ltd	**Completed**	10 January 2025		
Job No.	E26491.G03	**Logged By**	PS	**Date**	10 January 2025
Sheets	3 of 3	**Review By**	JB	**Date**	14 February 2025

Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.80 m (AHD)	**Northing**	6260040.1776 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	331076.9665 (MGA 2020 Zone 56)



SANDSTONE: fine to medium grained, pale grey with thin, dark grey planer siltstone bedding

12.33: JT PR RO SN
12.36: Handling Break
12.40: JT 5° PR RO OP
12.59: JT 10° PR RO SN

13.33: JT 5° PR RO SN

14.02: JT 25° PR RO OP

14.22: JT 10° PR RO OP
14.35: JT 5° PR RO OP

15.40: JT 10° PR RO OP

16.67: JT 5° PR RO OP

17.40: JT PR RO Extremely weathered sandstone Infilled

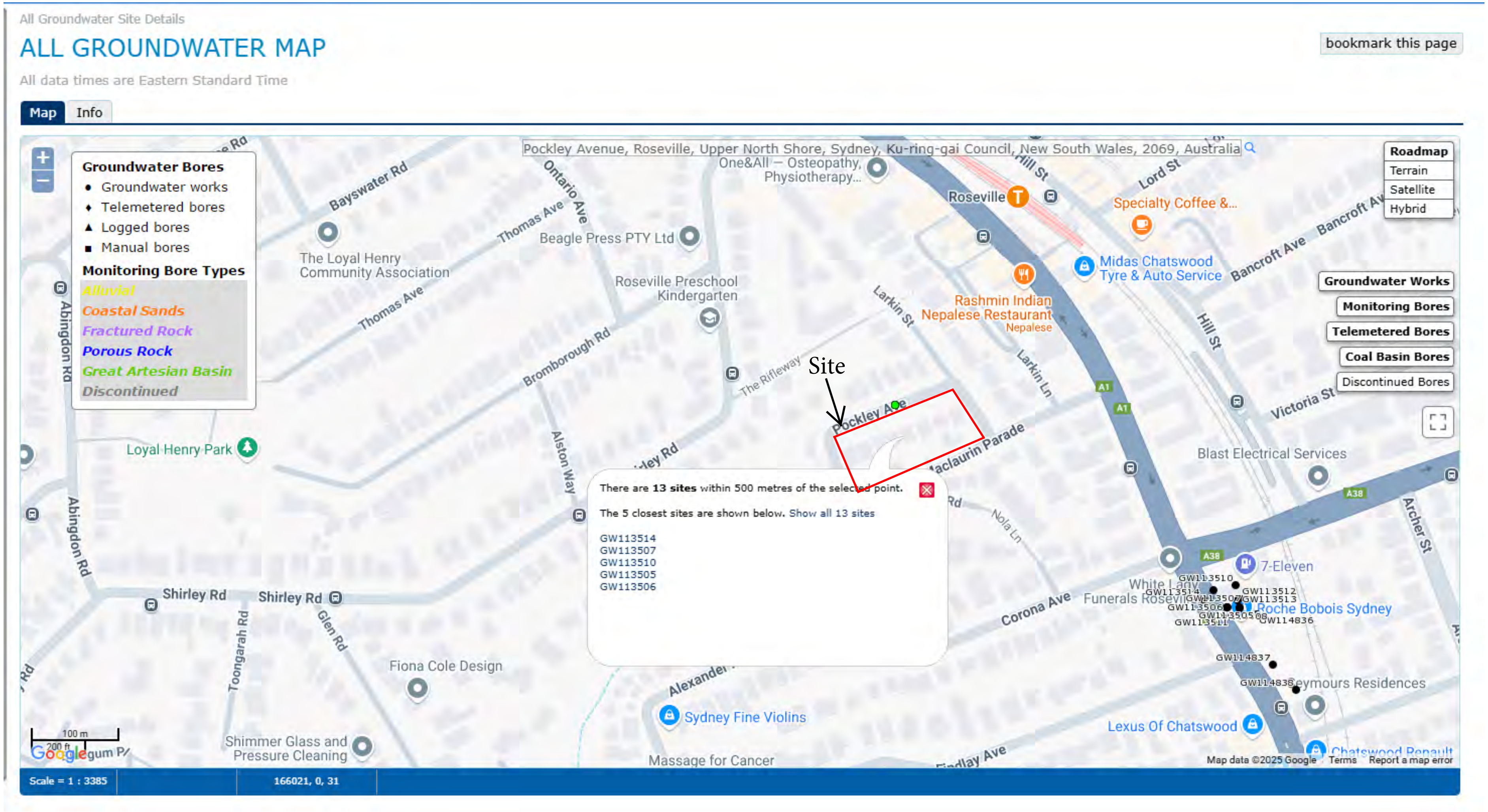
18.46: JT 5° PR RO OP

18.96: JT 40° PR RO OP

Terminated at 19.37m. Target Depth Reached.

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

Appendix F – Registered Water Supply Bores



All Groundwater Site Details

ALL GROUNDWATER MAP

All data times are Eastern Standard Time

Pockley Avenue, Roseville, Upper North Shore, Sydney, Ku-ring-gai Council, New South Wales, 2069, Australia

There are **13 sites** within 500 metres of the selected point.

The 5 closest sites are shown below. Show all 13 sites

GW113514
GW113507
GW113510
GW113505
GW113506

Scale = 1 : 3385 | 166021, 0, 31

NOTE: All 13 sites were identified as Monitoring Bores as described in Section 2.4 of the report.

WaterNSW
Work Summary

GW113514

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 06/09/2004
Final Depth: 8.60 m
Drilled Depth: 8.60 m

Contractor Name: (None)
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR BOUNDARY ST & PACIFIC HWY ROSEVILLE 2069 NSW
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	//9999
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259881.000
Easting: 331431.000
Latitude: 33°47'16.1"S
Longitude: 151°10'45.3"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113514 ***

WaterNSW
Work Summary

GW113507

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/08/2004
Final Depth: 7.60 m
Drilled Depth: 7.60 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR BOUNDARY ST & PACIFIC HWY ROSEVILLE 2069 NSW
Standing Water Level (m):
GWMA:
GW Zone:
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
CMA Map:
River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259890.000
Easting: 331441.000
Latitude: 33°47'15.8"S
Longitude: 151°10'45.7"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113507 ***

WaterNSW
Work Summary
GW113510

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/08/2004
Final Depth: 7.80 m
Drilled Depth: 7.80 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259895.000
Easting: 331462.000
Latitude: 33°47'15.7"S
Longitude: 151°10'46.6"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113510 ***

WaterNSW
Work Summary

GW113505

Licence: 10BL164807

Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/08/2004

Final Depth: 8.00 m
Drilled Depth: 8.00 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:

Standing Water Level (m):

Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6259873.000
Easting: 331454.000

Latitude: 33°47'16.4"S
Longitude: 151°10'46.2"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113505 ***

WaterNSW
Work Summary

GW113506

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/08/2004
Final Depth: 3.10 m
Drilled Depth: 3.10 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259874.000
Easting: 331455.000
Latitude: 33°47'16.4"S
Longitude: 151°10'46.3"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113506 ***

WaterNSW
Work Summary

GW113513

Licence: 10BL164807

Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/09/2004

Final Depth: 2.80 m
Drilled Depth: 2.80 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:

Standing Water Level (m):

Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6259881.000
Easting: 331465.000

Latitude: 33°47'16.1"S
Longitude: 151°10'46.7"E

GS Map: -

MGA Zone: 56

Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113513 ***

WaterNSW
Work Summary

GW113512

Licence: 10BL164807

Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/08/2004

Final Depth: 8.00 m
Drilled Depth: 8.00 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:

Standing Water Level (m):

Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6259883.000
Easting: 331467.000

Latitude: 33°47'16.1"S
Longitude: 151°10'46.7"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113512 ***

WaterNSW
Work Summary

GW113511

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/09/2004
Final Depth: 8.00 m
Drilled Depth: 8.00 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR BOUNDARY ST & PACIFIC HWY ROSEVILLE 2069 NSW
Standing Water Level (m):
GWMA:
GW Zone:
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
CMA Map:
River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259865.000
Easting: 331458.000
Latitude: 33°47'16.7"S
Longitude: 151°10'46.4"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

***** End of GW113511 *****

WaterNSW
Work Summary

GW113509

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/09/2004
Final Depth: 3.00 m
Drilled Depth: 3.00 m

Contractor Name: Drilltest Pty Ltd
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259874.000
Easting: 331467.000
Latitude: 33°47'16.4"S
Longitude: 151°10'46.7"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113509 ***

WaterNSW
Work Summary

GW113508

Licence: 10BL164807
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/09/2004
Final Depth: 7.50 m
Drilled Depth: 7.50 m

Contractor Name: (None)
Driller: Unkown Unknown
Assistant Driller:

Property: SUCCESS INVESTMENTS PL CNR
BOUNDARY ST & PACIFIC HWY
ROSEVILLE 2069 NSW
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	101//1042439
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1205697

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259873.000
Easting: 331467.000
Latitude: 33°47'16.4"S
Longitude: 151°10'46.7"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

31/07/2014: Nat Carling, 31-July-2014; Added status, drill method, depth & updated work type.

*** End of GW113508 ***

WaterNSW
Work Summary

GW114836

Licence: 10BL604596
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date:
Completion Date: 30/07/2011
Final Depth: 15.00 m
Drilled Depth: 15.00 m

Contractor Name: Macquarie Drilling
Driller: Douglas Stephen Miller
Assistant Driller:

Property: PHIKEL WHOLESALE PTY LTD 989-1015 Pacific Hwy ROSEVILLE 2069 NSW
Standing Water Level (m): 8.800
GWMA:
GW Zone:
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	1//34636
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1240433

Region: 10 - Sydney South Coast
CMA Map:
River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259867.000
Easting: 331484.000
Latitude: 33°47'16.6"S
Longitude: 151°10'47.4"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	15.00	125			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	5.50				
1		Annulus	Waterworn/Rounded	5.50	15.00				Graded
1	1	Casing	Pvc Class 18	0.00	6.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	6.00	15.00	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 5.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
8.80	15.00	6.20	Unknown	8.80					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.60	0.60	COMPACTED GRAVEL / BALLAST	Gravel	
0.60	2.00	1.40	COMPACTED GRAVEL / BALLAST	Gravel	
2.00	2.20	0.20	CLAY LIGHT RED BROWN	Clay	
2.20	3.00	0.80	CLAY WHITE RED	Clay	
3.00	4.50	1.50	CLAY GREY VERY HARD	Clay	
4.50	6.00	1.50	CLAY GREY	Clay	
6.00	9.00	3.00	SHALE GREY VERY HARD CLAY	Shale	
9.00	15.00	6.00	SHALE VERY WEATHERED GREY SHALE	Shale	

Remarks

30/07/2011: Form A Remarks:
Coordinates provided by LAS.
15/06/2015: Nat Carling, 15-June-2015; Updated work type & fixed rock type errors.

*** End of GW114836 ***

WaterNSW
Work Summary

GW114837

Licence: 10BL604596
Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date:
Completion Date: 30/07/2011
Final Depth: 5.00 m
Drilled Depth: 5.00 m

Contractor Name: Macquarie Drilling
Driller: Douglas Stephen Miller
Assistant Driller:

Property: PHIKEL WHOLESALE PTY LTD 989-1015 Pacific Hwy ROSEVILLE 2069 NSW
GWMA:
GW Zone:
Standing Water Level (m): 2.600
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	1//34636
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1240433

Region: 10 - Sydney South Coast
CMA Map:
River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6259818.000
Easting: 331501.000
Latitude: 33°47'18.2"S
Longitude: 151°10'48.0"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CF-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	125			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	2.00				
1		Annulus	Waterworn/Rounded	2.00	5.00				Graded
1	1	Casing	Pvc Class 18	0.00	2.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	2.00	5.00	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 5.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
2.60	5.00	2.40	Unknown	2.60					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	GRAVEL COMPACTED	Gravel	
0.20	1.40	1.20	NON DESTRUCTIVE EXCAVATIONS,GRAVEL	Gravel	
1.40	2.50	1.10	CLAY YELLOW	Clay	
2.50	3.80	1.30	CLAY RED GREY	Clay	
3.80	5.00	1.20	CLAY RED, WEATHERED ROCK	Clay	

Remarks

30/07/2011: Form A Remarks:
Coordinates provided by LAS
15/06/2015: Nat Carling, 15-June-2015; Updated work type & fixed rock type errors.

*** End of GW114837 ***

WaterNSW
Work Summary

GW114838

Licence: 10BL604596

Licence Status: CANCELLED

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date:
Completion Date: 30/07/2011

Final Depth: 9.70 m
Drilled Depth: 9.70 m

Contractor Name: Macquarie Drilling
Driller: Douglas Stephen Miller
Assistant Driller:

Property: PHIKEL WHOLESALE PTY LTD 989-1015 Pacific Hwy ROSEVILLE 2069 NSW
GWMA:
GW Zone:

Standing Water Level (m): 3.900
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	WILLOUGHB	1//34636
Licensed:	CUMBERLA	WILLOUGH	Whole Lot 1//1240433

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6259794.000
Easting: 331524.000

Latitude: 33°47'19.0"S
Longitude: 151°10'48.9"E

GS Map: -

MGA Zone: 56

Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	9.70	125			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	3.70				
1		Annulus	Waterworn/Rounded	3.70	9.70				Graded
1	1	Casing	Pvc Class 18	0.00	3.70	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	3.70	9.70	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 5.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
3.90	9.70	5.80	Unknown	3.90					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	SAND GRAVEL	Sand	
0.20	1.60	1.40	COMPACTED BALLAST,SAND GRAVEL	Sand	
1.60	2.80	1.20	CLAY RED YELLOW	Clay	
2.80	3.90	1.10	CLAY RED GREY	Clay	
3.90	6.00	2.10	CLAY RED/WHITE,SOME WET ROCKS	Clay	
6.00	7.00	1.00	ROCK AND CLAY RED WEATHERED	Rock	
7.00	7.50	0.50	ROCK WHITE WEATHERED	Rock	
7.50	8.00	0.50	SHALE ORANGE WHEATHERED	Shale	
8.00	9.70	1.70	SHALE MUDDY WEATHERED	Shale	

Remarks

30/07/2011: Form A Remarks:
Coordinates provided by LAS.
15/06/2015: Nat Carling, 15-June-2015; Updated work type & fixed rock type errors.

Appendix G – Laboratory Documentation

Sheet 1__ of 1 __

Site:
2-16 Pockley Avenue, Roseville, NSW

Project No:
E26491

Laboratory:
SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

			Sampling		Sample Matrix				Analysis																				
Sample ID	Laboratory ID	Container Type	Date	Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM ^{A} /TRH (including F1, F2, F3, F4)/BTEX/ PAHs/ OCP/OP/PCB/Asbestos	HM ^{A} /TRH (including F1, F2, F3, F4)/ BTEX/PAHs	HM ^{A} /TRH (including F1, F2, F3, F4)/BTEX	Appendix A **(without pH or microbio)**	BTEX	Asbestos	Asbestos Quantification (500ml)	Asbestos 10L field screening	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM ^{A} /pH / EC / Foreign Materials)	Dewatering Suite **(without pH or phenol)**	pH / pH peroxide	HOLD	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM ^{B} / PAH
BH1M	1	S/P/VC/B	20/02/2025	am/pm		X	X													X									
BH2M	2	S/P/VC/B	20/02/2025	am/pm		X	X													X									
BH3M	3	S/P/VC/B	20/02/2025	am/pm		X	X													X									
BH4M		S/P/VC/B	24/02/2025	am/pm		X	X													X									
BH4.1M		S/P/VC/B	24/02/2025	am/pm		X	X					X																	
GW_QD1		S/P/VC	LAB PREP	am/pm		X					X																		
GW_QR1		S/P/VC	LAB PREP	am/pm		X					X																		
GW_QRB1		S/P/VC	LAB PREP	am/pm		X																X							
GW_TS1		VC	LAB PREP	am/pm		X							X																
GW_TB1		VC	LAB PREP	am/pm		X							X																

Comments

HM ^{A}
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM ^{B}
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

☒ Standard
☐ 24 Hours
☐ 48 Hours
☐ 72 Hours
☐ Other____

Container Type:
J = solvent washed, acid rinsed, Teflon sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Teflon Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC November 2024 FORM v.6 - SGS

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI): Amy Nyiri		Received by (SGS):	
Print	Amy Nyiri	Print	
Signature		Signature	
Date	4/03/2025	Date	4/3/25 @ 2:49 pm

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:

1) Please extract the sample today so they are within the holding time

~~2) Please~~ cc Sharon, Amy, Marina

SGS EHS Alexandria Laboratory
SE278616A COC
Received: 04-Mar-2025

SAMPLE RECEIPT ADVICE

SE278616A

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 Site B 2-16 Pockley Street,Rosevi**
Order Number	**E26491**
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
Samples Received	Tue 4/3/2025
Report Due	Tue 11/3/2025
SGS Reference	**SE278616A**

SUBMISSION DETAILS

This is to confirm that 3 samples were received on Tuesday 4/3/2025. Results are expected to be ready by COB Tuesday 11/3/2025. Please quote SGS reference SE278616A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	3 Water	Type of documentation received	COC
Date documentation received	4/3/2025@2:59pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	14.0°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

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

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client EI AUSTRALIA

Project E26491 Site B 2-16 Pockley Street,Rosevi

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Total Cyanide in water by Discrete Analyser	Total Dissolved Solids (TDS) in water	TRH (Total Recoverable Hydrocarbons) in Water	Turbidity	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH1M	1	23	1	1	9	1	11	7
002	BH2M	1	23	1	1	9	1	11	7
003	BH2.1M	1	23	1	1	9	1	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client	EI AUSTRALIA	Project	E26491 Site B 2-16 Pockley Street,Rosevi

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES	Trace Metals (Dissolved) in Water by ICPMS
001	BH1M	1	3	8
002	BH2M	1	3	8
003	BH2.1M	1	3	8

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 Site B 2-16 Pockley Street,Rosevi**
Order Number	**E26491**
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	**SE278616A R0**
Date Received	4/3/2025
Date Reported	10/3/2025

COMMENTS

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

SIGNATORIES

		yingying zhang
Dong LIANG	**Ly Kim HA**	**Ying Ying ZHANG**
Metals/Inorganics Team Leader	Organic Section Head	Laboratory Technician

VOCs in Water [AN433] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.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: 4/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.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: 4/3/2025

			BH1M WATER - 20/2/2025	BH2M WATER - 20/2/2025	BH2.1M WATER - 20/2/2025
PARAMETER	**UOM**	**LOR**	**SE278616A.001**	**SE278616A.002**	**SE278616A.003**
TRH C10-C14	µg/L	50	<50	**110**	<50
TRH C15-C28	µg/L	200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200
TRH >C10-C16	µg/L	60	<60	**120**	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	**120**	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500
TRH C10-C40	µg/L	320	<320	<320	<320

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.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(b&j&k)fluoranthene	μg/L	0.2	<0.2	<0.2	<0.2
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

Conductivity and TDS by Calculation - Water [AN106] Tested: 4/3/2025

			BH1M	BH2M	BH2.1M
			WATER	WATER	WATER
			-	-	-
			20/2/2025	20/2/2025	20/2/2025
PARAMETER	**UOM**	**LOR**	**SE278616A.001**	**SE278616A.002**	**SE278616A.003**
Conductivity @ 25 C	µS/cm	2	540	1400	2100

Total Dissolved Solids (TDS) in water [AN113] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.003
Total Dissolved Solids Dried at 175-185°C	mg/L	10	370	840	1400

Turbidity [AN119] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.003
Turbidity	NTU	0.5	510	29000	9.3

Total Cyanide in water by Discrete Analyser [AN077/AN287] Tested: 6/3/2025

			BH1M	BH2M	BH2.1M
			WATER	WATER	WATER
			-	-	-
			20/2/2025	20/2/2025	20/2/2025
PARAMETER	UOM	LOR	SE278616A.001	SE278616A.002	SE278616A.003
Total Cyanide	mg/L	0.004	<0.004	<0.004	<0.004

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 6/3/2025

			BH1M WATER - 20/2/2025	BH2M WATER - 20/2/2025	BH2.1M WATER - 20/2/2025
PARAMETER	UOM	LOR	SE278616A.001	SE278616A.002	SE278616A.003
Calcium, Ca	mg/L	0.2	7.6	4.1	15
Magnesium, Mg	mg/L	0.1	3.8	2.6	34
Total Hardness by Calculation	mg CaCO3/L	1	35	21	180

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.003
Aluminium	µg/L	5	**130**	**76**	**28**
Arsenic	µg/L	1	<1	<1	**1**
Cadmium	µg/L	0.1	**0.1**	<0.1	<0.1
Chromium	µg/L	1	<1	**2**	<1
Copper	µg/L	1	**32**	**4**	**1**
Lead	µg/L	1	<1	<1	<1
Nickel	µg/L	1	**78**	**12**	**4**
Zinc	µg/L	5	**46**	**23**	**130**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616A.001	BH2M WATER - 20/2/2025 SE278616A.002	BH2.1M WATER - 20/2/2025 SE278616A.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.
AN077	Hydrogen cyanide is liberated from an acidified sample by distillation and purging with air. The hydrogen cyanide gas is then collected by passing it through a sodium hydroxide scrubbing solution. The scrubbing solution will then be analysed for cyanide by the appropriate method.
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.
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.
AN287	A buffered distillate or water sample is treated with chloramine/barbituric acid reagents and the intensity of the colour developed is proportional to the cyanide concentration by DA.
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 Recoveerable 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.

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:

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

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

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

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

Any holder of this document is advised that information contained hereon reflects the Company 's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or

STATEMENT OF QA/QC PERFORMANCE

SE278616A R0

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 Site B 2-16 Pockley Street,Rosevi**
Order Number	**E26491**
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	**SE278616A R0**
Date Received	04 Mar 2025
Date Reported	10 Mar 2025

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	PAH (Polynuclear Aromatic Hydrocarbons) in Water	3 items
	Total Dissolved Solids (TDS) in water	3 items
	TRH (Total Recoverable Hydrocarbons) in Water	3 items
	Turbidity	3 items
Analysis Date	Total Dissolved Solids (TDS) in water	3 items
	Turbidity	3 items
Matrix Spike	Total Cyanide in water by Discrete Analyser	1 item

SAMPLE SUMMARY

Sample counts by matrix	3 Water	Type of documentation received	COC
Date documentation received	4/3/2025@2:59pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	14.0°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339746	20 Feb 2025	04 Mar 2025	20 Mar 2025	04 Mar 2025	20 Mar 2025	04 Mar 2025
BH2M	SE278616A.002	LB339746	20 Feb 2025	04 Mar 2025	20 Mar 2025	04 Mar 2025	20 Mar 2025	04 Mar 2025
BH2.1M	SE278616A.003	LB339746	20 Feb 2025	04 Mar 2025	20 Mar 2025	04 Mar 2025	20 Mar 2025	04 Mar 2025

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339831	20 Feb 2025	04 Mar 2025	20 Mar 2025	05 Mar 2025	20 Mar 2025	06 Mar 2025
BH2M	SE278616A.002	LB339831	20 Feb 2025	04 Mar 2025	20 Mar 2025	05 Mar 2025	20 Mar 2025	06 Mar 2025
BH2.1M	SE278616A.003	LB339831	20 Feb 2025	04 Mar 2025	20 Mar 2025	05 Mar 2025	20 Mar 2025	06 Mar 2025

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339980	20 Feb 2025	04 Mar 2025	19 Aug 2025	06 Mar 2025	19 Aug 2025	06 Mar 2025
BH2M	SE278616A.002	LB339980	20 Feb 2025	04 Mar 2025	19 Aug 2025	06 Mar 2025	19 Aug 2025	06 Mar 2025
BH2.1M	SE278616A.003	LB339980	20 Feb 2025	04 Mar 2025	19 Aug 2025	06 Mar 2025	19 Aug 2025	06 Mar 2025

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339751	20 Feb 2025	04 Mar 2025	27 Feb 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
BH2M	SE278616A.002	LB339751	20 Feb 2025	04 Mar 2025	27 Feb 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
BH2.1M	SE278616A.003	LB339751	20 Feb 2025	04 Mar 2025	27 Feb 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339929	20 Feb 2025	04 Mar 2025	06 Mar 2025	06 Mar 2025	06 Mar 2025	06 Mar 2025
BH2M	SE278616A.002	LB339929	20 Feb 2025	04 Mar 2025	06 Mar 2025	06 Mar 2025	06 Mar 2025	06 Mar 2025
BH2.1M	SE278616A.003	LB339929	20 Feb 2025	04 Mar 2025	06 Mar 2025	06 Mar 2025	06 Mar 2025	06 Mar 2025

Total Dissolved Solids (TDS) in water

Method: ME-(AU)-[ENV]AN113

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339850	20 Feb 2025	04 Mar 2025	27 Feb 2025	05 Mar 2025†	27 Feb 2025	06 Mar 2025†
BH2M	SE278616A.002	LB339850	20 Feb 2025	04 Mar 2025	27 Feb 2025	05 Mar 2025†	27 Feb 2025	06 Mar 2025†
BH2.1M	SE278616A.003	LB339850	20 Feb 2025	04 Mar 2025	27 Feb 2025	05 Mar 2025†	27 Feb 2025	06 Mar 2025†

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339828	20 Feb 2025	04 Mar 2025	19 Aug 2025	05 Mar 2025	19 Aug 2025	06 Mar 2025
BH2M	SE278616A.002	LB339828	20 Feb 2025	04 Mar 2025	19 Aug 2025	05 Mar 2025	19 Aug 2025	06 Mar 2025
BH2.1M	SE278616A.003	LB339828	20 Feb 2025	04 Mar 2025	19 Aug 2025	05 Mar 2025	19 Aug 2025	06 Mar 2025

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339751	20 Feb 2025	04 Mar 2025	27 Feb 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
BH2M	SE278616A.002	LB339751	20 Feb 2025	04 Mar 2025	27 Feb 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
BH2.1M	SE278616A.003	LB339751	20 Feb 2025	04 Mar 2025	27 Feb 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025

Turbidity

Method: ME-(AU)-[ENV]AN119

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339747	20 Feb 2025	04 Mar 2025	21 Feb 2025	04 Mar 2025†	21 Feb 2025	04 Mar 2025†
BH2M	SE278616A.002	LB339747	20 Feb 2025	04 Mar 2025	21 Feb 2025	04 Mar 2025†	21 Feb 2025	04 Mar 2025†
BH2.1M	SE278616A.003	LB339747	20 Feb 2025	04 Mar 2025	21 Feb 2025	04 Mar 2025†	21 Feb 2025	04 Mar 2025†

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339796	20 Feb 2025	04 Mar 2025	06 Mar 2025	04 Mar 2025	06 Mar 2025	05 Mar 2025
BH2M	SE278616A.002	LB339796	20 Feb 2025	04 Mar 2025	06 Mar 2025	04 Mar 2025	06 Mar 2025	05 Mar 2025
BH2.1M	SE278616A.003	LB339796	20 Feb 2025	04 Mar 2025	06 Mar 2025	04 Mar 2025	06 Mar 2025	05 Mar 2025

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616A.001	LB339796	20 Feb 2025	04 Mar 2025	06 Mar 2025	04 Mar 2025	06 Mar 2025	05 Mar 2025
BH2M	SE278616A.002	LB339796	20 Feb 2025	04 Mar 2025	06 Mar 2025	04 Mar 2025	06 Mar 2025	05 Mar 2025
BH2.1M	SE278616A.003	LB339796	20 Feb 2025	04 Mar 2025	06 Mar 2025	04 Mar 2025	06 Mar 2025	05 Mar 2025

SURROGATES

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	70
	BH2M	SE278616A.002	%	40 - 130%	61
	BH2.1M	SE278616A.003	%	40 - 130%	66
d14-p-terphenyl (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	69
	BH2M	SE278616A.002	%	40 - 130%	56
	BH2.1M	SE278616A.003	%	40 - 130%	61
d5-nitrobenzene (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	66
	BH2M	SE278616A.002	%	40 - 130%	56
	BH2.1M	SE278616A.003	%	40 - 130%	57

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	93
	BH2M	SE278616A.002	%	40 - 130%	93
	BH2.1M	SE278616A.003	%	40 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	103
	BH2M	SE278616A.002	%	40 - 130%	103
	BH2.1M	SE278616A.003	%	40 - 130%	106
d8-toluene (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	88
	BH2M	SE278616A.002	%	40 - 130%	88
	BH2.1M	SE278616A.003	%	40 - 130%	89

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	93
	BH2M	SE278616A.002	%	40 - 130%	93
	BH2.1M	SE278616A.003	%	40 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH1M	SE278616A.001	%	60 - 130%	103
	BH2M	SE278616A.002	%	60 - 130%	103
	BH2.1M	SE278616A.003	%	60 - 130%	106
d8-toluene (Surrogate)	BH1M	SE278616A.001	%	40 - 130%	88
	BH2M	SE278616A.002	%	40 - 130%	88
	BH2.1M	SE278616A.003	%	40 - 130%	89

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB339746.001	Conductivity @ 25 C	µS/cm	2	<2

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB339831.001	Mercury	mg/L	0.0001	<0.0001

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result
LB339980.001	Calcium, Ca	mg/L	0.2	<0.2
	Magnesium, Mg	mg/L	0.1	<0.1

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB339751.001	Naphthalene	µg/L	0.1	<0.1
	2-methylnaphthalene	µg/L	0.1	<0.1
	1-methylnaphthalene	µg/L	0.1	<0.1
	Acenaphthylene	µg/L	0.1	<0.1
	Acenaphthene	µg/L	0.1	<0.1
	Fluorene	µg/L	0.1	<0.1
	Phenanthrene	µg/L	0.1	<0.1
	Anthracene	µg/L	0.1	<0.1
	Fluoranthene	µg/L	0.1	<0.1
	Pyrene	µg/L	0.1	<0.1
	Benzo(a)anthracene	µg/L	0.1	<0.1
	Chrysene	µg/L	0.1	<0.1
	Benzo(b&j&k)fluoranthene	µg/L	0.2	<0.2
	Benzo(a)pyrene	µg/L	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
	Dibenzo(ah)anthracene	µg/L	0.1	<0.1
	Benzo(ghi)perylene	µg/L	0.1	<0.1
Surrogates	d5-nitrobenzene (Surrogate)	%	-	60
	2-fluorobiphenyl (Surrogate)	%	-	68
	d14-p-terphenyl (Surrogate)	%	-	68

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result
LB339929.001	Total Cyanide	mg/L	0.004	<0.004

Total Dissolved Solids (TDS) in water

Method: ME-(AU)-[ENV]AN113

Sample Number	Parameter	Units	LOR	Result
LB339850.001	Total Dissolved Solids Dried at 175-185°C	mg/L	10	<10

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB339828.001	Aluminium	µg/L	5	<5
	Arsenic	µg/L	1	<1
	Cadmium	µg/L	0.1	<0.1
	Chromium	µg/L	1	<1
	Copper	µg/L	1	<1
	Lead	µg/L	1	<1
	Nickel	µg/L	1	<1
	Zinc	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Water (continued)

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB339751.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

Turbidity

Method: ME-(AU)-[ENV]AN119

Sample Number	Parameter	Units	LOR	Result
LB339747.001	Turbidity	NTU	0.5	<0.5

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB339796.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene (VOC)*	µg/L	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	99
		d8-toluene (Surrogate)	%	-	86
		Bromofluorobenzene (Surrogate)	%	-	89

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB339796.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	99
		d8-toluene (Surrogate)	%	-	86
		Bromofluorobenzene (Surrogate)	%	-	89

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Conductivity and TDS by Calculation - Water — Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279140.001	LB339746.026	Conductivity @ 25 C	µS/cm	2	3000	2980	15	1

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616A.003	LB339831.014	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	197
SE278780A.004	LB339831.019	Mercury	µg/L	0.0001	0	0.008	200	198

Metals in Water (Dissolved) by ICPOES — Method: ME-(AU)-[ENV]AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339980.014	Calcium, Ca	mg/L	0.2	27.542	27.944	16	1
		Magnesium, Mg	mg/L	0.1	14.113	14.283	16	1

PAH (Polynuclear Aromatic Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020	Naphthalene	µg/L	0.1	0.0241860315	0.0241642965	200	0
		2-methylnaphthalene	µg/L	0.1	0.0196431773	0.0178035083	200	0
		1-methylnaphthalene	µg/L	0.1	0.0227245098	0.0206722889	200	0
		Acenaphthylene	µg/L	0.1	0.0013639565	0.0014983259	200	0
		Acenaphthene	µg/L	0.1	0.0030900908	0.0028710922	200	0
		Fluorene	µg/L	0.1	0.0064121088	0.0060945835	200	0
		Phenanthrene	µg/L	0.1	0.0191031925	0.0194629973	200	0
		Anthracene	µg/L	0.1	0.0010992117	0.0014042273	200	0
		Fluoranthene	µg/L	0.1	0.0013388814	0.0024756405	200	0
		Pyrene	µg/L	0.1	0.0026785340	0.0026152007	200	0
		Benzo(a)anthracene	µg/L	0.1	0.0157938540	0.0159991979	200	0
		Chrysene	µg/L	0.1	0.0179820378	0.0182727106	200	0
		Benzo(b&j)fluoranthene	µg/L	0.1	0.0019887377	0.0019685906	200	0
		Benzo(k)fluoranthene	µg/L	0.1	0.0023723236	0.0019185620	200	0
		Benzo(b&j&k)fluoranthene	µg/L	0.2	0.0043610614	0.0038871526	200	0
		Benzo(a)pyrene	µg/L	0.1	0.0004955835	0.0007465806	200	0
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	0.0004653279	0.0005863445	200	0
		Dibenzo(ah)anthracene	µg/L	0.1	0.0003277463	0.0002145123	200	0
		Benzo(ghi)perylene	µg/L	0.1	0.0021482210	0.0021289063	200	0
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.2672350315	0.2655822035	30	1
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.2915633607	0.2910770993	30	0
		d14-p-terphenyl (Surrogate)	µg/L	-	0.3017034482	0.3093267074	30	2

Total Dissolved Solids (TDS) in water — Method: ME-(AU)-[ENV]AN113

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339850.013	Total Dissolved Solids Dried at 175-185°C	mg/L	10	50.000000000	82.000000000	16	4
SE279195.001	LB339850.021	Total Dissolved Solids Dried at 175-185°C	mg/L	10	93.000000000	93.999999999	17	0

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616A.003	LB339828.014	Aluminium	µg/L	5	28	28	33	1
		Arsenic	µg/L	1	1	1	91	0
		Cadmium	µg/L	0.1	<0.1	<0.1	200	0
		Chromium	µg/L	1	<1	<1	136	0
		Copper	µg/L	1	1	1	110	1
		Lead	µg/L	1	<1	<1	200	0
		Nickel	µg/L	1	4	4	41	1
		Zinc	µg/L	5	130	130	19	0
SE279219.008	LB339828.022	Arsenic	µg/L	1	0.004	0.008	200	0
		Cadmium	µg/L	0.1	-0.002	-0.001	200	0
		Chromium	µg/L	1	0.133	0.142	200	0
		Copper	µg/L	1	0.893	0.938	124	0
		Lead	µg/L	1	0.079	0.097	200	0

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279219.008	LB339828.022		Nickel	µg/L	1	0.058	0.338	200	0
			Zinc	µg/L	5	7.393	7.76	81	5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		TRH C10-C14	µg/L	50	0	0	200	0
			TRH C15-C28	µg/L	200	0	0	200	0
			TRH C29-C36	µg/L	200	0	0	200	0
			TRH C37-C40	µg/L	200	0	0	200	0
			TRH C10-C40	µg/L	320	0	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	0	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	-0.1283582721	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	0	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	0	0	200	0
SE278780A.004	LB339751.019		TRH C10-C14	µg/L	50	0	0	200	0
			TRH C15-C28	µg/L	200	0	0	200	0
			TRH C29-C36	µg/L	200	0	0	200	0
			TRH C37-C40	µg/L	200	0	0	200	0
			TRH C10-C40	µg/L	320	0	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	0	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	-0.0300387604	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	0	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	0	0	200	0

Turbidity

Method: ME-(AU)-[ENV]AN119

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339747.015		Turbidity	NTU	0.5	205	202	15	1

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616A.003	LB339796.015	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	0.0590587808	200	0
			Toluene	µg/L	0.5	<0.5	0.3096769569	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.0391398485	200	0
			m/p-xylene	µg/L	1	<1	0.1039072400	200	0
			o-xylene	µg/L	0.5	<0.5	0.0361549489	200	0
		Polycyclic	Naphthalene (VOC)*	µg/L	0.5	<0.5	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	11	11.1181979655	30	5
			d8-toluene (Surrogate)	µg/L	-	8.9	9.6880654190	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	9.3	11.2104081008	30	19
		Totals	Total BTEX	µg/L	3	<3	0	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616A.003	LB339796.015		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	11	11.1181979655	30	5
			d8-toluene (Surrogate)	µg/L	-	8.9	9.6880654190	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	9.3	11.2104081008	30	19
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.0590587808	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339746.002	Conductivity @ 25 C	µS/cm	2	290	303	90 - 110	94

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339980.002	Calcium, Ca	mg/L	0.2	50	50.5	80 - 120	99
	Magnesium, Mg	mg/L	0.1	46	50.5	80 - 120	91

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002		Naphthalene	µg/L	0.1	44	40	60 - 140	109
		Acenaphthylene	µg/L	0.1	49	40	60 - 140	122
		Acenaphthene	µg/L	0.1	49	40	60 - 140	122
		Phenanthrene	µg/L	0.1	49	40	60 - 140	123
		Anthracene	µg/L	0.1	45	40	60 - 140	113
		Fluoranthene	µg/L	0.1	48	40	60 - 140	120
		Pyrene	µg/L	0.1	46	40	60 - 140	116
		Benzo(a)pyrene	µg/L	0.1	54	40	60 - 140	136
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.34	0.5	40 - 130	68
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.43	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	µg/L	-	0.35	0.5	40 - 130	70

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339929.002	Total Cyanide	mg/L	0.004	0.023	0.025	80 - 120	92

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339828.002	Aluminium	µg/L	5	21	20	80 - 120	104
	Arsenic	µg/L	1	20	20	80 - 120	98
	Cadmium	µg/L	0.1	23	20	80 - 120	114
	Chromium	µg/L	1	22	20	80 - 120	112
	Copper	µg/L	1	23	20	80 - 120	115
	Lead	µg/L	1	21	20	80 - 120	105
	Nickel	µg/L	1	22	20	80 - 120	108
	Zinc	µg/L	5	24	20	80 - 120	119

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002		TRH C10-C14	µg/L	50	1200	1200	60 - 140	101
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	113
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	118
	TRH F Bands	TRH >C10-C16	µg/L	60	1300	1200	60 - 140	108
		TRH >C16-C34 (F3)	µg/L	500	1400	1200	60 - 140	118
		TRH >C34-C40 (F4)	µg/L	500	720	600	60 - 140	120

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339796.002	Monocyclic Aromatic	Benzene	µg/L	0.5	56	45.45	60 - 140	123
		Toluene	µg/L	0.5	62	45.45	60 - 140	137
		Ethylbenzene	µg/L	0.5	61	45.45	60 - 140	133
		m/p-xylene	µg/L	1	110	90.9	60 - 140	126
		o-xylene	µg/L	0.5	59	45.45	60 - 140	130
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.6	10	60 - 140	96
		d8-toluene (Surrogate)	µg/L	-	9.6	10	70 - 130	96
		Bromofluorobenzene (Surrogate)	µg/L	-	12	10	70 - 130	116

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

LABORATORY CONTROL SAMPLES

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339796.002		TRH C6-C10	µg/L	50	880	946.63	60 - 140	92
		TRH C6-C9	µg/L	40	600	818.71	60 - 140	74
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.6	10	60 - 140	96
		d8-toluene (Surrogate)	µg/L	-	9.6	10	70 - 130	96
		Bromofluorobenzene (Surrogate)	µg/L	-	12	10	70 - 130	116
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	520	639.67	60 - 140	82

MATRIX SPIKES

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.001	LB339831.004	Mercury	mg/L	0.0001	0.0018	0.004	0.008	91

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.001	LB339980.004	Calcium, Ca	mg/L	0.2	91	31.22	50.5	118
		Magnesium, Mg	mg/L	0.1	93	37.112	50.5	111

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279322.001	LB339929.015	Total Cyanide	mg/L	0.004	0.18	0.001305	0.025	699 †

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.001	LB339828.004	Aluminium	µg/L	5	26	6.461	20	98
		Arsenic	µg/L	1	22	0.657	20	105
		Cadmium	µg/L	0.1	20	0.114	20	101
		Chromium	µg/L	1	21	0.417	20	101
		Copper	µg/L	1	21	3.33	20	89
		Lead	µg/L	1	20	0.216	20	97
		Nickel	µg/L	1	41	24.075	20	85
		Zinc	µg/L	5	64	48.126	20	78

MATRIX SPIKE DUPLICATES

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

Sheet 1__ of 1 __

Site: 2-16 Pockley Avenue, Roseville, NSW

Project No: E26491

Laboratory:

SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM ^A /TRH (including F1, F2, F3, F4)/BTEX/ PAHs/ OCP/OP/PCB/Asbestos	HM ^A /TRH (including F1, F2, F3, F4)/ BTEX/PAHs	HM ^A /TRH (including F1, F2, F3, F4)/BTEX	Appendix A **(without pH or microbio)**	BTEX	Asbestos	Asbestos Quantification (500ml)	Asbestos 10L field screening	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM ^A /pH / EC / Foreign Materials)	Dewatering Suite **(without pH or phenol)**	pH / pH peroxide	HOLD	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM ^B / PAH
BH1M		S/P/VC/B	20/02/2025	am/pm		X	X													X									
BH2M		S/P/VC/B	20/02/2025	am/pm		X	X													X									
BH3M		S/P/VC/B	20/02/2025	am/pm		X	X													X									
BH4M	1	S/P/VC/B	24/02/2025	am/pm		X	X													X									
BH4.1M	2	S/P/VC/B	24/02/2025	am/pm		X	X					X																	
GW_QD1	3	S/P/VC	LAB PREP	am/pm		X					X																		
GW_QR1	4	S/P/VC	LAB PREP	am/pm		X					X																		
GW_QRB1		S/P/VC	LAB PREP	am/pm		X																X							
GW_TS1	5	VC	LAB PREP	am/pm		X							X																
GW_TB1	6	VC	LAB PREP	am/pm		X							X																

Comments

HM ^A
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM ^B
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- ☒ Standard
- ☐ 24 Hours
- ☐ 48 Hours
- ☐ 72 Hours
- ☐ Other______

Container Type:
J = solvent washed, acid rinsed, Teflon sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Teflon Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI): Amy Nyiri	Received by (SGS):
Print Amy Nyiri	Print
Signature	Signature
Date 4/03/2025	Date 4/3/25 @ 2.49

Sampler's Comments:

1) **Please extract the sample today so they are within the holding time**

~~2) Please~~ cc Sharon, Amy, Marina

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

SGS Alexandria Environmental
SE278780A COC
Received: 04-Mar-2025

SAMPLE RECEIPT ADVICE

SE278780A

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 2-16 Pockley Street,RosevilleNSW**
Order Number	**E26491**
Samples	6

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
Samples Received	Tue 4/3/2025
Report Due	Tue 11/3/2025
SGS Reference	**SE278780A**

SUBMISSION DETAILS

This is to confirm that 6 samples were received on Tuesday 4/3/2025. Results are expected to be ready by COB Tuesday 11/3/2025. Please quote SGS reference SE278780A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	6 Water	Type of documentation received	COC
Date documentation received	4/3/2025@2:59pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	10.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

GW_QRB1 on Hold.

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client EI AUSTRALIA

Project E26491 2-16 Pockley Street,RosevilleNSW

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Total Dissolved Solids (TDS) in water	Total Phenolics in Water	TRH (Total Recoverable Hydrocarbons) in Water	Turbidity	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH4M	1	23	1	-	9	1	11	7
002	BH4.1M	1	23	1	1	9	1	84	7
003	GW_QD1	-	-	-	-	9	-	11	7
004	GW_QR1	-	-	-	-	9	-	11	7
005	GW_TS1	-	-	-	-	-	-	9	-
006	GW_TB1	-	-	-	-	-	-	11	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE278780A

CLIENT DETAILS

Client EI AUSTRALIA

Project E26491 2-16 Pockley Street,RosevilleNSW

SUMMARY OF ANALYSIS

No.	Sample ID	Full 8270 SVOC in Water	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES	OC Pesticides in Water	OP Pesticides in Water	PCBs in Water	Total Cyanide in water by Discrete Analyser	Trace Metals (Dissolved) in Water by ICPMS
001	BH4M	-	1	3	-	-	-	1	8
002	BH4.1M	167	1	9	26	13	9	-	21
003	GW_QD1	-	1	-	-	-	-	-	7
004	GW_QR1	-	1	-	-	-	-	-	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE278780A

CLIENT DETAILS

Client EI AUSTRALIA

Project E26491 2-16 Pockley Street,RosevilleNSW

SUMMARY OF ANALYSIS

No.	Sample ID	Alkalinity	Ammonia Nitrogen by Discrete Analyser	Anions by Ion Chromatography in Water	Calculation of Anion-Cation Balance	Dissolved Oxygen by Membrane Electrode	Forms of Carbon	Nitrite in Water	TKN Kjeldahl Digestion by Discrete Analyser	Total and Volatile Suspended Solids (TSS /	Total Phosphorus by Kjeldahl Digestion DA in
002	BH4.1M	10	1	5	4	3	1	2	2	1	1

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client	EI AUSTRALIA	Project	E26491 2-16 Pockley Street,RosevilleNSW

SUMMARY OF ANALYSIS

No.	Sample ID	Filterable Reactive Phosphorus (FRP)	Per- and Polyfluoroalkyl Substances (PFAS) in	Redox Potential (Eh) in water
002	BH4.1M	1	60	2

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 2-16 Pockley Street,RosevilleNSW**
Order Number	**E26491**
Samples	6

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	**SE278780A R0**
Date Received	4/3/2025
Date Reported	11/3/2025

COMMENTS

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

SIGNATORIES

			yingying zhang
Akheeqar BENIAMEEN	**Dong LIANG**	**Ly Kim HA**	**Ying Ying ZHANG**
Chemist	Metals/Inorganics Team Leader	Organic Section Head	Laboratory Technician

VOCs in Water [AN433] Tested: 4/3/2025

			BH4M	BH4.1M	GW_QD1	GW_QR1	GW_TS1
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			24/2/2025	24/2/2025	24/2/2025	24/2/2025	24/2/2025
PARAMETER	**UOM**	**LOR**	**SE278780A.001**	**SE278780A.002**	**SE278780A.003**	**SE278780A.004**	**SE278780A.005**
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[96%]
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[94%]
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[100%]
m/p-xylene	µg/L	1	<1	<1	<1	<1	[84%]
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[84%]
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	-
Total BTEX	µg/L	3	<3	<3	<3	<3	-
Naphthalene (VOC)*	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[83%]
Dichlorodifluoromethane (CFC-12)	µg/L	5	-	<5	-	-	-
Chloromethane	µg/L	5	-	<5	-	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-	<0.3	-	-	-
Bromomethane	µg/L	10	-	<10	-	-	-
Chloroethane	µg/L	5	-	<5	-	-	-
Trichlorofluoromethane	µg/L	1	-	<1	-	-	-
Acetone (2-propanone)	µg/L	10	-	<10	-	-	-
Iodomethane	µg/L	5	-	<5	-	-	-
1,1-dichloroethene	µg/L	0.5	-	<0.5	-	-	-
Acrylonitrile	µg/L	0.5	-	<0.5	-	-	-
Dichloromethane (Methylene chloride)	µg/L	5	-	<5	-	-	-
Allyl chloride	µg/L	2	-	<2.0	-	-	-
Carbon disulfide	µg/L	2	-	**2.9**	-	-	-
trans-1,2-dichloroethene	µg/L	0.5	-	<0.5	-	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	0.5	-	<0.5	-	-	-
1,1-dichloroethane	µg/L	0.5	-	<0.5	-	-	-
Vinyl acetate*	µg/L	10	-	<10	-	-	-
MEK (2-butanone)	µg/L	10	-	<10	-	-	-
cis-1,2-dichloroethene	µg/L	0.5	-	<0.5	-	-	-
Bromochloromethane	µg/L	0.5	-	<0.5	-	-	-
Chloroform (THM)	µg/L	0.5	-	**6.2**	-	-	-
2,2-dichloropropane	µg/L	0.5	-	<0.5	-	-	-
1,2-dichloroethane	µg/L	0.5	-	<0.5	-	-	-
1,1,1-trichloroethane	µg/L	0.5	-	<0.5	-	-	-
1,1-dichloropropene	µg/L	0.5	-	<0.5	-	-	-
Carbon tetrachloride	µg/L	0.5	-	<0.5	-	-	-
Dibromomethane	µg/L	0.5	-	<0.5	-	-	-
1,2-dichloropropane	µg/L	0.5	-	<0.5	-	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-	<0.5	-	-	-
2-nitropropane	µg/L	100	-	<100	-	-	-
Bromodichloromethane (THM)	µg/L	0.5	-	<0.5	-	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-	<5	-	-	-
cis-1,3-dichloropropene	µg/L	0.5	-	<0.5	-	-	-
trans-1,3-dichloropropene	µg/L	0.5	-	<0.5	-	-	-
1,1,2-trichloroethane	µg/L	0.5	-	<0.5	-	-	-
1,3-dichloropropane	µg/L	0.5	-	<0.5	-	-	-
Dibromochloromethane (THM)	µg/L	0.5	-	<0.5	-	-	-
2-hexanone (MBK)	µg/L	5	-	<5	-	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	-	<0.5	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-	<0.5	-	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-	<0.5	-	-	-
Chlorobenzene	µg/L	0.5	-	<0.5	-	-	-
Bromoform (THM)	µg/L	0.5	-	<0.5	-	-	-
Styrene (Vinyl benzene)	µg/L	0.5	-	<0.5	-	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-	<0.5	-	-	-
1,2,3-trichloropropane	µg/L	0.5	-	<0.5	-	-	-
trans-1,4-dichloro-2-butene	µg/L	1	-	<1	-	-	-
Isopropylbenzene (Cumene)	µg/L	0.5	-	<0.5	-	-	-

VOCs in Water [AN433] Tested: 4/3/2025 (continued)

			BH4M	BH4.1M	GW_QD1	GW_QR1	GW_TS1
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			24/2/2025	24/2/2025	24/2/2025	24/2/2025	24/2/2025
PARAMETER	UOM	LOR	SE278780A.001	SE278780A.002	SE278780A.003	SE278780A.004	SE278780A.005
Bromobenzene	µg/L	0.5	-	<0.5	-	-	-
n-propylbenzene	µg/L	0.5	-	<0.5	-	-	-
2-chlorotoluene	µg/L	0.5	-	<0.5	-	-	-
4-chlorotoluene	µg/L	0.5	-	<0.5	-	-	-
1,3,5-trimethylbenzene	µg/L	0.5	-	<0.5	-	-	-
tert-butylbenzene	µg/L	0.5	-	<0.5	-	-	-
1,2,4-trimethylbenzene	µg/L	0.5	-	<0.5	-	-	-
sec-butylbenzene	µg/L	0.5	-	<0.5	-	-	-
1,3-dichlorobenzene	µg/L	0.5	-	<0.5	-	-	-
1,4-dichlorobenzene	µg/L	0.3	-	<0.3	-	-	-
p-isopropyltoluene	µg/L	0.5	-	<0.5	-	-	-
1,2-dichlorobenzene	µg/L	0.5	-	<0.5	-	-	-
n-butylbenzene	µg/L	0.5	-	<0.5	-	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-	<0.5	-	-	-
1,2,4-trichlorobenzene	µg/L	0.5	-	<0.5	-	-	-
Hexachlorobutadiene	µg/L	0.5	-	<0.5	-	-	-
1,2,3-trichlorobenzene	µg/L	0.5	-	<0.5	-	-	-
Total VOC	µg/L	10	-	**10**	-	-	-
Total Halogenated Hydrocarbons	µg/L	10	-	<10	-	-	-
Total Chlorinated Hydrocarbons VIC EPA	µg/L	0.5	-	**7.6**	-	-	-
Total MAH	µg/L	0.5	-	<0.5	-	-	-
Total Chlorinated Hydrocarbons	µg/L	10	-	<10	-	-	-
Total Other Chlorinated Hydrocarbons VIC EPA	µg/L	0.5	-	**7.6**	-	-	-
Total THM	µg/L	2	-	**6**	-	-	-
Total MAH VIC EPA (BTEX+Styrene)	µg/L	0.5	-	<0.5	-	-	-

VOCs in Water [AN433] Tested: 4/3/2025 (continued)

PARAMETER	UOM	LOR	GW_TB1 WATER - 24/2/2025 SE278780A.006
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene (VOC)*	µg/L	0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	-
Chloromethane	µg/L	5	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-
Bromomethane	µg/L	10	-
Chloroethane	µg/L	5	-
Trichlorofluoromethane	µg/L	1	-
Acetone (2-propanone)	µg/L	10	-
Iodomethane	µg/L	5	-
1,1-dichloroethene	µg/L	0.5	-
Acrylonitrile	µg/L	0.5	-
Dichloromethane (Methylene chloride)	µg/L	5	-
Allyl chloride	µg/L	2	-
Carbon disulfide	µg/L	2	-
trans-1,2-dichloroethene	µg/L	0.5	-
MtBE (Methyl-tert-butyl ether)	µg/L	0.5	-
1,1-dichloroethane	µg/L	0.5	-
Vinyl acetate*	µg/L	10	-
MEK (2-butanone)	µg/L	10	-
cis-1,2-dichloroethene	µg/L	0.5	-
Bromochloromethane	µg/L	0.5	-
Chloroform (THM)	µg/L	0.5	-
2,2-dichloropropane	µg/L	0.5	-
1,2-dichloroethane	µg/L	0.5	-
1,1,1-trichloroethane	µg/L	0.5	-
1,1-dichloropropene	µg/L	0.5	-
Carbon tetrachloride	µg/L	0.5	-
Dibromomethane	µg/L	0.5	-
1,2-dichloropropane	µg/L	0.5	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-
2-nitropropane	µg/L	100	-
Bromodichloromethane (THM)	µg/L	0.5	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-
cis-1,3-dichloropropene	µg/L	0.5	-
trans-1,3-dichloropropene	µg/L	0.5	-
1,1,2-trichloroethane	µg/L	0.5	-
1,3-dichloropropane	µg/L	0.5	-
Dibromochloromethane (THM)	µg/L	0.5	-
2-hexanone (MBK)	µg/L	5	-
1,2-dibromoethane (EDB)	µg/L	0.5	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-
Chlorobenzene	µg/L	0.5	-
Bromoform (THM)	µg/L	0.5	-
Styrene (Vinyl benzene)	µg/L	0.5	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-
1,2,3-trichloropropane	µg/L	0.5	-
trans-1,4-dichloro-2-butene	µg/L	1	-
Isopropylbenzene (Cumene)	µg/L	0.5	-

VOCs in Water [AN433] Tested: 4/3/2025 (continued)

PARAMETER	UOM	LOR	GW_TB1 WATER - 24/2/2025 SE278780A.006
Bromobenzene	µg/L	0.5	-
n-propylbenzene	µg/L	0.5	-
2-chlorotoluene	µg/L	0.5	-
4-chlorotoluene	µg/L	0.5	-
1,3,5-trimethylbenzene	µg/L	0.5	-
tert-butylbenzene	µg/L	0.5	-
1,2,4-trimethylbenzene	µg/L	0.5	-
sec-butylbenzene	µg/L	0.5	-
1,3-dichlorobenzene	µg/L	0.5	-
1,4-dichlorobenzene	µg/L	0.3	-
p-isopropyltoluene	µg/L	0.5	-
1,2-dichlorobenzene	µg/L	0.5	-
n-butylbenzene	µg/L	0.5	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-
1,2,4-trichlorobenzene	µg/L	0.5	-
Hexachlorobutadiene	µg/L	0.5	-
1,2,3-trichlorobenzene	µg/L	0.5	-
Total VOC	µg/L	10	-
Total Halogenated Hydrocarbons	µg/L	10	-
Total Chlorinated Hydrocarbons VIC EPA	µg/L	0.5	-
Total MAH	µg/L	0.5	-
Total Chlorinated Hydrocarbons	µg/L	10	-
Total Other Chlorinated Hydrocarbons VIC EPA	µg/L	0.5	-
Total THM	µg/L	2	-
Total MAH VIC EPA (BTEX+Styrene)	µg/L	0.5	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002	GW_QD1 WATER - 24/2/2025 SE278780A.003	GW_QR1 WATER - 24/2/2025 SE278780A.004
TRH C6-C9	µg/L	40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002	GW_QD1 WATER - 24/2/2025 SE278780A.003	GW_QR1 WATER - 24/2/2025 SE278780A.004
TRH C10-C14	µg/L	50	<50	<50	<50	<50
TRH C15-C28	µg/L	200	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	<60	<60	<60	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500
TRH C10-C40	µg/L	320	<320	<320	<320	<320

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002
Naphthalene	µg/L	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(b&j&k)fluoranthene	µg/L	0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1

Total Phenolics in Water [AN295] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Total Phenols	mg/L	0.05	<0.05

Conductivity and TDS by Calculation - Water [AN106] Tested: 4/3/2025

			BH4M WATER - 24/2/2025	BH4.1M WATER - 24/2/2025
PARAMETER	UOM	LOR	SE278780A.001	SE278780A.002
Conductivity @ 25 C	µS/cm	2	850	820

Total Dissolved Solids (TDS) in water [AN113] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002
Total Dissolved Solids Dried at 175-185°C	mg/L	10	500	500

Turbidity [AN119] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002
Turbidity	NTU	0.5	190	210

Total Cyanide in water by Discrete Analyser [AN077/AN287] Tested: 5/3/2025

			BH4M
			WATER
			-
			24/2/2025
PARAMETER	UOM	LOR	SE278780A.001
Total Cyanide	mg/L	0.004	<0.004

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 6/3/2025

			BH4M WATER - 24/2/2025	BH4.1M WATER - 24/2/2025
PARAMETER	**UOM**	**LOR**	**SE278780A.001**	**SE278780A.002**
Calcium, Ca	mg/L	0.2	6.8	28
Magnesium, Mg	mg/L	0.1	17	14
Total Hardness by Calculation	mg CaCO3/L	1	86	130
Sodium Adsorption Ratio	No unit	0.2	-	4.7
Sodium, Na	mg/L	0.5	-	120
Potassium, K	mg/L	0.1	-	52
Lithium, Li	mg/L	0.005	-	0.024
Silicon, Si*	mg/L	0.05	-	8.3
Soluble Silicon as Silica, SiO2*	mg/L	0.1	-	18

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002	GW_QD1 WATER - 24/2/2025 SE278780A.003	GW_QR1 WATER - 24/2/2025 SE278780A.004
Aluminium	µg/L	5	**25**	**19**	-	-
Arsenic	µg/L	1	<1	<1	<1	<1
Cadmium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Chromium	µg/L	1	<1	<1	<1	<1
Copper	µg/L	1	<1	<1	<1	<1
Lead	µg/L	1	<1	<1	<1	<1
Nickel	µg/L	1	**27**	**2**	**4**	<1
Zinc	µg/L	5	**48**	**19**	**8**	<5
Silver	µg/L	1	-	<1	-	-
Antimony	µg/L	1	-	<1	-	-
Barium	µg/L	1	-	**48**	-	-
Beryllium	µg/L	1	-	<1	-	-
Boron	µg/L	5	-	**49**	-	-
Cobalt	µg/L	1	-	<1	-	-
Iron	µg/L	5	-	**6600**	-	-
Manganese	µg/L	1	-	**920**	-	-
Molybdenum	µg/L	1	-	<1	-	-
Selenium	µg/L	1	-	**5**	-	-
Strontium	µg/L	1	-	**60**	-	-
Uranium	µg/L	1	-	<1	-	-
Vanadium	µg/L	1	-	<1	-	-

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780A.001	BH4.1M WATER - 24/2/2025 SE278780A.002	GW_QD1 WATER - 24/2/2025 SE278780A.003	GW_QR1 WATER - 24/2/2025 SE278780A.004
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001

OC Pesticides in Water [AN420] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Alpha BHC	µg/L	0.1	<0.1
Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
Beta BHC	µg/L	0.1	<0.1
Lindane (gamma BHC)	µg/L	0.1	<0.1
Delta BHC	µg/L	0.1	<0.1
Heptachlor	µg/L	0.1	<0.1
Aldrin	µg/L	0.1	<0.1
Heptachlor epoxide	µg/L	0.1	<0.1
Gamma Chlordane	µg/L	0.1	<0.1
Alpha Chlordane	µg/L	0.1	<0.1
Alpha Endosulfan	µg/L	0.1	<0.1
p,p'-DDE	µg/L	0.1	<0.1
Dieldrin	µg/L	0.1	<0.1
Endrin	µg/L	0.1	<0.1
Beta Endosulfan	µg/L	0.1	<0.1
p,p'-DDD	µg/L	0.1	<0.1
Endrin aldehyde	µg/L	0.1	<0.1
Endosulfan sulphate	µg/L	0.1	<0.1
p,p'-DDT	µg/L	0.1	<0.1
Endrin ketone	µg/L	0.1	<0.1
Methoxychlor	µg/L	0.1	<0.1
Mirex	µg/L	0.1	<0.1
Total OC	µg/L	1	<1
Total OC	µg/L	1	<1
Total Other OC VIC EPA	µg/L	1	<1

OP Pesticides in Water [AN420] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Azinphos-methyl	µg/L	0.2	<0.2
Bromophos Ethyl	µg/L	0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
Diazinon (Dimpylate)	µg/L	0.5	<0.5
Dichlorvos	µg/L	0.5	<0.5
Dimethoate	µg/L	0.5	<0.5
Ethion	µg/L	0.2	<0.2
Fenitrothion	µg/L	0.2	<0.2
Malathion	µg/L	0.2	<0.2
Methidathion	µg/L	0.5	<0.5
Parathion-ethyl (Parathion)	µg/L	0.2	<0.2

PCBs in Water [AN420] Tested: 4/3/2025

			BH4.1M WATER - 24/2/2025
PARAMETER	UOM	LOR	SE278780A.002
Arochlor 1016	µg/L	1	<1
Arochlor 1221	µg/L	1	<1
Arochlor 1232	µg/L	1	<1
Arochlor 1242	µg/L	1	<1
Arochlor 1248	µg/L	1	<1
Arochlor 1254	µg/L	1	<1
Arochlor 1260	µg/L	1	<1
Total Arochlors*	µg/L	5	<5

Full 8270 SVOC in Water [AN420] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Acenaphthene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(b&j&k)fluoranthene	µg/L	0.2	<0.2
Benzo(k)fluoranthene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
Naphthalene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
2-acetylaminofluorene	µg/L	0.5	<0.5
7,12-dimethyl-benz(a)anthracene	µg/L	0.5	<0.5
3-methylcholanthrene	µg/L	0.5	<0.5
Aldrin	µg/L	0.1	<0.1
Alpha-BHC	µg/L	0.1	<0.1
Beta-BHC	µg/L	0.1	<0.1
Delta-BHC	µg/L	0.1	<0.1
Gamma-BHC (Lindane)	µg/L	0.1	<0.1
p,p-DDD	µg/L	0.1	<0.1
p,p-DDE	µg/L	0.1	<0.1
p,p-DDT	µg/L	0.1	<0.1
Dieldrin	µg/L	0.1	<0.1
Alpha-endosulfan	µg/L	0.1	<0.1
Beta-endosulfan	µg/L	0.1	<0.1
Endosulfan sulphate	µg/L	0.1	<0.1
Endrin	µg/L	0.1	<0.1
Heptachlor	µg/L	0.1	<0.1
Heptachlor epoxide	µg/L	0.1	<0.1
Methoxychlor	µg/L	0.1	<0.1
Mirex	µg/L	0.1	<0.1
Alpha-chlordane	µg/L	0.1	<0.1
Gamma-chlordane	µg/L	0.1	<0.1
Endrin ketone	µg/L	0.1	<0.1
Azinphos-methyl (Guthion)	µg/L	0.2	<0.2
Bromophos ethyl	µg/L	0.2	<0.2
Carbophenothion	µg/L	0.5	<0.5
Chlorfenvinphos-cis	µg/L	5	<5
Chlorfenvinphos-trans	µg/L	0.5	<0.5
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
Chlorpyrifos-methyl	µg/L	0.5	<0.5
Co-Ral (Coumaphos)	µg/L	0.5	<0.5
Diazinon (Dimpylate)	µg/L	0.5	<0.5
Dichlorvos	µg/L	0.5	<0.5
Demeton-S-methyl	µg/L	0.5	<0.5
Dimethoate	µg/L	0.5	<0.5
Disulfoton (Di-syston)	µg/L	0.5	<0.5
EPN*	µg/L	0.5	<0.5

Full 8270 SVOC in Water [AN420] Tested: 4/3/2025 (continued)

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Ethion	µg/L	0.2	<0.2
Ethoprophos (ethoprop or prophos)	µg/L	0.5	<0.5
Famphur (Famophos)	µg/L	0.5	<0.5
Fenamiphos (Phenamiphos)	µg/L	0.5	<0.5
Fenchlorophos (Ronnel)	µg/L	0.5	<0.5
Fenitrothion	µg/L	0.2	<0.2
Fenthion	µg/L	0.5	<0.5
Malathion (Maldison)	µg/L	0.2	<0.2
Methidathion	µg/L	0.5	<0.5
Mevinphos-cis/trans	µg/L	1	<1
o,o,o-triethyl phosphorothioate	µg/L	0.5	<0.5
Parathion ethyl (Parathion)	µg/L	0.2	<0.2
Parathion methyl	µg/L	0.5	<0.5
Phorate	µg/L	0.5	<0.5
Pirimiphos-ethyl	µg/L	0.5	<0.5
Pirimiphos-methyl	µg/L	0.5	<0.5
Profenofos	µg/L	0.5	<0.5
Prothiophos (Tokuthion)*	µg/L	0.5	<0.5
Sulfotepp	µg/L	0.5	<0.5
Tetrachlorvinphos (Stirophos)*	µg/L	0.5	<0.5
PCB Congener C28	µg/L	0.1	<0.1
PCB Congener C52	µg/L	0.1	<0.1
PCB Congener C101	µg/L	0.1	<0.1
PCB Congener C118	µg/L	0.1	<0.1
PCB Congener C138	µg/L	0.1	<0.1
PCB Congener C153	µg/L	0.1	<0.1
PCB Congener C180	µg/L	0.1	<0.1
Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
1,2-dichlorobenzene	µg/L	0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5
1,4-dichlorobenzene	µg/L	0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5
Hexachlorocyclopentadiene	µg/L	2	<2
Hexachloroethane	µg/L	0.5	<0.5
Hexachloroproprene	µg/L	0.5	<0.5
Pentachlorobenzene	µg/L	0.5	<0.5
Pentachloroethane	µg/L	0.5	<0.5
1,2,3,5 and 1,2,4,5 -tetrachlorobenzene	µg/L	1	<1
1,2,3,4-tetrachlorobenzene	µg/L	0.5	<0.5
1/2-Chloronaphthalene	µg/L	1	<1
1,2,4-trichlorobenzene	µg/L	0.5	<0.5
Bis(2-ethylhexyl)phthalate	µg/L	10	<10
Bis(2-ethylhexyl)adipate	µg/L	1	<1
Butyl benzyl phthalate	µg/L	1	<1
Di-n-butyl phthalate	µg/L	10	<10
Diethyl phthalate	µg/L	5	<5
Dimethyl phthalate	µg/L	1	<1
Di-n-octyl phthalate	µg/L	1	<1
Carbofuran	µg/L	0.5	<0.5
Carbaryl	µg/L	0.5	<0.5
Trifluralin	µg/L	0.5	<0.5
N-nitroso-di-n-butylamine (NDBA)	µg/L	1	<1
N-nitroso-diethylamine (NDEA)	µg/L	1	<1
N-nitroso-di-n-propylamine (NDPA)	µg/L	1	<1
N-nitroso-morpholine (NMOR)	µg/L	1	<1
N-nitroso-piperidine (NPIP)	µg/L	1	<1

Full 8270 SVOC in Water [AN420] Tested: 4/3/2025 (continued)

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
N-nitroso-pyrrolidine (NPYR)	µg/L	1	<1
4-amino biphenyl	µg/L	1	<1
Acetophenone	µg/L	1	2
1,3-dinitrobenzene	µg/L	1	<1
2,4-dinitrotoluene	µg/L	1	<1
2,6-dinitrotoluene	µg/L	1	<1
Isophorone	µg/L	1	<1
Nitrobenzene	µg/L	1	<1
p-(dimethylamino) azobenzene	µg/L	1	<1
Phenacetin	µg/L	1	<1
Pentachloronitrobenzene (quintozene)	µg/L	1	<1
Aniline	µg/L	5	<5
4-chloroaniline	µg/L	1	<1
2-nitroaniline	µg/L	1	<1
3-nitroaniline	µg/L	1	<1
4-nitroaniline	µg/L	1	<1
Diphenylamine	µg/L	1	<1
o-toluidine	µg/L	1	<1
5-nitro-o-toluidine	µg/L	1	<1
1-naphthylamine	µg/L	2	<2
2-naphthylamine	µg/L	2	<2
Bis(2-chloroethoxy) methane	µg/L	1	<1
Bis(2-chloroethyl) ether	µg/L	1	<1
Bis(2-chloroisopropyl) ether	µg/L	1	<1
4-chlorophenyl phenyl ether	µg/L	1	<1
4-bromophenyl phenyl ether	µg/L	1	<1
Methyl methanesulfonate	µg/L	1	<1
Ethyl methanesulfonate	µg/L	1	<1
Dibenzofuran	µg/L	1	<1
Benzyl alcohol	µg/L	1	<1
Safrole	µg/L	1	<1
Isosafrole Isomer 1	µg/L	1	<1
Isosafrole Isomer 2	µg/L	1	<1
1,4-naphthoquinone	µg/L	1	<1
Thionazin	µg/L	1	<1
3/4-methyl phenol (m/p-cresol)	µg/L	1	<1
2-methyl phenol (o-cresol)	µg/L	0.5	<0.5
2,6-dichlorophenol	µg/L	0.5	<0.5
2,3,4,6-tetrachlorophenol	µg/L	0.5	<0.5
2,4,5-trichlorophenol	µg/L	0.5	<0.5
4-chloro-3-methylphenol	µg/L	2	<2
2-chlorophenol	µg/L	0.5	<0.5
2,4-dichlorophenol	µg/L	0.5	<0.5
2,4-dimethylphenol	µg/L	0.5	<0.5
2-nitrophenol	µg/L	0.5	<0.5
Phenol	µg/L	0.5	<0.5
2,4,6-trichlorophenol	µg/L	0.5	<0.5
Pentachlorophenol	µg/L	0.5	<0.5
4-nitrophenol	µg/L	1	<1
Total Endosulfan (alpha+beta+sulfate)	µg/L	0.2	<0.2

Anions by Ion Chromatography in Water [AN245] Tested: 6/3/2025

			BH4.1M WATER - 24/2/2025
PARAMETER	UOM	LOR	SE278780A.002
Chloride	mg/L	0.05	**170**
Bromide	mg/L	0.05	**1.1**
Fluoride	mg/L	0.1	**0.43**
Sulfate, SO4	mg/L	1	**45**
Nitrate Nitrogen, NO3-N	mg/L	0.005	<0.005

Alkalinity [AN135] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Bicarbonate Alkalinity as CaCO3	mg/L	5	140
Bicarbonate Alkalinity as HCO3	mg/L	5	170
Carbonate Alkalinity as CaCO3	mg/L	5	<5
Carbonate Alkalinity as CO3	mg/L	5	<5
Hydroxide Alkalinity as CaCO3	mg/L	5	<5
Hydroxide Alkalinity as OH	mg/L	5	<5
Total Alkalinity as CaCO3	mg/L	5	140
Carbonate Hardness as CaCO3*	mg CaCO3/L	2	138.31125
Non-Carbonate Hardness as CaCO3*	mg CaCO3/L	2	-
Negative Hardness as CaCO3*	mg CaCO3/L	-100	-

Dissolved Oxygen by Membrane Electrode [AN176] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Temperature*	°C	-	14.2
Dissolved Oxygen**	mg/L	0.5	6.5
Dissolved Oxygen (percent saturation)**	%	1	63.2

Total and Volatile Suspended Solids (TSS / VSS) [AN114] Tested: 5/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Total Suspended Solids Dried at 103-105°C	mg/L	5	320

Forms of Carbon [AN190] Tested: 6/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Total Organic Carbon as NPOC	mg/L	0.2	2.7

Ammonia Nitrogen by Discrete Analyser [AN291] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Ammonia Nitrogen, NH_3 as N	mg/L	0.01	0.10

Calculation of Anion-Cation Balance (SAR Calc) [AN121] Tested: 7/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Sum of Ions*	mg/L	10	576
Anion-Cation Balance	%	-100	4.97
TFSS*	mg/L	10	576
Sodium Adsorption Ratio*	No unit	0.1	4.7

Nitrite in Water [AN277] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Nitrite Nitrogen, NO2 as N	mg/L	0.005	<0.005
Total Oxidised Nitrogen, NOx-N	mg/L	0.005	<0.005

TKN Kjeldahl Digestion by Discrete Analyser [AN292] Tested: 6/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Total Kjeldahl Nitrogen	mg/L	0.05	0.82
Total Nitrogen (calc)	mg/L	0.05	0.82

Total Phosphorus by Kjeldahl Digestion DA in Water [AN279/AN293(Sydney only)] Tested: 6/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	0.22

Filterable Reactive Phosphorus (FRP) [AN278] Tested: 4/3/2025

PARAMETER	UOM	LOR	**BH4.1M** WATER - 24/2/2025 **SE278780A.002**
Filterable Reactive Phosphorus as P	mg/L	0.005	<0.005

Redox Potential (Eh) in water [AN240] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Eh of Sample Relative to Standard H+ Electrode***	mV	-500	211
Temperature of Sample*	°C	0.1	21.2

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples [AN404] Tested: 4/3/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780A.002
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.05
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.01
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.01
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.01
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.01
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.01
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.01
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.01
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.01
Perfluoropropane sulfonic acid (PFPrS)	µg/L	0.01	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.01
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	µg/L	0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.01	<0.01
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	µg/L	0.01	<0.01
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	µg/L	0.01	<0.01
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	µg/L	0.01	<0.01
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2	µg/L	0.01	<0.01
Perfluorooctane sulfonamide (FOSA)	µg/L	0.01	<0.01
N-Methylperfluoroctane sulfonamide (N-MeFOSA)	µg/L	0.01	<0.01
N-Ethylperfluoroctane sulfonamide (N-EtFOSA)	µg/L	0.01	<0.01
N-Methylperfluorooctanesulfonamidoacetic acid	µg/L	0.05	<0.05
N-Ethylperfluorooctanesulfonamidoacetic acid	µg/L	0.05	<0.05
2-(N-Ethylperfluorooctane sulfonamido)-ethanol	µg/L	0.05	<0.05
2-(N-Methylperfluorooctane sulfonamido)-ethanol	µg/L	0.05	<0.05
Sum of PFOS and PFHxS	µg/L	0.01	<0.01
Sum of enHealth PFAS (PFHxS+PFOS+PFOA)	µg/L	0.01	<0.01
Sum of US EPA PFAS (PFOS+PFOA)	µg/L	0.01	<0.01
Sum of PFAS A	µg/L	0.01	<0.01
Sum of PFAS B	µg/L	0.01	<0.01
Sum of PFAS C	µg/L	0.01	<0.01
Sum of Positive PFAS	µg/L	0.01	<0.01

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN077	Hydrogen cyanide is liberated from an acidified sample by distillation and purging with air. The hydrogen cyanide gas is then collected by passing it through a sodium hydroxide scrubbing solution. The scrubbing solution will then be analysed for cyanide by the appropriate method.
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 calculation 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
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, K2SO4 and CuSO4. 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 digestor with sulfuric acid, K2SO4 and CuSO4. 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.
AN287	A buffered distillate or water sample is treated with chloramine/barbituric acid reagents and the intensity of the colour developed is proportional to the cyanide concentration by DA.
AN291	Ammonia in solution reacts with hypochlorite ions from Sodium Dichloroisocyanuate, and salicylate in the presence of Sodium Nitroprusside to form indophenol blue and measured at 660 nm by Discrete Analyser.
AN295	The water sample or extract of sample is distilled in a phosphoric acid stream. Phenolic compounds in the distillate react with a reagent stream of potassium hexacyanoferrate(III) and 4-Amino-2,3-dimethyl-3-pryazolin-5-one in an alkaline medium to form a coloured complex which is analysed spectrophotometrically onboard a continuous flow 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 Recoveerable 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.
AN404	This method covers the analysis of per- and polyfluoroalkyl substances (PFAS) in aqueous, solid and biosolid samples and solvent extracts. After spiking with isotopically labelled quantification surrogates and sample extracts are analysed by liquid chromatography/mass spectrometry (LC-MS/MS). PFAS concentrations are determined by isotope dilution quantification. PFOS and PFHXS are determined as the total of linear and branched isomers.
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 .
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
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.
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:

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE278780A R0

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 2-16 Pockley Street,RosevilleNSW**
Order Number	**E26491**
Samples	6

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	**SE278780A R0**
Date Received	04 Mar 2025
Date Reported	19 Mar 2025

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	Dissolved Oxygen by Membrane Electrode	1 item
	Forms of Carbon	1 item
	Full 8270 SVOC in Water	1 item
	Nitrite in Water	1 item
	OC Pesticides in Water	1 item
	OP Pesticides in Water	1 item
	PAH (Polynuclear Aromatic Hydrocarbons) in Water	2 items
	PCBs in Water	1 item
	Redox Potential (Eh) in water	1 item
	Total and Volatile Suspended Solids (TSS / VSS)	1 item
	Total Dissolved Solids (TDS) in water	2 items
	TRH (Total Recoverable Hydrocarbons) in Water	4 items
	Turbidity	2 items
Analysis Date	Dissolved Oxygen by Membrane Electrode	1 item

There are more than 15 quality objective exceedences. Please see report for details

SAMPLE SUMMARY

Sample counts by matrix	6 Water	Type of documentation received	COC
Date documentation received	4/3/2025@2:59pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	10.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Alkalinity

Method: ME-(AU)-[ENV]AN135

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339812	24 Feb 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025	10 Mar 2025	05 Mar 2025

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]AN291

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339749	24 Feb 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339959	24 Feb 2025	04 Mar 2025	24 Mar 2025	06 Mar 2025	24 Mar 2025	07 Mar 2025

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339746	24 Feb 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025
BH4.1M	SE278780A.002	LB339746	24 Feb 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025

Dissolved Oxygen by Membrane Electrode

Method: ME-(AU)-[ENV]AN176

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339748	24 Feb 2025	04 Mar 2025	25 Feb 2025	04 Mar 2025†	25 Feb 2025	04 Mar 2025†

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]AN278

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339749	24 Feb 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025

Forms of Carbon

Method: ME-(AU)-[ENV]AN190

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339969	24 Feb 2025	04 Mar 2025	03 Mar 2025	06 Mar 2025†	03 Mar 2025	11 Mar 2025†

Full 8270 SVOC in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	11 Mar 2025
BH4.1M	SE278780A.002	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	11 Mar 2025
GW_QD1	SE278780A.003	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	11 Mar 2025
GW_QR1	SE278780A.004	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	11 Mar 2025

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339831	24 Feb 2025	04 Mar 2025	24 Mar 2025	05 Mar 2025	24 Mar 2025	06 Mar 2025
BH4.1M	SE278780A.002	LB339831	24 Feb 2025	04 Mar 2025	24 Mar 2025	05 Mar 2025	24 Mar 2025	06 Mar 2025
GW_QD1	SE278780A.003	LB339831	24 Feb 2025	04 Mar 2025	24 Mar 2025	05 Mar 2025	24 Mar 2025	06 Mar 2025
GW_QR1	SE278780A.004	LB339831	24 Feb 2025	04 Mar 2025	24 Mar 2025	05 Mar 2025	24 Mar 2025	06 Mar 2025

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339980	24 Feb 2025	04 Mar 2025	23 Aug 2025	06 Mar 2025	23 Aug 2025	07 Mar 2025
BH4.1M	SE278780A.002	LB339980	24 Feb 2025	04 Mar 2025	23 Aug 2025	06 Mar 2025	23 Aug 2025	07 Mar 2025

Nitrite in Water

Method: ME-(AU)-[ENV]AN277

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339749	24 Feb 2025	04 Mar 2025	28 Feb 2025	04 Mar 2025†	28 Feb 2025	07 Mar 2025†

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
BH4.1M	SE278780A.002	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
GW_QD1	SE278780A.003	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
GW_QR1	SE278780A.004	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

OP Pesticides in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
BH4.1M	SE278780A.002	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
GW_QD1	SE278780A.003	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
GW_QR1	SE278780A.004	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
BH4.1M	SE278780A.002	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
GW_QD1	SE278780A.003	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
GW_QR1	SE278780A.004	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
BH4.1M	SE278780A.002	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
GW_QD1	SE278780A.003	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025
GW_QR1	SE278780A.004	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	06 Mar 2025

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples

Method: ME-(AU)-[ENV]AN404

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339750	24 Feb 2025	04 Mar 2025	24 Mar 2025	04 Mar 2025	01 Apr 2025	06 Mar 2025

Redox Potential (Eh) in water

Method: ME-(AU)-[ENV]AN240

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339766	24 Feb 2025	04 Mar 2025	25 Feb 2025	04 Mar 2025†	25 Feb 2025	04 Mar 2025†

TKN Kjeldahl Digestion by Discrete Analyser

Method: ME-(AU)-[ENV]AN292

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339941	24 Feb 2025	04 Mar 2025	24 Mar 2025	06 Mar 2025	24 Mar 2025	07 Mar 2025

Total and Volatile Suspended Solids (TSS / VSS)

Method: ME-(AU)-[ENV]AN114

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339851	24 Feb 2025	04 Mar 2025	03 Mar 2025	05 Mar 2025†	12 Mar 2025	05 Mar 2025

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339811	24 Feb 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025	10 Mar 2025	05 Mar 2025

Total Dissolved Solids (TDS) in water

Method: ME-(AU)-[ENV]AN113

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339850	24 Feb 2025	04 Mar 2025	03 Mar 2025	05 Mar 2025†	03 Mar 2025	06 Mar 2025†
BH4.1M	SE278780A.002	LB339850	24 Feb 2025	04 Mar 2025	03 Mar 2025	05 Mar 2025†	03 Mar 2025	06 Mar 2025†

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339808	24 Feb 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025	10 Mar 2025	05 Mar 2025

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293(Sydney only)

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780A.002	LB339941	24 Feb 2025	04 Mar 2025	24 Mar 2025	06 Mar 2025	24 Mar 2025	07 Mar 2025

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339828	24 Feb 2025	04 Mar 2025	23 Aug 2025	05 Mar 2025	23 Aug 2025	06 Mar 2025
BH4.1M	SE278780A.002	LB339828	24 Feb 2025	04 Mar 2025	23 Aug 2025	05 Mar 2025	23 Aug 2025	06 Mar 2025
GW_QD1	SE278780A.003	LB339828	24 Feb 2025	04 Mar 2025	23 Aug 2025	05 Mar 2025	23 Aug 2025	06 Mar 2025
GW_QR1	SE278780A.004	LB339828	24 Feb 2025	04 Mar 2025	23 Aug 2025	05 Mar 2025	23 Aug 2025	06 Mar 2025

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
BH4.1M	SE278780A.002	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
GW_QD1	SE278780A.003	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025
GW_QR1	SE278780A.004	LB339751	24 Feb 2025	04 Mar 2025	03 Mar 2025	04 Mar 2025†	13 Apr 2025	07 Mar 2025

Turbidity

Method: ME-(AU)-[ENV]AN119

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339747	24 Feb 2025	04 Mar 2025	25 Feb 2025	04 Mar 2025†	25 Feb 2025	04 Mar 2025†
BH4.1M	SE278780A.002	LB339747	24 Feb 2025	04 Mar 2025	25 Feb 2025	04 Mar 2025†	25 Feb 2025	04 Mar 2025†

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
BH4.1M	SE278780A.002	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_QD1	SE278780A.003	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_QR1	SE278780A.004	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_TS1	SE278780A.005	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_TB1	SE278780A.006	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780A.001	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
BH4.1M	SE278780A.002	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_QD1	SE278780A.003	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_QR1	SE278780A.004	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_TS1	SE278780A.005	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025
GW_TB1	SE278780A.006	LB339752	24 Feb 2025	04 Mar 2025	10 Mar 2025	04 Mar 2025	10 Mar 2025	05 Mar 2025

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Full 8270 SVOC in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2,4,6-Tribromophenol (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	47
2-fluorobiphenyl (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	42
d14-p-terphenyl (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	48
d5-nitrobenzene (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	48
d5-phenol (Surrogate)	BH4.1M	SE278780A.002	%	20 - 130%	32

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	85

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	63
d14-p-terphenyl (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	59

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	63
	BH4.1M	SE278780A.002	%	40 - 130%	60
d14-p-terphenyl (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	59
	BH4.1M	SE278780A.002	%	40 - 130%	57
d5-nitrobenzene (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	56
	BH4.1M	SE278780A.002	%	40 - 130%	55

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	BH4.1M	SE278780A.002	%	40 - 130%	85

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples

Method: ME-(AU)-[ENV]AN404

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(13C2_PFTeDA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	10 - 150%	79
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 300%	112
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 300%	94
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 300%	93
(13C2-PFDoA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	10 - 150%	67
(13C3-PFBS) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	84
(13C3-PFHxS) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	89
(13C4_PFOA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	90
(13C4-PFBA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	5 - 150%	90
(13C4-PFHpA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	98
(13C5-PFHxA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	91
(13C5-PFPeA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	35 - 150%	79
(13C6-PFDA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	77
(13C7-PFUdA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	30 - 150%	103
(13C8-PFOS) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	70
(13C8-PFOSA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	20 - 150%	58
(13C9-PFNA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	40 - 150%	89
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	10 - 150%	50
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	30 - 170%	62
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	10 - 150%	59
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	20 - 150%	107
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	10 - 150%	60
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery Standard	BH4.1M	SE278780A.002	%	10 - 150%	64

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	106
	BH4.1M	SE278780A.002	%	40 - 130%	107
	GW_QD1	SE278780A.003	%	40 - 130%	110
	GW_QR1	SE278780A.004	%	40 - 130%	107
	GW_TS1	SE278780A.005	%	40 - 130%	105

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GW_TB1	SE278780A.006	%	40 - 130%	100
d4-1,2-dichloroethane (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	119
	BH4.1M	SE278780A.002	%	40 - 130%	101
	GW_QD1	SE278780A.003	%	40 - 130%	104
	GW_QR1	SE278780A.004	%	40 - 130%	123
	GW_TS1	SE278780A.005	%	40 - 130%	114
	GW_TB1	SE278780A.006	%	40 - 130%	85
d8-toluene (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	99
	BH4.1M	SE278780A.002	%	40 - 130%	100
	GW_QD1	SE278780A.003	%	40 - 130%	100
	GW_QR1	SE278780A.004	%	40 - 130%	100
	GW_TS1	SE278780A.005	%	40 - 130%	91
	GW_TB1	SE278780A.006	%	40 - 130%	89

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	106
	BH4.1M	SE278780A.002	%	40 - 130%	107
	GW_QD1	SE278780A.003	%	40 - 130%	110
	GW_QR1	SE278780A.004	%	40 - 130%	107
d4-1,2-dichloroethane (Surrogate)	BH4M	SE278780A.001	%	60 - 130%	119
	BH4.1M	SE278780A.002	%	60 - 130%	101
	GW_QD1	SE278780A.003	%	60 - 130%	104
	GW_QR1	SE278780A.004	%	60 - 130%	123
d8-toluene (Surrogate)	BH4M	SE278780A.001	%	40 - 130%	99
	BH4.1M	SE278780A.002	%	40 - 130%	100
	GW_QD1	SE278780A.003	%	40 - 130%	100
	GW_QR1	SE278780A.004	%	40 - 130%	100

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Alkalinity

Method: ME-(AU)-[ENV]AN135

Sample Number	Parameter	Units	LOR	Result
LB339812.001	Bicarbonate Alkalinity as CaCO3	mg/L	5	<5
	Carbonate Alkalinity as CaCO3	mg/L	5	<5
	Total Alkalinity as CaCO3	mg/L	5	<5

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]AN291

Sample Number	Parameter	Units	LOR	Result
LB339749.001	Ammonia Nitrogen, NH_3 as N	mg/L	0.01	<0.01

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result
LB339959.001	Fluoride	mg/L	0.1	<0.10
	Chloride	mg/L	0.05	<0.05
	Bromide	mg/L	0.05	<0.05
	Nitrate Nitrogen, NO3-N	mg/L	0.005	<0.005
	Sulfate, SO4	mg/L	1	<1.0

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB339746.001	Conductivity @ 25 C	µS/cm	2	<2

Dissolved Oxygen by Membrane Electrode

Method: ME-(AU)-[ENV]AN176

Sample Number	Parameter	Units	LOR	Result
LB339748.001	Dissolved Oxygen**	mg/L	0.5	<0.5

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]AN278

Sample Number	Parameter	Units	LOR	Result
LB339749.001	Filterable Reactive Phosphorus as P	mg/L	0.005	<0.005

Forms of Carbon

Method: ME-(AU)-[ENV]AN190

Sample Number	Parameter	Units	LOR	Result
LB339969.001	Total Organic Carbon as NPOC	mg/L	0.2	<0.2

Full 8270 SVOC in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001	01-PAHs	Acenaphthene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Benzo(b&j&k)fluoranthene	µg/L	0.2	<0.2
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		Naphthalene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		2-acetylaminofluorene	µg/L	0.5	<0.5
		7,12-dimethyl-benz(a)anthracene	µg/L	0.5	<0.5
		3-methylcholanthrene	µg/L	0.5	<0.5
	02-OCs	Aldrin	µg/L	0.1	<0.1
		Alpha-BHC	µg/L	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001	02-OCs	Beta-BHC	µg/L	0.1	<0.1
		Delta-BHC	µg/L	0.1	<0.1
		Gamma-BHC (Lindane)	µg/L	0.1	<0.1
		p,p-DDD	µg/L	0.1	<0.1
		p,p-DDE	µg/L	0.1	<0.1
		p,p-DDT	µg/L	0.1	<0.1
		Dieldrin	µg/L	0.1	<0.1
		Alpha-endosulfan	µg/L	0.1	<0.1
		Beta-endosulfan	µg/L	0.1	<0.1
		Endosulfan sulphate	µg/L	0.1	<0.1
		Endrin	µg/L	0.1	<0.1
		Heptachlor	µg/L	0.1	<0.1
		Heptachlor epoxide	µg/L	0.1	<0.1
		Methoxychlor	µg/L	0.1	<0.1
		Mirex	µg/L	0.1	<0.1
		Alpha-chlordane	µg/L	0.1	<0.1
		Gamma-chlordane	µg/L	0.1	<0.1
		Endrin ketone	µg/L	0.1	<0.1
	03-OPs	Azinphos-methyl (Guthion)	µg/L	0.2	<0.2
		Bromophos ethyl	µg/L	0.2	<0.2
		Carbophenothion	µg/L	0.5	<0.5
		Chlorfenvinphos-cis	µg/L	5	<5
		Chlorfenvinphos-trans	µg/L	0.5	<0.5
		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
		Chlorpyrifos-methyl	µg/L	0.5	<0.5
		Co-Ral (Coumaphos)	µg/L	0.5	<0.5
		Diazinon (Dimpylate)	µg/L	0.5	<0.5
		Dichlorvos	µg/L	0.5	<0.5
		Demeton-S-methyl	µg/L	0.5	<0.5
		Dimethoate	µg/L	0.5	<0.5
		Disulfoton (Di-syston)	µg/L	0.5	<0.5
		EPN*	µg/L	0.5	<0.5
		Ethion	µg/L	0.2	<0.2
		Ethoprophos (ethoprop or prophos)	µg/L	0.5	<0.5
		Famphur (Famophos)	µg/L	0.5	<0.5
		Fenamiphos (Phenamiphos)	µg/L	0.5	<0.5
		Fenchlorophos (Ronnel)	µg/L	0.5	<0.5
		Fenitrothion	µg/L	0.2	<0.2
		Fenthion	µg/L	0.5	<0.5
		Malathion (Maldison)	µg/L	0.2	<0.2
		Methidathion	µg/L	0.5	<0.5
		Mevinphos-cis/trans	µg/L	1	<1
		o,o,o-triethyl phosphorothioate	µg/L	0.5	<0.5
		Parathion ethyl (Parathion)	µg/L	0.2	<0.2
		Parathion methyl	µg/L	0.5	<0.5
		Phorate	µg/L	0.5	<0.5
		Pirimiphos-ethyl	µg/L	0.5	<0.5
		Pirimiphos-methyl	µg/L	0.5	<0.5
		Profenofos	µg/L	0.5	<0.5
		Prothiophos (Tokuthion)*	µg/L	0.5	<0.5
		Sulfotepp	µg/L	0.5	<0.5
	04-PCB UPAC(7) Congeners	PCB Congener C28	µg/L	0.1	<0.1
		PCB Congener C52	µg/L	0.1	<0.1
		PCB Congener C101	µg/L	0.1	<0.1
		PCB Congener C118	µg/L	0.1	<0.1
		PCB Congener C138	µg/L	0.1	<0.1
		PCB Congener C153	µg/L	0.1	<0.1
		PCB Congener C180	µg/L	0.1	<0.1
	05-SVCH (Cl Benzenes, Hydrocarbons & VOCs)	Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001	05-SVCH (Cl Benzenes, Hydrocarbons & VOCs)	1,4-dichlorobenzene	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
		Hexachlorocyclopentadiene	µg/L	2	<2
		Hexachloroethane	µg/L	0.5	<0.5
		Hexachloroproprene	µg/L	0.5	<0.5
		Pentachlorobenzene	µg/L	0.5	<0.5
		Pentachloroethane	µg/L	0.5	<0.5
		1,2,3,5 and 1,2,4,5 -tetrachlorobenzene	µg/L	1	<1
		1,2,3,4-tetrachlorobenzene	µg/L	0.5	<0.5
		1/2-Chloronaphthalene	µg/L	1	<1
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
	06-Phthalates	Bis(2-ethylhexyl)phthalate	µg/L	10	<10
		Bis(2-ethylhexyl)adipate	µg/L	1	<1
		Butyl benzyl phthalate	µg/L	1	<1
		Di-n-butyl phthalate	µg/L	10	<10
		Diethyl phthalate	µg/L	5	<5
		Dimethyl phthalate	µg/L	1	<1
		Di-n-octyl phthalate	µg/L	1	<1
	07-Carbamates	Carbofuran	µg/L	0.5	<0.5
		Carbaryl	µg/L	0.5	<0.5
	08-Herbicides (normal)	Trifluralin	µg/L	0.5	<0.5
	09-Nitrosamines	N-nitroso-di-n-butylamine (NDBA)	µg/L	1	<1
		N-nitroso-diethylamine (NDEA)	µg/L	1	<1
		N-nitroso-di-n-propylamine (NDPA)	µg/L	1	<1
		N-nitroso-morpholine (NMOR)	µg/L	1	<1
		N-nitroso-piperidine (NPIP)	µg/L	1	<1
		N-nitroso-pyrrolidine (NPYR)	µg/L	1	<1
		4-amino biphenyl	µg/L	1	<1
	10-Nitroaromatics and Ketones	Acetophenone	µg/L	1	<1
		1,3-dinitrobenzene	µg/L	1	<1
		2,4-dinitrotoluene	µg/L	1	<1
		2,6-dinitrotoluene	µg/L	1	<1
		Isophorone	µg/L	1	<1
		Nitrobenzene	µg/L	1	<1
		p-(dimethylamino) azobenzene	µg/L	1	<1
		Phenacetin	µg/L	1	<1
		Pentachloronitrobenzene (quintozene)	µg/L	1	<1
	11-Anilines and Amines	Aniline	µg/L	5	<5
		4-chloroaniline	µg/L	1	<1
		2-nitroaniline	µg/L	1	<1
		3-nitroaniline	µg/L	1	<1
		4-nitroaniline	µg/L	1	<1
		Diphenylamine	µg/L	1	<1
		o-toluidine	µg/L	1	<1
		5-nitro-o-toluidine	µg/L	1	<1
		1-naphthylamine	µg/L	2	<2
		2-naphthylamine	µg/L	2	<2
	12-Haloethers	Bis(2-chloroethoxy) methane	µg/L	1	<1
		Bis(2-chloroethyl) ether	µg/L	1	<1
		Bis(2-chloroisopropyl) ether	µg/L	1	<1
		4-chlorophenyl phenyl ether	µg/L	1	<1
		4-bromophenyl phenyl ether	µg/L	1	<1
	13-Other SVOCs	Methyl methanesulfonate	µg/L	1	<1
		Ethyl methanesulfonate	µg/L	1	<1
		Dibenzofuran	µg/L	1	<1
		Benzyl alcohol	µg/L	1	<1
		Safrole	µg/L	1	<1
		Isosafrole Isomer 1	µg/L	1	<1
		Isosafrole Isomer 2	µg/L	1	<1
		1,4-naphthoquinone	µg/L	1	<1
		Thionazin	µg/L	1	<1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Full 8270 SVOC in Water (continued) Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001	14-Speciated Routine Phenols	3/4-methyl phenol (m/p-cresol)	µg/L	1	<1
		2-methyl phenol (o-cresol)	µg/L	0.5	<0.5
		2,6-dichlorophenol	µg/L	0.5	<0.5
		2,4,5-trichlorophenol	µg/L	0.5	<0.5
		4-chloro-3-methylphenol	µg/L	2	<2
		2-chlorophenol	µg/L	0.5	<0.5
		2,4-dichlorophenol	µg/L	0.5	<0.5
		2,4-dimethylphenol	µg/L	0.5	<0.5
		2-nitrophenol	µg/L	0.5	<0.5
		Phenol	µg/L	0.5	<0.5
		2,4,6-trichlorophenol	µg/L	0.5	<0.5
		Pentachlorophenol	µg/L	0.5	<0.5
		4-nitrophenol	µg/L	1	<1
	Surrogates	d5-phenol (Surrogate)	%	-	107
		d5-nitrobenzene (Surrogate)	%	-	60
		2-fluorobiphenyl (Surrogate)	%	-	74
		2,4,6-Tribromophenol (Surrogate)	%	-	96
		d14-p-terphenyl (Surrogate)	%	-	88

Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB339831.001	Mercury	mg/L	0.0001	<0.0001

Metals in Water (Dissolved) by ICPOES Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result
LB339980.001	Calcium, Ca	mg/L	0.2	<0.2
	Magnesium, Mg	mg/L	0.1	<0.1
	Potassium, K	mg/L	0.1	<0.1
	Silicon, Si*	mg/L	0.05	<0.05
	Sodium, Na	mg/L	0.5	<0.5

Nitrite in Water Method: ME-(AU)-[ENV]AN277

Sample Number	Parameter	Units	LOR	Result
LB339749.001	Nitrite Nitrogen, NO2 as N	mg/L	0.005	<0.005

OC Pesticides in Water Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB339751.001	Alpha BHC	µg/L	0.1	<0.1
	Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
	Beta BHC	µg/L	0.1	<0.1
	Lindane (gamma BHC)	µg/L	0.1	<0.1
	Delta BHC	µg/L	0.1	<0.1
	Heptachlor	µg/L	0.1	<0.1
	Aldrin	µg/L	0.1	<0.1
	Heptachlor epoxide	µg/L	0.1	<0.1
	Gamma Chlordane	µg/L	0.1	<0.1
	Alpha Chlordane	µg/L	0.1	<0.1
	Alpha Endosulfan	µg/L	0.1	<0.1
	p,p'-DDE	µg/L	0.1	<0.1
	Dieldrin	µg/L	0.1	<0.1
	Endrin	µg/L	0.1	<0.1
	Beta Endosulfan	µg/L	0.1	<0.1
	p,p'-DDD	µg/L	0.1	<0.1
	Endrin aldehyde	µg/L	0.1	<0.1
	Endosulfan sulphate	µg/L	0.1	<0.1
	p,p'-DDT	µg/L	0.1	<0.1
	Endrin ketone	µg/L	0.1	<0.1
	Methoxychlor	µg/L	0.1	<0.1
	Mirex	µg/L	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

OC Pesticides in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	77

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001		Azinphos-methyl	µg/L	0.2	<0.2
		Bromophos Ethyl	µg/L	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
		Diazinon (Dimpylate)	µg/L	0.5	<0.5
		Dichlorvos	µg/L	0.5	<0.5
		Dimethoate	µg/L	0.5	<0.5
		Ethion	µg/L	0.2	<0.2
		Fenitrothion	µg/L	0.2	<0.2
		Malathion	µg/L	0.2	<0.2
		Methidathion	µg/L	0.5	<0.5
		Parathion-ethyl (Parathion)	µg/L	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	68
		d14-p-terphenyl (Surrogate)	%	-	68

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(b&j&k)fluoranthene	µg/L	0.2	<0.2
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	60
		2-fluorobiphenyl (Surrogate)	%	-	68
		d14-p-terphenyl (Surrogate)	%	-	68

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB339751.001		Arochlor 1016	µg/L	1	<1
		Arochlor 1221	µg/L	1	<1
		Arochlor 1232	µg/L	1	<1
		Arochlor 1242	µg/L	1	<1
		Arochlor 1248	µg/L	1	<1
		Arochlor 1254	µg/L	1	<1
		Arochlor 1260	µg/L	1	<1

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples

Method: ME-(AU)-[ENV]AN404

Sample Number		Parameter	Units	LOR	Result
LB339750.001		Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.05
		Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.01
		Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.01
		Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.01
		Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01
		Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.01
		Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.01
		Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.01
		Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.01
		Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.01

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples (continued)

Method: ME-(AU)-[ENV]AN404

Sample Number	Parameter	Units	LOR	Result
LB339750.001	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.01
	Perfluoropropane sulfonic acid (PFPrS)	µg/L	0.01	<0.01
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.01
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.01
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01
	Perfluorononane sulfonic acid (PFNS)	µg/L	0.01	<0.01
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.01	<0.01
	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	µg/L	0.01	<0.01
	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	µg/L	0.01	<0.01
	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	µg/L	0.01	<0.01
	1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	µg/L	0.01	<0.01
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.01	<0.01
	N-Methylperfluoroctane sulfonamide (N-MeFOSA)	µg/L	0.01	<0.01
	N-Ethylperfluoroctane sulfonamide (N-EtFOSA)	µg/L	0.01	<0.01
	N-Methylperfluorooctanesulfonamidoacetic acid (N_MeFOSAA)	µg/L	0.05	<0.05
	N-Ethylperfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	µg/L	0.05	<0.05
	2-(N-Methylperfluorooctane sulfonamido)-ethanol (N-MeFOSE)	µg/L	0.05	<0.05
	2-(N-Ethylperfluorooctane sulfonamido)-ethanol (N-EtFOSE)	µg/L	0.05	<0.05

Total and Volatile Suspended Solids (TSS / VSS)

Method: ME-(AU)-[ENV]AN114

Sample Number	Parameter	Units	LOR	Result
LB339851.001	Total Suspended Solids Dried at 103-105°C	mg/L	5	<5

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result
LB339811.001	Total Cyanide	mg/L	0.004	<0.004

Total Dissolved Solids (TDS) in water

Method: ME-(AU)-[ENV]AN113

Sample Number	Parameter	Units	LOR	Result
LB339850.001	Total Dissolved Solids Dried at 175-185°C	mg/L	10	<10

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result
LB339808.001	Total Phenols	mg/L	0.05	<0.05

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293(Sydney only)

Sample Number	Parameter	Units	LOR	Result
LB339941.001	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	<0.02

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB339828.001	Aluminium	µg/L	5	<5
	Antimony	µg/L	1	<1
	Arsenic	µg/L	1	<1
	Barium	µg/L	1	<1
	Beryllium	µg/L	1	<1
	Boron	µg/L	5	<5
	Cadmium	µg/L	0.1	<0.1
	Chromium	µg/L	1	<1
	Cobalt	µg/L	1	<1
	Copper	µg/L	1	<1
	Iron	µg/L	5	<5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB339828.001	Lead	µg/L	1	<1
	Manganese	µg/L	1	<1
	Molybdenum	µg/L	1	<1
	Nickel	µg/L	1	<1
	Selenium	µg/L	1	<1
	Silver	µg/L	1	<1
	Strontium	µg/L	1	<1
	Uranium	µg/L	1	<1
	Vanadium	µg/L	1	<1
	Zinc	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB339751.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

Turbidity

Method: ME-(AU)-[ENV]AN119

Sample Number	Parameter	Units	LOR	Result
LB339747.001	Turbidity	NTU	0.5	<0.5

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB339752.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		1,1-dichloroethene	µg/L	0.5	<0.5
		Iodomethane	µg/L	5	<5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2.0
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB339752.001	Halogenated Aromatics	2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		o-xylene	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	0.5	<0.5
		Vinyl acetate*	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene (VOC)*	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2.0
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	86
		d8-toluene (Surrogate)	%	-	86
		Bromofluorobenzene (Surrogate)	%	-	102
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB339752.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	86
		d8-toluene (Surrogate)	%	-	86
		Bromofluorobenzene (Surrogate)	%	-	102

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Alkalinity

Method: ME-(AU)-[ENV]AN135

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279066.005	LB339812.013	Bicarbonate Alkalinity as CaCO3	mg/L	5	390	390	16	0
		Carbonate Alkalinity as CaCO3	mg/L	5	<5	<5	200	0
		Total Alkalinity as CaCO3	mg/L	5	390	390	16	0
SE279152.004	LB339812.024	Bicarbonate Alkalinity as CaCO3	mg/L	5	290	280	17	3
		Carbonate Alkalinity as CaCO3	mg/L	5	<5	<5	200	0
		Total Alkalinity as CaCO3	mg/L	5	290	280	17	3

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]AN291

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339749.025	Ammonia Nitrogen, NH_3 as N	mg/L	0.01	0.10	0.10	25	1
SE279152.003	LB339749.014	Ammonia Nitrogen, NH_3 as N	mg/L	0.01	<0.01	<0.01	155	0

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339959.025	Fluoride	mg/L	0.1	0.43	0.48	37	11
		Chloride	mg/L	0.05	170	160	15	4
		Bromide	mg/L	0.05	1.1	1.1	20	5
		Nitrate Nitrogen, NO3-N	mg/L	0.005	<0.005	<0.005	200	0
		Sulfate, SO4	mg/L	1	45	44	17	2
SE279152.004	LB339959.014	Fluoride	mg/L	0.1	<0.1	<0.1	200	0
		Chloride	mg/L	0.05	63	57	15	9
		Nitrate Nitrogen, NO3-N	mg/L	0.005	<0.005	<0.005	200	0
		Sulfate, SO4	mg/L	1	610	590	15	2

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279140.001	LB339746.026	Conductivity @ 25 C	µS/cm	2	3000	3000	15	1

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]AN278

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339749.025	Filterable Reactive Phosphorus as P	mg/L	0.005	<0.005	<0.005	200	0
SE279152.003	LB339749.014	Filterable Reactive Phosphorus as P	mg/L	0.005	<0.005	<0.005	200	0

Forms of Carbon

Method: ME-(AU)-[ENV]AN190

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339969.021	Total Organic Carbon as NPOC	mg/L	0.2	2.7	2.9	22	7

Full 8270 SVOC in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020	01-PAHs	Acenaphthene	µg/L	0.1	<0.1	<0.1	200	0
			Acenaphthylene	µg/L	0.1	<0.1	<0.1	200	0
			Anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(b&j&k)fluoranthene	µg/L	0.2	<0.2	<0.2	200	0
			Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Chrysene	µg/L	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Fluorene	µg/L	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	200	0
			Naphthalene	µg/L	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020	01-PAHs	Phenanthrene	µg/L	0.1	<0.1	<0.1	200	0
			Pyrene	µg/L	0.1	<0.1	<0.1	200	0
			2-acetylaminofluorene	µg/L	0.5	<0.5	<0.5	200	0
			7,12-dimethyl-benz(a)anthracene	µg/L	0.5	<0.5	<0.5	200	0
			3-methylcholanthrene	µg/L	0.5	<0.5	<0.5	200	0
		02-OCs	Aldrin	µg/L	0.1	<0.1	<0.1	200	0
			Alpha-BHC	µg/L	0.1	<0.1	<0.1	200	0
			Beta-BHC	µg/L	0.1	<0.1	<0.1	200	0
			Delta-BHC	µg/L	0.1	<0.1	<0.1	200	0
			Gamma-BHC (Lindane)	µg/L	0.1	<0.1	<0.1	200	0
			p,p-DDD	µg/L	0.1	<0.1	<0.1	200	0
			p,p-DDE	µg/L	0.1	<0.1	<0.1	173	0
			p,p-DDT	µg/L	0.1	<0.1	<0.1	200	0
			Dieldrin	µg/L	0.1	<0.1	<0.1	173	0
			Alpha-endosulfan	µg/L	0.1	<0.1	<0.1	200	0
			Beta-endosulfan	µg/L	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	µg/L	0.1	<0.1	<0.1	200	0
			Endrin	µg/L	0.1	<0.1	<0.1	200	0
			Heptachlor	µg/L	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	µg/L	0.1	<0.1	<0.1	200	0
			Methoxychlor	µg/L	0.1	<0.1	<0.1	200	0
			Mirex	µg/L	0.1	<0.1	<0.1	200	0
			Alpha-chlordane	µg/L	0.1	<0.1	<0.1	200	0
			Gamma-chlordane	µg/L	0.1	<0.1	<0.1	200	0
			Endrin ketone	µg/L	0.1	<0.1	<0.1	200	0
		03-OPs	Azinphos-methyl (Guthion)	µg/L	0.2	<0.2	<0.2	200	0
			Bromophos ethyl	µg/L	0.2	<0.2	<0.2	200	0
			Carbophenothion	µg/L	0.5	<0.5	<0.5	200	0
			Chlorfenvinphos-cis	µg/L	5	<5	<5	200	0
			Chlorfenvinphos-trans	µg/L	0.5	<0.5	<0.5	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2	<0.2	200	0
			Chlorpyrifos-methyl	µg/L	0.5	<0.5	<0.5	200	0
			Co-Ral (Coumaphos)	µg/L	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	µg/L	0.5	<0.5	<0.5	200	0
			Dichlorvos	µg/L	0.5	<0.5	<0.5	200	0
			Demeton-S-methyl	µg/L	0.5	<0.5	<0.5	200	0
			Dimethoate	µg/L	0.5	<0.5	<0.5	200	0
			Disulfoton (Di-syston)	µg/L	0.5	<0.5	<0.5	200	0
			EPN*	µg/L	0.5	<0.5	<0.5	200	0
			Ethion	µg/L	0.2	<0.2	<0.2	200	0
			Ethoprophos (ethoprop or prophos)	µg/L	0.5	<0.5	<0.5	200	0
			Famphur (Famophos)	µg/L	0.5	<0.5	<0.5	200	0
			Fenamiphos (Phenamiphos)	µg/L	0.5	<0.5	<0.5	200	0
			Fenchlorophos (Ronnel)	µg/L	0.5	<0.5	<0.5	200	0
			Fenitrothion	µg/L	0.2	<0.2	<0.2	200	0
			Fenthion	µg/L	0.5	<0.5	<0.5	200	0
			Malathion (Maldison)	µg/L	0.2	<0.2	<0.2	200	0
			Methidathion	µg/L	0.5	<0.5	<0.5	200	0
			Mevinphos-cis/trans	µg/L	1	<1	<1	200	0
			o,o,o-triethyl phosphorothioate	µg/L	0.5	<0.5	<0.5	200	0
			Parathion ethyl (Parathion)	µg/L	0.2	<0.2	<0.2	200	0
			Parathion methyl	µg/L	0.5	<0.5	<0.5	200	0
			Phorate	µg/L	0.5	<0.5	<0.5	200	0
			Pirimiphos-ethyl	µg/L	0.5	<0.5	<0.5	200	0
			Pirimiphos-methyl	µg/L	0.5	<0.5	<0.5	200	0
			Profenofos	µg/L	0.5	<0.5	<0.5	200	0
			Prothiophos (Tokuthion)*	µg/L	0.5	<0.5	<0.5	200	0
			Sulfotepp	µg/L	0.5	<0.5	<0.5	200	0
			Tetrachlorvinphos (Stirophos)*	µg/L	0.5	<0.5	<0.5	200	0
		04-PCB UPAC(7)	PCB Congener C28	µg/L	0.1	<0.1	<0.1	200	0
			PCB Congener C52	µg/L	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020	04-PCB UPAC(7)	PCB Congener C101	µg/L	0.1	<0.1	<0.1	200	0
			PCB Congener C118	µg/L	0.1	<0.1	<0.1	200	0
			PCB Congener C138	µg/L	0.1	<0.1	<0.1	200	0
			PCB Congener C153	µg/L	0.1	<0.1	<0.1	200	0
			PCB Congener C180	µg/L	0.1	<0.1	<0.1	200	0
		05-SVCH (Cl Benzenes,	Hexachlorobenzene (HCB)	µg/L	0.1	<0.1	<0.1	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,4-dichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	200	0
			Hexachlorocyclopentadiene	µg/L	2	<2	<2	200	0
			Hexachloroethane	µg/L	0.5	<0.5	<0.5	200	0
			Hexachloroproprene	µg/L	0.5	<0.5	<0.5	200	0
			Pentachlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			Pentachloroethane	µg/L	0.5	<0.5	<0.5	200	0
			1,2,3,5 and 1,2,4,5 -tetrachlorobenzene	µg/L	1	<1	<1	200	0
			1,2,3,4-tetrachlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			1/2-Chloronaphthalene	µg/L	1	<1	<1	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
		06-Phthalates	Bis(2-ethylhexyl)phthalate	µg/L	10	<10	<10	200	0
			Bis(2-ethylhexyl)adipate	µg/L	1	<1	<1	200	0
			Butyl benzyl phthalate	µg/L	1	<1	<1	200	0
			Di-n-butyl phthalate	µg/L	10	<10	<10	200	0
			Diethyl phthalate	µg/L	5	<5	<5	200	0
			Dimethyl phthalate	µg/L	1	<1	<1	200	0
			Di-n-octyl phthalate	µg/L	1	<1	<1	200	0
		07-Carbamates	Carbofuran	µg/L	0.5	<0.5	<0.5	200	0
			Carbaryl	µg/L	0.5	<0.5	<0.5	200	0
		08-Herbicides	Trifluralin	µg/L	0.5	<0.5	<0.5	200	0
		09-Nitrosamines	N-nitroso-di-n-butylamine (NDBA)	µg/L	1	<1	<1	200	0
			N-nitroso-diethylamine (NDEA)	µg/L	1	<1	<1	200	0
			N-nitroso-di-n-propylamine (NDPA)	µg/L	1	<1	<1	200	0
			N-nitroso-morpholine (NMOR)	µg/L	1	<1	<1	200	0
			N-nitroso-piperidine (NPIP)	µg/L	1	<1	<1	200	0
			N-nitroso-pyrrolidine (NPYR)	µg/L	1	<1	<1	200	0
			4-amino biphenyl	µg/L	1	<1	<1	200	0
		10-Nitroaromatics and	Acetophenone	µg/L	1	<1	<1	200	0
			1,3-dinitrobenzene	µg/L	1	<1	<1	200	0
			2,4-dinitrotoluene	µg/L	1	<1	<1	200	0
			2,6-dinitrotoluene	µg/L	1	<1	<1	200	0
			Isophorone	µg/L	1	<1	<1	200	0
			Nitrobenzene	µg/L	1	<1	<1	200	0
			p-(dimethylamino) azobenzene	µg/L	1	<1	<1	200	0
			Phenacetin	µg/L	1	<1	<1	200	0
			Pentachloronitrobenzene (quintozene)	µg/L	1	<1	<1	200	0
		11-Anilines and Amines	Aniline	µg/L	5	<5	<5	200	0
			4-chloroaniline	µg/L	1	<1	<1	200	0
			2-nitroaniline	µg/L	1	<1	<1	200	0
			3-nitroaniline	µg/L	1	<1	<1	200	0
			4-nitroaniline	µg/L	1	<1	<1	200	0
			Diphenylamine	µg/L	1	<1	<1	200	0
			o-toluidine	µg/L	1	<1	<1	200	0
			5-nitro-o-toluidine	µg/L	1	<1	<1	200	0
			1-naphthylamine	µg/L	2	<2	<2	200	0
			2-naphthylamine	µg/L	2	<2	<2	200	0
		12-Haloethers	Bis(2-chloroethoxy) methane	µg/L	1	<1	<1	200	0
			Bis(2-chloroethyl) ether	µg/L	1	<1	<1	200	0
			Bis(2-chloroisopropyl) ether	µg/L	1	<1	<1	200	0
			4-chlorophenyl phenyl ether	µg/L	1	<1	<1	200	0
			4-bromophenyl phenyl ether	µg/L	1	<1	<1	200	0
		13-Other	Methyl methanesulfonate	µg/L	1	<1	<1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020	13-Other SVOCs	Ethyl methanesulfonate	µg/L	1	<1	<1	200	0
			Dibenzofuran	µg/L	1	<1	<1	200	0
			Benzyl alcohol	µg/L	1	<1	<1	200	0
			Safrole	µg/L	1	<1	<1	200	0
			Isosafrole Isomer 1	µg/L	1	<1	<1	200	0
			Isosafrole Isomer 2	µg/L	1	<1	<1	200	0
			1,4-naphthoquinone	µg/L	1	<1	<1	200	0
			Thionazin	µg/L	1	<1	<1	200	0
		14-Speciated Routine	3/4-methyl phenol (m/p-cresol)	µg/L	1	<1	<1	200	0
			2-methyl phenol (o-cresol)	µg/L	0.5	<0.5	<0.5	200	0
			2,6-dichlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			2,3,4,6-tetrachlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			2,4,5-trichlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			4-chloro-3-methylphenol	µg/L	2	<2	<2	200	0
			2-chlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			2,4-dichlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			2,4-dimethylphenol	µg/L	0.5	<0.5	<0.5	200	0
			2-nitrophenol	µg/L	0.5	<0.5	<0.5	200	0
			Phenol	µg/L	0.5	<0.5	<0.5	200	0
			2,4,6-trichlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			Pentachlorophenol	µg/L	0.5	<0.5	<0.5	200	0
			4-nitrophenol	µg/L	1	<1	<1	200	0
		Surrogates	d5-phenol (Surrogate)	µg/L	-	0.63	0.64	30	2
			d5-nitrobenzene (Surrogate)	µg/L	-	0.24	0.25	30	4
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.20	0.20	30	0
			2,4,6-Tribromophenol (Surrogate)	µg/L	-	2.4	2.4	30	0
			d14-p-terphenyl (Surrogate)	µg/L	-	0.25	0.25	30	0

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616A.003	LB339831.014	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	197
SE278780A.004	LB339831.019	Mercury	µg/L	0.0001	<0.0001	0.0000	200	198

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339980.014	Calcium, Ca	mg/L	0.2	28	28	16	1
		Lithium, Li	mg/L	0.005	0.024	0.025	35	2
		Magnesium, Mg	mg/L	0.1	14	14	16	1
		Potassium, K	mg/L	0.1	52	54	15	2
		Silicon, Si*	mg/L	0.05	8.3	8.4	16	1
		Sodium, Na	mg/L	0.5	120	120	15	2

Nitrite in Water

Method: ME-(AU)-[ENV]AN277

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339749.025	Nitrite Nitrogen, NO2 as N	mg/L	0.005	<0.005	<0.005	200	0
SE279152.003	LB339749.014	Nitrite Nitrogen, NO2 as N	mg/L	0.005	0.011	0.012	58	1

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020	Alpha BHC	µg/L	0.1	<0.1	<0.1	200	0
		Hexachlorobenzene (HCB)	µg/L	0.1	<0.1	<0.1	200	0
		Beta BHC	µg/L	0.1	<0.1	<0.1	200	0
		Lindane (gamma BHC)	µg/L	0.1	<0.1	<0.1	200	0
		Delta BHC	µg/L	0.1	<0.1	<0.1	200	0
		Heptachlor	µg/L	0.1	<0.1	<0.1	200	0
		Aldrin	µg/L	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	µg/L	0.1	<0.1	<0.1	200	0
		Gamma Chlordane	µg/L	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	µg/L	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	µg/L	0.1	<0.1	<0.1	200	0

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OC Pesticides in Water (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		p,p'-DDE	μg/L	0.1	<0.1	<0.1	200	0
			Dieldrin	μg/L	0.1	<0.1	<0.1	200	0
			Endrin	μg/L	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	μg/L	0.1	<0.1	<0.1	200	0
			p,p'-DDD	μg/L	0.1	<0.1	<0.1	200	0
			Endrin aldehyde	μg/L	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	μg/L	0.1	<0.1	<0.1	200	0
			p,p'-DDT	μg/L	0.1	<0.1	<0.1	200	0
			Endrin ketone	μg/L	0.1	<0.1	<0.1	200	0
			Methoxychlor	μg/L	0.1	<0.1	<0.1	200	0
			Mirex	μg/L	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	μg/L	-	0.096	0.12	30	22

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		Azinphos-methyl	μg/L	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	μg/L	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	μg/L	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	μg/L	0.5	<0.5	<0.5	200	0
			Dichlorvos	μg/L	0.5	<0.5	<0.5	200	0
			Dimethoate	μg/L	0.5	<0.5	<0.5	200	0
			Ethion	μg/L	0.2	<0.2	<0.2	200	0
			Fenitrothion	μg/L	0.2	<0.2	<0.2	200	0
			Malathion	μg/L	0.2	<0.2	<0.2	200	0
			Methidathion	μg/L	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	μg/L	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	μg/L	-	0.29	0.29	30	0
			d14-p-terphenyl (Surrogate)	μg/L	-	0.30	0.31	30	2
	LB339751.021		Azinphos-methyl	μg/L	0.2	<0.2	0	200	0
			Bromophos Ethyl	μg/L	0.2	<0.2	0.0625	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	μg/L	0.2	<0.2	0	200	0
			Diazinon (Dimpylate)	μg/L	0.5	<0.5	0.5	200	0
			Dichlorvos	μg/L	0.5	<0.5	0	200	0
			Dimethoate	μg/L	0.5	<0.5	0.1875	200	0
			Ethion	μg/L	0.2	<0.2	0	200	0
			Fenitrothion	μg/L	0.2	<0.2	0	200	0
			Malathion	μg/L	0.2	<0.2	0	200	0
			Methidathion	μg/L	0.5	<0.5	0	200	0
			Parathion-ethyl (Parathion)	μg/L	0.2	<0.2	0.0625	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	μg/L	-	0.29	0.2	30	37 †
			d14-p-terphenyl (Surrogate)	μg/L	-	0.30	0.25	30	19

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		Naphthalene	μg/L	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	μg/L	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	μg/L	0.1	<0.1	<0.1	200	0
			Acenaphthylene	μg/L	0.1	<0.1	<0.1	200	0
			Acenaphthene	μg/L	0.1	<0.1	<0.1	200	0
			Fluorene	μg/L	0.1	<0.1	<0.1	200	0
			Phenanthrene	μg/L	0.1	<0.1	<0.1	200	0
			Anthracene	μg/L	0.1	<0.1	<0.1	200	0
			Fluoranthene	μg/L	0.1	<0.1	<0.1	200	0
			Pyrene	μg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	μg/L	0.1	<0.1	<0.1	200	0
			Chrysene	μg/L	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	μg/L	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	μg/L	0.1	<0.1	<0.1	200	0
			Benzo(b&j&k)fluoranthene	μg/L	0.2	<0.2	<0.2	200	0
			Benzo(a)pyrene	μg/L	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	μg/L	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	μg/L	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Water (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.27	0.27	30	1
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.29	0.29	30	0
			d14-p-terphenyl (Surrogate)	µg/L	-	0.30	0.31	30	2

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		Arochlor 1016	µg/L	1	<1	<1	200	0
			Arochlor 1221	µg/L	1	<1	<1	200	0
			Arochlor 1232	µg/L	1	<1	<1	200	0
			Arochlor 1242	µg/L	1	<1	<1	200	0
			Arochlor 1248	µg/L	1	<1	<1	200	0
			Arochlor 1254	µg/L	1	<1	<1	200	0
			Arochlor 1260	µg/L	1	<1	<1	200	0
		Surrogates	TCMX (Surrogate)	µg/L	-	0.096	0.12	30	22

Redox Potential (Eh) in water

Method: ME-(AU)-[ENV]AN240

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339766.004	Eh of Sample Relative to Standard H+ Electrode***	mV	-500	211	209	15	1

TKN Kjeldahl Digestion by Discrete Analyser

Method: ME-(AU)-[ENV]AN292

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279169.001	LB339941.014	Total Kjeldahl Nitrogen	mg/L	0.05	39	40	15	2
SE279174.001	LB339941.029	Total Kjeldahl Nitrogen	mg/L	0.05	42	38	15	11

Total and Volatile Suspended Solids (TSS / VSS)

Method: ME-(AU)-[ENV]AN114

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279195.001	LB339851.014	Total Suspended Solids Dried at 103-105°C	mg/L	5	52	48	25	8
SE279204.001	LB339851.022	Total Suspended Solids Dried at 103-105°C	mg/L	5	<5	<5	200	0

Total Dissolved Solids (TDS) in water

Method: ME-(AU)-[ENV]AN113

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339850.013	Total Dissolved Solids Dried at 175-185°C	mg/L	10	850	880	16	4
SE279195.001	LB339850.021	Total Dissolved Solids Dried at 175-185°C	mg/L	10	490	490	17	0

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279204.001	LB339808.010	Total Phenols	mg/L	0.05	<0.05	<0.05	200	0

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293(Sydney only)

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279169.001	LB339941.014	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	15	16	15	1
SE279174.001	LB339941.029	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	8.3	7.4	15	11

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616A.003	LB339828.014	Aluminium	µg/L	5	28	28	33	1
		Arsenic	µg/L	1	1	1	91	0
		Cadmium	µg/L	0.1	<0.1	<0.1	200	0
		Chromium	µg/L	1	<1	<1	136	0
		Copper	µg/L	1	1	1	110	1
		Lead	µg/L	1	<1	<1	200	0
		Nickel	µg/L	1	4	4	41	1
		Zinc	µg/L	5	130	130	19	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE279219.008	LB339828.022		Arsenic	μg/L	1	<1	<1	200	0
			Cadmium	μg/L	0.1	<0.1	<0.1	200	0
			Chromium	μg/L	1	<1	<1	200	0
			Copper	μg/L	1	<1	<1	124	0
			Lead	μg/L	1	<1	<1	200	0
			Nickel	μg/L	1	<1	<1	200	0
			Zinc	μg/L	5	7	8	81	5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278615A.003	LB339751.020		TRH C10-C14	μg/L	50	<50	<50	200	0
			TRH C15-C28	μg/L	200	<200	<200	200	0
			TRH C29-C36	μg/L	200	<200	<200	200	0
			TRH C37-C40	μg/L	200	<200	<200	200	0
			TRH C10-C40	μg/L	320	<320	<320	200	0
		TRH F Bands	TRH >C10-C16	μg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	μg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	μg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	μg/L	500	<500	<500	200	0
SE278780A.004	LB339751.019		TRH C10-C14	μg/L	50	<50	<50	200	0
			TRH C15-C28	μg/L	200	<200	<200	200	0
			TRH C29-C36	μg/L	200	<200	<200	200	0
			TRH C37-C40	μg/L	200	<200	<200	200	0
			TRH C10-C40	μg/L	320	<320	<320	200	0
		TRH F Bands	TRH >C10-C16	μg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	μg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	μg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	μg/L	500	<500	<500	200	0

Turbidity

Method: ME-(AU)-[ENV]AN119

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.002	LB339747.015		Turbidity	NTU	0.5	210	200	15	1

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.003	LB339752.011	Monocyclic Aromatic	Benzene	μg/L	0.5	<0.5	<0.5	200	0
			Toluene	μg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	μg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	μg/L	1	<1	<1	200	0
			o-xylene	μg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene (VOC)*	μg/L	0.5	<0.5	<0.5	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	μg/L	-	10	8.5	30	20
			d8-toluene (Surrogate)	μg/L	-	10	9.2	30	9
			Bromofluorobenzene (Surrogate)	μg/L	-	11	10	30	5
		Totals	Total BTEX	μg/L	3	<3	<3	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278780A.003	LB339752.011		TRH C6-C10	μg/L	50	<50	<50	200	0
			TRH C6-C9	μg/L	40	<40	<40	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	μg/L	-	10	8.5	30	20
			d8-toluene (Surrogate)	μg/L	-	10	9.2	30	9
			Bromofluorobenzene (Surrogate)	μg/L	-	11	10	30	5
		VPH F Bands	Benzene (F0)	μg/L	0.5	<0.5	<0.5	200	0
			TRH C6-C10 minus BTEX (F1)	μg/L	50	<50	<50	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]AN291

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339749.002	Ammonia Nitrogen, NH_3 as N	mg/L	0.01	2.6	2.5	80 - 120	104

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339959.002	Fluoride	mg/L	0.1	2.1	2	80 - 120	107
	Chloride	mg/L	0.05	19	20	80 - 120	97
	Bromide	mg/L	0.05	2.1	2	80 - 120	105
	Nitrate Nitrogen, NO3-N	mg/L	0.005	2.0	2	80 - 120	102
	Sulfate, SO4	mg/L	1	21	20	80 - 120	104

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339746.002	Conductivity @ 25 C	µS/cm	2	290	303	90 - 110	94

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]AN278

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339749.002	Filterable Reactive Phosphorus as P	mg/L	0.005	0.10	0.1	80 - 120	102

Forms of Carbon

Method: ME-(AU)-[ENV]AN190

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339969.002	Total Organic Carbon as NPOC	mg/L	0.2	20	20	80 - 120	100

Full 8270 SVOC in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002	01-PAHs	Acenaphthene	µg/L	0.1	40	40	60 - 140	101
		Acenaphthylene	µg/L	0.1	39	40	60 - 140	98
		Anthracene	µg/L	0.1	37	40	60 - 140	93
		Benzo(a)pyrene	µg/L	0.1	50	40	60 - 140	125
		Fluoranthene	µg/L	0.1	35	40	60 - 140	88
		Naphthalene	µg/L	0.1	39	40	60 - 140	97
		Phenanthrene	µg/L	0.1	38	40	60 - 140	95
		Pyrene	µg/L	0.1	36	40	60 - 140	90
	02-OCs	Aldrin	µg/L	0.1	3.0	4	60 - 140	76
		Delta-BHC	µg/L	0.1	3.7	4	60 - 140	92
		p,p-DDT	µg/L	0.1	2.9	4	60 - 140	73
		Dieldrin	µg/L	0.1	3.7	4	60 - 140	92
		Endrin	µg/L	0.1	2.9	4	60 - 140	74
		Heptachlor	µg/L	0.1	2.9	4	60 - 140	73
	03-OPs	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	8.3	8	60 - 140	104
		Diazinon (Dimpylate)	µg/L	0.5	10	8	60 - 140	125
		Dichlorvos	µg/L	0.5	9.4	8	60 - 140	117
		Ethion	µg/L	0.2	8.0	8	60 - 140	100
	05-SVCH (Cl Benzenes,	Hexachlorobenzene (HCB)	µg/L	0.1	4.0	4	60 - 140	100
		Hexachlorobutadiene	µg/L	0.5	4.2	4	60 - 140	106
		Hexachloroethane	µg/L	0.5	4.1	4	60 - 140	101
		Pentachlorobenzene	µg/L	0.5	4.0	4	60 - 140	99
		1,2,3,4-tetrachlorobenzene	µg/L	0.5	3.9	4	60 - 140	97
	06-Phthalates	Bis(2-ethylhexyl)phthalate	µg/L	10	<10	8	60 - 140	95
		Butyl benzyl phthalate	µg/L	1	6	8	60 - 140	78
		Di-n-butyl phthalate	µg/L	10	<10	8	60 - 140	87
		Diethyl phthalate	µg/L	5	8	8	60 - 140	102
		Dimethyl phthalate	µg/L	1	7	8	60 - 140	88
		Di-n-octyl phthalate	µg/L	1	8	8	60 - 140	96
	09-Nitrosamine	N-nitroso-di-n-propylamine (NDPA)	µg/L	1	29	32	60 - 140	92
	10-Nitroaromat	Pentachloronitrobenzene (quintozene)	µg/L	1	5	4	60 - 140	129

LABORATORY CONTROL SAMPLES

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002	14-Speciated Routine	2,4-dichlorophenol	µg/L	0.5	43	40	60 - 140	107
		Phenol	µg/L	0.5	44	40	60 - 140	109
		2,4,6-trichlorophenol	µg/L	0.5	47	40	60 - 140	119
		Pentachlorophenol	µg/L	0.5	55	40	60 - 140	137
	Surrogates	d5-phenol (Surrogate)	µg/L	-	2.1	2	40 - 130	103
		d5-nitrobenzene (Surrogate)	µg/L	-	0.56	0.5	40 - 130	112
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.36	0.5	40 - 130	72
		2,4,6-Tribromophenol (Surrogate)	µg/L	-	4.8	5	40 - 130	95
		d14-p-terphenyl (Surrogate)	µg/L	-	0.39	0.5	40 - 130	78

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339980.002	Calcium, Ca	mg/L	0.2	50	50.5	80 - 120	99
	Lithium, Li	mg/L	0.005	0.092	0.1	80 - 120	92
	Magnesium, Mg	mg/L	0.1	46	50.5	80 - 120	91
	Potassium, K	mg/L	0.1	49	55	80 - 120	89
	Silicon, Si*	mg/L	0.05	0.26	0.25	80 - 120	104
	Sodium, Na	mg/L	0.5	48	50.5	80 - 120	94

Nitrite in Water

Method: ME-(AU)-[ENV]AN277

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339749.002	Nitrite Nitrogen, NO2 as N	mg/L	0.005	0.098	0.1	80 - 120	98

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002		Delta BHC	µg/L	0.1	0.2	0.2	60 - 140	86
		Heptachlor	µg/L	0.1	0.2	0.2	60 - 140	87
		Aldrin	µg/L	0.1	0.2	0.2	60 - 140	82
		Dieldrin	µg/L	0.1	0.2	0.2	60 - 140	89
		Endrin	µg/L	0.1	0.2	0.2	60 - 140	88
		p,p'-DDT	µg/L	0.1	0.2	0.2	60 - 140	90
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	µg/L	-	0.12	0.15	40 - 130	81

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	10	8	60 - 140	130
		Diazinon (Dimpylate)	µg/L	0.5	11	8	60 - 140	138
		Dichlorvos	µg/L	0.5	10	8	60 - 140	127
		Ethion	µg/L	0.2	11	8	60 - 140	131
	Surrogates	2-fluorobiphenyl (Surrogate)	µg/L	-	0.43	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	µg/L	-	0.35	0.5	40 - 130	70

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002		Naphthalene	µg/L	0.1	44	40	60 - 140	109
		Acenaphthylene	µg/L	0.1	49	40	60 - 140	122
		Acenaphthene	µg/L	0.1	49	40	60 - 140	122
		Phenanthrene	µg/L	0.1	49	40	60 - 140	123
		Anthracene	µg/L	0.1	45	40	60 - 140	113
		Fluoranthene	µg/L	0.1	48	40	60 - 140	120
		Pyrene	µg/L	0.1	46	40	60 - 140	116
		Benzo(a)pyrene	µg/L	0.1	54	40	60 - 140	136
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.34	0.5	40 - 130	68
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.43	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	µg/L	-	0.35	0.5	40 - 130	70

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002	Arochlor 1260	µg/L	1	<1	0.4	60 - 140	130

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples

Method: ME-(AU)-[ENV]AN404

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339750.002	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	0.17	0.2	40 - 160	85
	Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.22	0.2	40 - 160	108
	Perfluorononanoic acid (PFNA)	µg/L	0.01	0.19	0.2	40 - 160	93
	Perfluorodecanoic acid (PFDA)	µg/L	0.01	0.19	0.2	40 - 160	95
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	0.16	0.2	40 - 160	82
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	0.21	0.2	40 - 160	105
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.17	0.2	40 - 160	84
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.01	0.17	0.2	40 - 160	86

Redox Potential (Eh) in water

Method: ME-(AU)-[ENV]AN240

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339766.001	Eh of Sample Relative to Standard H+ Electrode***	mV	-500	427	428	90 - 110	100

Total and Volatile Suspended Solids (TSS / VSS)

Method: ME-(AU)-[ENV]AN114

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339851.002	Total Suspended Solids Dried at 103-105°C	mg/L	5	89	100	80 - 120	89

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339811.002	Total Cyanide	mg/L	0.004	0.026	0.025	80 - 120	103

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339808.002	Total Phenols	mg/L	0.05	0.19	0.2	80 - 120	93

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293(Sydney only)

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339941.002	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	1.0	1	80 - 120	100

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339828.002	Aluminium	µg/L	5	21	20	80 - 120	104
	Antimony	µg/L	1	20	20	80 - 120	98
	Arsenic	µg/L	1	20	20	80 - 120	98
	Barium	µg/L	1	21	20	80 - 120	107
	Beryllium	µg/L	1	24	20	80 - 120	120
	Boron	µg/L	5	23	20	80 - 120	117
	Cadmium	µg/L	0.1	23	20	80 - 120	114
	Chromium	µg/L	1	22	20	80 - 120	112
	Cobalt	µg/L	1	23	20	80 - 120	113
	Copper	µg/L	1	23	20	80 - 120	115
	Iron	µg/L	5	21	20	80 - 120	106
	Lead	µg/L	1	21	20	80 - 120	105
	Manganese	µg/L	1	21	20	80 - 120	106
	Molybdenum	µg/L	1	20	20	80 - 120	102
	Nickel	µg/L	1	22	20	80 - 120	108
	Selenium	µg/L	1	18	20	80 - 120	90
	Silver	µg/L	1	18	20	80 - 120	91
	Strontium	µg/L	1	20	20	80 - 120	102
	Uranium	µg/L	1	22	20	80 - 120	108
	Vanadium	µg/L	1	21	20	80 - 120	107
	Zinc	µg/L	5	24	20	80 - 120	119

LABORATORY CONTROL SAMPLES

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339751.002		TRH C10-C14	µg/L	50	1200	1200	60 - 140	101
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	113
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	118
	TRH F Bands	TRH >C10-C16	µg/L	60	1300	1200	60 - 140	108
		TRH >C16-C34 (F3)	µg/L	500	1400	1200	60 - 140	118
		TRH >C34-C40 (F4)	µg/L	500	720	600	60 - 140	120

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339752.002	Halogenated Aliphatics	1,1-dichloroethene	µg/L	0.5	59	45.45	60 - 140	130
		1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	110
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	50	45.45	60 - 140	110
	Halogenated	Chlorobenzene	µg/L	0.5	45	45.45	60 - 140	98
	Monocyclic Aromatic	Benzene	µg/L	0.5	63	45.45	60 - 140	139
		Toluene	µg/L	0.5	56	45.45	60 - 140	123
		Ethylbenzene	µg/L	0.5	52	45.45	60 - 140	115
		m/p-xylene	µg/L	1	110	90.9	60 - 140	118
		o-xylene	µg/L	0.5	53	45.45	60 - 140	118
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	12	10	60 - 140	124
		d8-toluene (Surrogate)	µg/L	-	12	10	70 - 130	115
		Bromofluorobenzene (Surrogate)	µg/L	-	11	10	70 - 130	111
	Trihalomethan	Chloroform (THM)	µg/L	0.5	59	45.45	60 - 140	130

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB339752.002		TRH C6-C10	µg/L	50	830	946.63	60 - 140	88
		TRH C6-C9	µg/L	40	710	818.71	60 - 140	87
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	12	10	60 - 140	124
		d8-toluene (Surrogate)	µg/L	-	12	10	70 - 130	115
		Bromofluorobenzene (Surrogate)	µg/L	-	11	10	70 - 130	111
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	500	639.67	60 - 140	78

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]AN291

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279152.001	LB339749.024	Ammonia Nitrogen, NH_3 as N	mg/L	0.01	3.0	0.41	2.5	103

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279258.001	LB339959.026	Nitrate Nitrogen, NO3-N	mg/L	0.005	2.2	0.055	2	105

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]AN278

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279152.001	LB339749.024	Filterable Reactive Phosphorus as P	mg/L	0.005	0.10	<0.005	0.1	103

Forms of Carbon

Method: ME-(AU)-[ENV]AN190

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279276.043	LB339969.005	Total Organic Carbon as NPOC	mg/L	0.2	52	0.6	50	102

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.001	LB339831.004	Mercury	mg/L	0.0001	0.0018	<0.0001	0.008	91

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.001	LB339980.004	Calcium, Ca	mg/L	0.2	91	31	50.5	118
		Magnesium, Mg	mg/L	0.1	93	37	50.5	111

Nitrite in Water

Method: ME-(AU)-[ENV]AN277

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279152.001	LB339749.024	Nitrite Nitrogen, NO2 as N	mg/L	0.005	0.10	<0.005	0.1	99

TKN Kjeldahl Digestion by Discrete Analyser

Method: ME-(AU)-[ENV]AN292

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279152.004	LB339941.028	Total Kjeldahl Nitrogen	mg/L	0.05	2.9	0.17	2.5	109

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278780A.001	LB339811.018	Total Cyanide	mg/L	0.004	0.025	<0.004	0.025	94

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.003	LB339808.004	Total Phenols	mg/L	0.05	0.19	<0.05	0.2	92

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293(Sydney only)

QC Sample	Sample Number	Parameter	Units	LOR

MATRIX SPIKES

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Total Phosphorus by Kjeldahl Digestion DA in Water (continued)

Method: ME-(AU)-[ENV]AN279/AN293(Sydney only)

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE279152.004	LB339941.028	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	1.1	0.02	1	110

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE278615A.001	LB339828.004	Aluminium	µg/L	5	26	6	20	98
		Arsenic	µg/L	1	22	<1	20	105
		Cadmium	µg/L	0.1	20	0.1	20	101
		Chromium	µg/L	1	21	<1	20	101
		Copper	µg/L	1	21	3	20	89
		Lead	µg/L	1	20	<1	20	97
		Nickel	µg/L	1	41	24	20	85
		Zinc	µg/L	5	64	48	20	78

MATRIX SPIKE DUPLICATES

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

FOOTNOTES

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

Sheet 1 of 1

"Site B"
2-16 Pockley
Street, Roseville NSW

Project No:
E26491

Laboratory:
SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM ^A /TRH (including F1, F2, F3, F4)/BTEX/ PAHs/ OCP/OP/PCB/Asbestos	HM ^A /TRH (including F1, F2, F3, F4)/ BTEX/PAHs	HM ^A /TRH (including F1, F2, F3, F4)/BTEX	Faecal coliforms	Faecal Streptococci	~~Asbestos~~ Escherichia Coli	Asbestos Quantification (500ml)	Asbestos 10L field screening	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM ^A /pH / EC / Foreign Materials)	Dewatering Suite	pH /	sPOCAS	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM ^B / PAH
BH4M	1	S/P/VC	24/2/25	2pm		X	X														X								
BH4.1M	2	↓	↓	↓		X	X					X	X	X							X								

SGS EHS Sydney COC
SE278780

Comments

HM ^A
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM ^B
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
☐ Standard
☒ 24 Hours
☐ 48 Hours
☐ 72 Hours
☐ Other_____

Container Type:
J = solvent washed, acid rinsed, Tefton sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI): Amy / Marine
Print: Marina Deza
Signature:
Date: 24/2/25

Received by (SGS):
Print: Joel K
Signature:
Date 24/2/25

1.30

Report with EI Waste Classification Table ☐

Sampler's Comments:
Please CC:
sharon.li; amy.nyiri; marina.deza

eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC November 2024 FORM v.6 - SGS

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE278780

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 2-16 Pockley Street,RosevilleNSW**
Order Number	**E26491**
Samples	2

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
Samples Received	Mon 24/2/2025
Report Due	Tue 25/2/2025
SGS Reference	**SE278780**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Monday 24/2/2025. Results are expected to be ready by COB Tuesday 25/2/2025. Please quote SGS reference SE278780 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Water	Type of documentation received	COC
Date documentation received	24/2/2025	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	10.8°C
Sample container provider	SGS	Turnaround time requested	Next day
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

Unlisted samples on hold - GW-QD1, GW-QR1 and GW-QRB1.

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client	EI AUSTRALIA	Project	E26491 2-16 Pockley Street,RosevilleNSW

SUMMARY OF ANALYSIS

No.	Sample ID	E. coli, Total and Faecal (Thermotolerant) coliforms	Enterococci in Water	pH in water
001	BH4M	-	-	1
002	BH4.1M	3	2	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Marina Deza	Manager	Shane McDermott
Client	EI AUSTRALIA	Laboratory	SGS Alexandria Environmental
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	61 2 95160722	Telephone	+61 2 8594 0400
Facsimile	(Not specified)	Facsimile	+61 2 8594 0499
Email	marina.deza@eiaustralia.com.au	Email	au.environmental.sydney@sgs.com
Project	**E26491 2-16 Pockley Street,RosevilleNSW**	SGS Reference	**SE278780 R0**
Order Number	**E26491**	Date Received	24/2/2025
Samples	2	Date Reported	26/2/2025

COMMENTS

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

SIGNATORIES

Tim MEEYAN	**Ying Ying ZHANG**
Lab Tech	Laboratory Technician

pH in water [AN101] Tested: 24/2/2025

PARAMETER	UOM	LOR	BH4M WATER - 24/2/2025 SE278780.001	BH4.1M WATER - 24/2/2025 SE278780.002
pH**	No unit	-	6.3	6.5

E. coli, Total and Faecal (Thermotolerant) coliforms in Water (MPN) [AN735] Tested: 25/2/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780.002
Date & Time Processed*	No unit	-	2025-02-25 11:24
E. coli	MPN/100mL	1	13
Faecal Coliforms	MPN/100mL	1	17

Enterococci in Water [AN705] Tested: 25/2/2025

PARAMETER	UOM	LOR	BH4.1M WATER - 24/2/2025 SE278780.002
Date & Time Processed*	No unit	-	2025-02-25 10:39
Intestinal Enterococci*	CFU/100mL	1	<1

METHOD	METHODOLOGY SUMMARY
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+.
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).
AN735	The Colilert matrix contains two nutrient indicators, ONPG (ortho-nitro-phenyl B-d- galactopyranoside) and MUG (4-methyl-umbelliferyl B-d-glucruonide). As coliforms grow, they use B-galactosidase to metabolise ONPG which causes yellow colouration of the matrix via the nitro-phenyl. E.coli possesses an additional enzyme, B-glucuronidase, which it uses to metabolise MUG and display florescence (caused by the 4 methyl-umbelliferyl). Incubation at 37°C.
AN735	Non target organisms are suppressed by a combination of high salts, detergents etc. present within the matrix. Faecal coliforms are thermotolerant, thus they can be enumerated by testing at 44.5°C.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.

-	Not analysed.
NVL	Not validated.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.

UOM	Unit of Measure.
LOR	Limit of Reporting.
↑↓	Raised/lowered Limit of Reporting.

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

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

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

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

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:
a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

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

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

STATEMENT OF QA/QC PERFORMANCE

SE278780 R0

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 2-16 Pockley Street,RosevilleNSW**
Order Number	**E26491**
Samples	2

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	**SE278780 R0**
Date Received	24 Feb 2025
Date Reported	26 Feb 2025

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	2 Water	Type of documentation received	COC
Date documentation received	24/2/2025	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	10.8°C
Sample container provider	SGS	Turnaround time requested	Next day
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

E. coli, Total and Faecal (Thermotolerant) coliforms in Water (MPN)

Method: ME-(AU)-[ENV]AN735

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780.002	LB338920	24 Feb 2025	24 Feb 2025	25 Feb 2025	25 Feb 2025	28 Feb 2025	25 Feb 2025

Enterococci in Water

Method: ME-(AU)-[ENV]AN705

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4.1M	SE278780.002	LB338920	24 Feb 2025	24 Feb 2025	25 Feb 2025	25 Feb 2025	28 Feb 2025	25 Feb 2025

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4M	SE278780.001	LB338812	24 Feb 2025	24 Feb 2025	25 Feb 2025	24 Feb 2025	25 Feb 2025	24 Feb 2025
BH4.1M	SE278780.002	LB338812	24 Feb 2025	24 Feb 2025	25 Feb 2025	24 Feb 2025	25 Feb 2025	24 Feb 2025

SURROGATES

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.

METHOD BLANKS

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

No method blanks were required for this job.

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

pH in water

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278717.002	LB338812.020	pH**	pH Units	-	4.6418	4.6118	17	1

LABORATORY CONTROL SAMPLES

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB338812.003	pH**	No unit	-	7.4	7.415	98 - 102	100

MATRIX SPIKES

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

Sheet 1 of 1

"Site B"
2-16 Pockley
Street, Roseville NSW

Project No:
E26491

Laboratory:

SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

SGS EHS Sydney COC
SE278616

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM^{A} /TRH (including F1, F2, F3, F4)/BTEX/ PAHs/ OCP/OP/PCB/Asbestos	HM^{A} /TRH (including F1, F2, F3, F4)/ BTEX/PAHs	HM^{A} /TRH (including F1, F2, F3, F4)/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification (500ml)	Asbestos 10L field screening	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM^{A} /pH / EC / Foreign Materials)	Dewatering Suite	pH [illegible]	sPOCAS	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM^{B} / PAH
BH1M	1	S/P/VC	20/2/25	am/pm		x	x														↓								
BH2M	2	S/P/VC	↓	↓		↓	↓														↓								
BH2.1M	3	"	↓	↓		↓	↓														↓								

Comments

HM^{A}
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM^{B}
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

☐ Standard
☒ 24 Hours
☐ 48 Hours
☐ 72 Hours
☐ Other____

Container Type:
J = solvent washed, acid rinsed, Tefton sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI): Amy / Marina	Received by (SGS):
Print Marina Deza	Print Joe / K
Signature	Signature
Date: 20/2/25	Date 20/2/25 @ 5:35

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:
Please CC:
sharon.li; amy.nyiri; marina.deza

eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC November 2024 FORM v.6 - SGS

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 Site B 2-16 Pockley Street,Rosevi**
Order Number	**E26491**
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	**SE278616 R0**
Date Received	20/2/2025
Date Reported	21/2/2025

COMMENTS

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

SIGNATORIES

yingying zhang

Ying Ying ZHANG

Laboratory Technician

pH in water [AN101] Tested: 21/2/2025

PARAMETER	UOM	LOR	BH1M WATER - 20/2/2025 SE278616.001	BH2M WATER - 20/2/2025 SE278616.002	BH21M WATER - 20/2/2025 SE278616.003
pH**	No unit	-	5.6	6.3	6.6

METHOD	METHODOLOGY SUMMARY
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+.

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:

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

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

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

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

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

This report must not be reproduced, except in full.

STATEMENT OF QA/QC PERFORMANCE

SE278616 R0

CLIENT DETAILS

Contact	Marina Deza
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	marina.deza@eiaustralia.com.au
Project	**E26491 Site B 2-16 Pockley Street,Rosevi**
Order Number	**E26491**
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	**SE278616 R0**
Date Received	20 Feb 2025
Date Reported	21 Feb 2025

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	3 Water	Type of documentation received	COC
Date documentation received	20/2/2025	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	14.0°C
Sample container provider	SGS	Turnaround time requested	Next day
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE278616.001	LB338561	20 Feb 2025	20 Feb 2025	21 Feb 2025	21 Feb 2025	21 Feb 2025	21 Feb 2025
BH2M	SE278616.002	LB338561	20 Feb 2025	20 Feb 2025	21 Feb 2025	21 Feb 2025	21 Feb 2025	21 Feb 2025
BH21M	SE278616.003	LB338561	20 Feb 2025	20 Feb 2025	21 Feb 2025	21 Feb 2025	21 Feb 2025	21 Feb 2025

SURROGATES

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.

METHOD BLANKS

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

No method blanks were required for this job.

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

pH in water

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE278616.003	LB338561.014	pH**	pH Units	-	6.6	6.6	17	0

LABORATORY CONTROL SAMPLES

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB338561.003	pH**	No unit	-	7.4	7.415	98 - 102	100

MATRIX SPIKES

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

FOOTNOTES

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

Sheet 1 of 1	
Site:	Project No:
"Site B" 2-16 Pockley Street, Roseville NSW	E26491
Laboratory:	**Envirolab Services** **12 Ashley Street,** **CHATSWOOD NSW 2067** **P: 02 9910 6200**

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM ^{A} /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	PAHs	HM ^{A} /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	Excavated Natural Material (ENM) Suite	Dewatering Suite	pH / pH peroxide	sPOCAS	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	HOLD		TCLP HM ^{B} / PAH
① GW-QT1		S/P/VC	24/2/25	am		X	X				X																

Comments

HM ^{A}
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM ^{B}
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH

LABORATORY TURNAROUND

☒ Standard
☐ 24 Hours
☐ 48 Hours
☐ 72 Hours
☐ Other______

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
ENVIROLAB GROUP
Job No: 373969
Date Received: 25/2/25
Time Received: 1455
Received By: KC
Temp: [✓ Cool]/Ambient
Cooling: Ice/[✓ Icepack]
Security: [✓ Intact]/Broken/None

Container Type:
J = solvent washed, acid rinsed, Tefton sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI): Amy/Marina	Received by (Envirolab):
Print Marina Deza	Print K-chavez
Signature:	Signature KC
Date 24/2/25	Date 25/2/25 1.30

Report with EI Waste Classification Table ☐

Sampler's Comments:
cc:
sharon.li
amy.nyiri
marina.deza

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC June 2021 FORM v.5 - Envirolab

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	Marina Deza

Sample Login Details

Your reference	E26491, "Site B" 2-16 Pockley Street,Roseville NSW
Envirolab Reference	373969
Date Sample Received	25/02/2025
Date Instructions Received	25/02/2025
Date Results Expected to be Reported	04/03/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	HM in water - dissolved
GW-QT1	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 373969

Client Details

Client	EI Australia
Attention	Marina Deza
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	**E26491, "Site B" 2-16 Pockley Street,Roseville NSW**
Number of Samples	1 Water
Date samples received	25/02/2025
Date completed instructions received	25/02/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	04/03/2025
Date of Issue	03/03/2025

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Giovanni Agosti, Group Technical Manager
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		373969-1
Your Reference	UNITS	GW-QT1
Date Sampled		24/02/2025
Type of sample		Water
Date extracted	-	28/02/2025
Date analysed	-	28/02/2025
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate Toluene-d8	%	99
Surrogate 4-Bromofluorobenzene	%	99

svTRH (C10-C40) in Water		
Our Reference		373969-1
Your Reference	UNITS	GW-QT1
Date Sampled		24/02/2025
Type of sample		Water
Date extracted	-	27/02/2025
Date analysed	-	28/02/2025
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	75

HM in water - dissolved		
Our Reference		373969-1
Your Reference	UNITS	GW-QT1
Date Sampled		24/02/2025
Type of sample		Water
Date prepared	-	27/02/2025
Date analysed	-	27/02/2025
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	2
Zinc-Dissolved	µg/L	1

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			28/02/2025	[NT]	[NT]	[NT]	[NT]	28/02/2025	[NT]
Date analysed	-			28/02/2025	[NT]	[NT]	[NT]	[NT]	28/02/2025	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	102	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	87	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate Toluene-d8	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			27/02/2025	[NT]	[NT]	[NT]	[NT]	27/02/2025	[NT]
Date analysed	-			27/02/2025	[NT]	[NT]	[NT]	[NT]	27/02/2025	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	116	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	129	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	116	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	129	[NT]
Surrogate o-Terphenyl	%		Org-020	104	[NT]	[NT]	[NT]	[NT]	113	[NT]

QUALITY CONTROL: HM in water - dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			27/02/2025	[NT]	[NT]	[NT]	[NT]	27/02/2025	[NT]
Date analysed	-			27/02/2025	[NT]	[NT]	[NT]	[NT]	27/02/2025	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Dissolved Metals: The preserved sample provided was not identified as either total or dissolved, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.

Note: there is a possibility some elements may be underestimated.

Appendix H – QAQC Assessment

Data Quality Objectives

In accordance with the NEPC (2013) *Schedule B2 Guideline on Site Characterisation* and the USEPA (2006) *Data Quality Assessment*, the seven step process described in **Table H-1** was applied, so that the appropriate levels of data quantity and quality needed for the specific requirements of the GME could be achieved.

Table H-1 Summary of GME Data Quality Objectives

DQO Step	Details
1. State the Problem Summarise the problem that will require environmental data.	This GME was required to characterise the baseline groundwater conditions of the site, and inform the design of a treatment system for the water to be extracted during the dewatering period.
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made.	What is the quality of local groundwater? What parameters will require monitoring and/or treatment during dewatering?
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision.	Inputs to the decision making process included: • The proposed development and land use; • Review of the previous investigations; • National and EPA guidelines; • Observations during groundwater sampling; and • Laboratory analytical results for the groundwater samples.
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the media that the data must represent to support decision.	Lateral – The proposed development (basement) area. Vertical – Groundwater table. Temporal – The results are valid for the day samples were collected and remain so as long as no changes occur in regards to site use, and contamination (if present) does not migrate onto the site from off-site sources.
5. Develop a Decision Rule Make a single statement that describes a logical basis for the GME.	The decision rule for the GME was: If the concentration of a COPC in the groundwater exceeded the adopted criteria, then determine the need to treat the water extracted during the dewatering works.
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data.	Specific limits for this GME were in accordance with National and EPA guidance, appropriate indicators of data quality and standard procedures for field sampling and handling. Concentrations for the COPCs that were below criteria indicated no treatment of extracted water needed. Concentrations for the COPCs that exceeded the adopted criteria indicated treatment of extracted water during dewatering would be prudent.
7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data) Identify the most resource-effective sampling and analysis design for the GME and satisfy the DQOs.	In order to identify the most resource-effective sampling and analysis design and satisfy the DQOs: • A total of 5 groundwater monitoring wells were gauged and sampled to assess groundwater quality at the site. • Laboratory analysis of five samples for COPCs. • A review of the results was undertaken.

QA/QC

QA/QC was maintained during the GME according to the measures and DQIs outlined in **Table H-2**.

Table H-2 Data Quality Indicators

QA/QC Component	Data Quality Indicator(s)
Precision A quantitative measure of the variability (or reproducibility) of data	Data precision was assessed by reviewing the performance of blind field duplicate samples, through calculation of relative percentage differences (RPD). Data precision was deemed acceptable if RPDs were found to be less than 30%. RPDs that exceeded this range were considered acceptable where: • Results were less than 10 times the limits of reporting (LOR); • Results were less than 20 times the LOR and the RPD was <50%; or • Heterogeneous materials or volatile compounds were encountered.
Accuracy A quantitative measure of the closeness of reported data to the "true" value	Data accuracy was assessed through the analysis of: • Split field duplicate sample sets; • Field and method blanks; • Matrix spike sample sets; and • Laboratory control samples.
Representativeness The confidence (expressed qualitatively) that data are representative of each medium present onsite	To ensure the data produced by the laboratory were representative of conditions encountered in the field, the following measures were taken: • Blank samples run in parallel with field samples, to confirm there were no unacceptable instances of laboratory artefacts; • Review of RPD values for field and laboratory duplicates to provide an indication that the samples were generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; • The appropriateness of sample collection methodologies, including handling, storage, and preservation, was assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods).
Completeness A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the GME were evaluated as complete upon confirmation that: • Standard operating procedures (SOPs) for sampling protocols were adhered to; and • Copies of all chain of custody (COC) documentation were included and found to be properly completed. It could therefore be considered whether the proportion of "useable data" was sufficient for the purposes of the GME.
Comparability The confidence (expressed qualitatively) that data were equivalent for each sampling and analytical event	Issues of comparability were reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards. In addition, the data were collected by experienced samplers and NATA-accredited laboratory methodologies were employed.

Quality Assurance / Quality Control Program

Quality assurance comprises an assessment of the reliability of the field procedures and laboratory results, in accordance with the SAQP. A summary of the project QA/QC measures incorporated into this report is presented in **Table H-3**.

Table H-3 Summary of Project QA/QC Measures

Task	Description	Comments
Field QA/QC		
General	Work was to be undertaken following standard field procedures which are based on industry accepted standard practice.	Groundwater samples were obtained using sample bottles/vials provided by the laboratory.
	All fieldwork was supervised by a suitably qualified and experienced scientist or engineer.	Yes
Equipment Decontamination	Sampling equipment to be decontaminated after the collection of each soil sample by washing with phosphate-free detergent and potable water, followed by a final distilled water rinse. One rinsate blank would be collected and analysed for the primary contaminants. All results should be non-detect.	Yes
Transport	Samples were stored in a chilled cooler box and transported to the laboratories. To ensure the integrity of the samples from collection to receipt by the analytical laboratory, samples were sent by courier to the laboratories under 'chain of custody' describing sample preservation and transport duration.	Yes
Trip Blanks	Trip Blank samples were to be prepared and analysed by the primary laboratory for BTEX. Analytical results to be below the laboratory LOR.	One laboratory-prepared trip blank sample was analysed for BTEX during groundwater testing. The results were reported below the laboratory LOR, indicating that sample transport acceptable.
Trip Spikes	Trip spike samples were to be prepared and analysed by the primary laboratory for BTEX. Analytical results (recoveries) to be 70-130%.	One laboratory-prepared trip spike sample was analysed for BTEX, the results of which were reported within the DQI It was therefore concluded that satisfactory sample transport and handling conditions were achieved.

Task	Description	Comments
Duplicates	Field duplicate samples were analysed as follows: ▪ intra-laboratory duplicate samples at a rate of 1 in 20 primary samples (as per NEPM); and ▪ inter-laboratory duplicate samples at a rate of 1 in 20 primary samples (as per NEPM). ▪ Field and laboratory acceptable limits between 30-50% RPD as stated by AS4482.1–2005. RPDs that exceed this range may be considered acceptable where: ▪ Results are less than 10 times the limits of reporting (LOR); ▪ Results are less than 20 times the LOR and the RPD is less than 50%; or ▪ Heterogeneous materials or volatile compounds are encountered. Non-compliance is to be documented in the report and the sample re-analysed or a higher level conservatively adopted.	The required sampling density of 1 duplicate per 20 samples was achieved. Field duplicates and calculated RPD values are presented in **Table 3, Appendix B**. Nickel and Zinc were found to be outside of DQI likely due to heterogeneity of groundwater. Copies of laboratory reports are included in **Appendix G**.
Laboratory QA/QC		
Laboratory Analysis	The laboratories selected are NATA accredited for the analytes selected and perform their own internal QA/QC programs.	Yes SGS - primary laboratory Laboratory QA/QC analyses are included in **Appendices G**.
	Appropriate detection limits were used for the analyses to be undertaken.	Practical Quantitation Limits for all tested parameters during the GME are presented in summary tables in **Appendix B.**
Holding Times	Holding times are the maximum permissible elapsed time in days from the collection of the sample to its extraction and/or analysis.	Assessment of holding times was undertaken by the laboratory. PAH in Water was extracted on the 04/03/25, and had an extraction due date of 27/02/25. TDS in Water was extracted on the 05/03/25, and had an extraction due date of 27/02/25. TDS in water was analysed 06/03/25 and had an analysis due date of 27/02/25. TRH in Water was extracted on the 04/03/25, and had an extraction due date of 27/02/25. Turbidity was extracted on the 04/03/25, and had an extraction due date of 21/02/25. Turbidity was analysed 04/03/25 and had an analysis due date of 21/02/25. Samples are considered to be representative due to trip spike results reported within the DQI.
Method Blanks	The method blank contains the reagents used to prepare the sample for analysis. The purpose of this procedure is to identify contamination in the reagent materials and assess potential bias in the sample analysis. The DQI is no detectable contamination.	Assessment of method blanks was undertaken by the laboratory.

Task	Description	Comments
Laboratory Duplicates	Laboratory duplicates are field samples from a given batch, selected at random (a frequency of 1 per 10 samples), that are analysed a number of times, to assess the precision of the analytical method.	Assessment of laboratory duplicates was undertaken by the laboratory.
Laboratory Control Standard	A laboratory control standard is a standard reference material used in preparing primary standards. The concentration should be equivalent to a mid-range standard to confirm the primary calibration. Laboratory control samples should be performed on a frequency of 1 per 20 samples or at least one per analytical run.	Assessment of laboratory control standards was undertaken by the laboratory.
Matrix Spikes	Matrix spikes are field samples to which a predetermined amount of analyte is added. Recovery of the addition should be 70-130%.	Assessment of matrix spikes was undertaken by the laboratory.
Surrogates	Surrogates provide a means of checking no significant analyte loss. Recoveries should be 70-130%.	Assessment of surrogate spikes was undertaken by the laboratory.
Conclusion	The QA/QC indicators should either all comply with the required standards or showed no variations that would have no significant effect on the quality of the data.	Assessment of the investigation QA/QC is presented in the following sections.

Field QA/QC

The field duplicates collected during the works are identified in **Table H-4**.

Table H-4 Field Duplicates

Matrix	Primary Sample	Intra-Lab Duplicate (Primary Lab)	Inter-Lab Duplicate (Secondary Lab)
Groundwater	BH4.1M	GW-QD1	GW-QT1

A summary of the field QA/QC is presented in **Table H-5**.

Table H-5 Field Data Quality Indicators

DQI	Item	Conformance
Precision Measure of the variability (or reproducibility) of data.	SOPs appropriate and complied with	**Yes**
Accuracy Quantitative measure of the closeness of reported data to the true values.	SOPs appropriate and complied with	**Yes**
	Calibration of instruments against known standards	**Yes**
Representativeness Confidence the data are representative of each media present on the site.	Appropriate media sampled according to SAQP	**Yes**
	Each media identified in SAQP sampled	**Yes**

DQI	Item	Conformance
Precision Measure of the variability (or reproducibility) of data.	SOPs appropriate and complied with	**Yes**
Accuracy Quantitative measure of the closeness of reported data to the true values.	SOPs appropriate and complied with	**Yes**
	Calibration of instruments against known standards	**Yes**
Representativeness Confidence the data are representative of each media present on the site.	Appropriate media sampled according to SAQP	**Yes**
	Each media identified in SAQP sampled	**Yes**
Completeness Percentage of useable data from sampling episode (set).	Each critical location sampled	**Yes**
	SAQP appropriate and complied with	**Yes**
	Appropriate number of field duplicate samples taken	**Yes**
	Experienced sampler	**Yes**
	Field documentation correct	**Yes**
Comparability Confidence [expressed qualitatively] that data are equivalent for each sampling and analytical event.	Same sampling method used on each occasion	**Yes**
	Experienced sampler	**Yes**
	Same type of samples collected (filtered, size)	**Yes**

Conclusion for the Field QA/QC

All field work, including equipment decontamination and sample preservation and transport, was conducted in accordance with the SAQP and SOPs, which were devised with reference to industry-approved guidelines. Appropriate QC measures were integrated into each sampling event and the DQI were met, or if not, the minor non-conformances had negligible effects on the data use for interpretative purposes.

All samples, including field QC samples, were transported to the primary and secondary laboratories under chilled conditions, using strict COC procedures. Relevant documents (COC forms) were presented with the samples at the times of delivery. All supporting documents (COCs and SRAs) were completed in full and signed, where appropriate. Copies of these were included in Appendix J. EI considered the field QA/QC program carried out during the GME to be appropriate.

Laboratory QA/QC

A summary of the laboratory QA/QC is presented in **Table H-6**.

Table H-6 Laboratory QA/QC

DQI	Item	Conformance
Completeness A measure of the amount of useable data (expressed as %) from a data collection activity	All critical samples analysed according to SAQP and proposal	**Yes**
	All analytes analysed according to SAQP in proposal	**Yes**
	Appropriate methods and LORs	**Yes**
	Sample documentation complete	**Yes**
	Sample holding times complied with	**Yes**
Comparability	Sample analytical methods used (including clean-up)	**Yes**

DQI	Item	Conformance
The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Sample LORs (justify/ quantify if different)	**Yes**
	Same laboratories (justify/ quantify if different)	**Yes**
	Same units (justify/ quantify if different)	**Yes**
Representativeness Confidence that data are representative of each media	All key samples analysed according to SAQP in the proposal	**Yes**
Precision A quantitative measure of the variability (or reproducibility) of data	Analysis of laboratory duplicates	**Yes**
	Analysis of field duplicates	**Yes**
	Analysis of laboratory-prepared volatile trip spikes	**Yes**
Accuracy A quantitative measure of the closeness of reported data to the true value	Analysis of field blanks	**Yes**
	Analysis of rinsate blanks	**Yes**
	Analysis of method blanks	**Yes**
	Analysis of matrix spikes	**Yes**
	Analysis of surrogate	**Yes**
	Analysis of laboratory control samples	**Yes**

Conclusion for the Laboratory QA/QC

The contracted laboratories (SGS and Enviroloab) were accredited by NATA for the analyses undertaken. All analytical procedures used were industry recognised and endorsed standard methods. Appropriate QC measures were integrated into each testing batch and the DQI were met, or if not, the variability was suitably justified. All final reports were submitted in full and included all requested analyses, as per the signed COC forms. EI considered the laboratory QA/QC programs carried out during the GME to be appropriate.

Summary of Project QA/QC

The project DQOs specified in **Section 3.3**, **Table 3-1** were considered to have been achieved. The adopted QA/QC program ensured that the data collated during the GME were accurate, precise and representative of the (final) site conditions. It was therefore considered that the data were reliable and that the results could be used for DMP interpretative purposes.

Appendix I – Completion Report For Dewatering Work

Completion report for dewatering work

Providing a completion report is a condition of the approval and a copy of the completed form **must** be supplied **when or before you surrender the approval** to finalise the dewatering activity. You cannot surrender the approval without it.

All the information to be supplied is specified within this form.

To complete the form, you will be required to gather data at the commencement of works and during the dewatering activity.

How to use this form

Use this form to record and report groundwater taken by aquifer interference activities[1]

Section A to E:

These sections require information on the following:

Approval held, dewatering duration/groundwater source, details of person taking water, activity description and location.

Section F to I:

For these sections you will be required to gather data at the commencement of works and during the dewatering activity.

Information to enter includes:
Summary of total water taken, record of metered volumes taken, summary of water level measurements from monitoring bores and water testing undertaken.

Note:

- Information must be supplied in accordance with approval held, refer to approval.
- To measure volumes, a meter must be used[7].
- Excel soft copies of measurement data may also be required. Please ensure these are provided in accordance with the instructions shown in that section.

Section J:

Complete form declaration.

Refer to the end of the form for information on:

- Returning completed forms and any attachments
- Where to get help
- Privacy Statement
- Notes section

Section A: Approval held

Report submission date	
Dewatering approval number	
Approval expiry date	
Date received (Office use only)	

Section B: Dewatering duration / groundwater source

Dewatering duration	Days/Weeks/Months/Years
Dewatering start date	
Dewatering end date	
Groundwater source[2]	

Section C: Details of person taking water[3]

Full name		
Company/organisation (including ACN/ABN)		
Postal address		
Suburb	State	Postcode
Phone number		
Email		

Section D: Activity description

Project name
Describe the activity/s resulting in groundwater being taken[4]
Describe the means by which the groundwater is being taken[5]
Is your dewatering activity exempt from obtaining a water access licence under the *Water Management (General) Regulation 2018* ☐ Yes ☐ No
If no, please provide your water access licence number

Section E: Activity location

Address		
Suburb	State	Postcode

or

Lot / Deposited Plan / Section

or

GPS coordinates[6] *(for example, 32.25316 S 148.60022 E)*

Section F: Summary of total water taken

Provide the below in accordance to approval held. **Important**: a meter must be used to measure volumes[7].

1. Duration of dewatering (pumping)[8] either a) or b):		
a) ☐ for water year	1 July	**to** 30 June
b) ☐ during dewatering period	From	**to**

2. Total volume pumped in either **a)**, **b)** or **c)** units[9]		
a) ☐ in Litres		L
b) ☐ in Kilolitres		kL
c) ☐ in Megalitres		ML

Section G: Record of metered volumes taken

Complete this section to record **metered** volumes taken. Either **daily** or **weekly** readings are required.

Refer to the conditions of your approval and the exemption (if applicable) to determine the reading frequency you need to provide.

Notes:

- A meter must be used to measure volumes[7].
- Please update the table required.
- If entries are longer than 5 lines, provide an Excel spreadsheet soft copy with the data. If a soft copy is provided - use the same headings and naming conventions as per the required daily or weekly table following.

Daily

Are any attachments included? ☐ Yes ☐ No	
If yes, provide attachment name/s	

Meter brand type		**Meter serial number**	

Start date and time	Start meter reading	End date and time	End meter reading	Volume taken	Units (L, kL, ML)	Date and time record made

Weekly

If entries are longer than 5 lines, provide an Excel spreadsheet soft copy with the data. If provided in soft copy - use the same headings and naming conventions as per the table below.

Are any attachments included? ☐ Yes ☐ No	
If yes, provide attachment name/s	

Meter brand type		**Meter serial number**	

Week ending	Start date and time	Start meter reading	End date and time	End meter reading	Volume taken	Units (L, kL, ML)	Date and time record made

Section H: Summary of water level measurements from monitoring bores

Refer to the approval you hold to determine if required. If required, enter information in the table below and provide all measurement data separately in an Excel spreadsheet (soft copy).

If automatic loggers are used, the default Excel output soft copy, will be accepted provided it includes all the relevant measurement data and units.

If automatic loggers are not used, the Excel output soft copy must include as a minimum the following:

- Bore ID
- Date
- Time
- Water level measurement (m below MP)
- Measuring point description
- Measuring point RL (m AHD)
- Comments.

Are any attachments included?	☐ Yes ☐ No
If yes, provide attachment name/s	

Bore ID	Measuring point RL (m AHD)	Depth to water before dewatering (m)	Depth to water during dewatering (m)	Depth to water after dewatering (m)	File name of measurements spreadsheet attached
For Example: *MB1*	*1.000*	*0.5*	*4.0*	*0.6*	*MB1.xlsx*

Section I: Water testing undertaken

Information supporting these entries must be captured and supplied as an attachment in Excel soft copy form:

Are any attachments included?	☐ Yes ☐ No
If yes, provide attachment name/s	

a) Range in pH measured	
b) Range in electrical conductivity (Salinity) in (µS/cm)	
c) Any other exceedance of water quality criteria?	☐ Yes (specify below) ☐ No

Exceedance(s)

Section J: Declaration

I declare all information contained in this record is accurate, true and complete.

Signature	Date	
Name/Company officeholder		
Position	Phone	
Address		
Suburb	State	Postcode
Email		

Giving false or misleading information is a serious offence under Part 5A of the *Crimes Act 1900*. It is an offence under section 91J of the *Water Management Act 2000* for a person to make a statement or furnish information in or in connection with a metering record required to be kept that the person knows to be false or misleading in a material particular.

Privacy statement

The personal information that is provided in this form will be managed by WaterNSW in accordance with its Privacy Procedure, or other such Policy document as updated from time to time. The information provided in this form is being collected and used for purposes relating to the Record confirmation of specified matters before water is taken described in this form to the *Water Management Act 2000* (NSW). The information provided in this form may be disclosed to public authorities and other authorised parties as required.

If you choose not to provide the requested information in this form, you may not be able to take water and you may be in breach of the *Water Management Act 2000*. You have the right to request access to, and correct details of, your personal information held by WaterNSW. Further information regarding privacy can be obtained from waternsw.com.au/privacy.

Returning completed forms

Please return your completed form/s and any attachments to:
Customer.Helpesk@waternsw.com.au
In the subject line: Dewatering completion report - Approval (Approval reference number)
or

WaterNSW
PO Box 398
Parramatta NSW 2124

Where to get help

Further information is available at:
waternsw.com.au/dewatering | 1300 662 077 | Customer.Helpdesk@waternsw.com.au

Notes

1. **Aquifer interference activity** has the same meaning as set out in the Dictionary to the *Water Management Act 2000* which is an activity involving any of the following:
    a. the penetration of an aquifer,
    b. the interference with water in an aquifer,
    c. the obstruction of the flow of water in an aquifer,
    d. the taking of water from an aquifer in the course of carrying out mining, or any other activity prescribed by the regulations,
    e. the disposal of water taken from an aquifer as referred to in paragraph d).
2. Refer to your approval for the **groundwater source** you are taking water from.
3. For infrastructure or construction projects this may be the **applicants' representative** for example a contractor.
4. **Describe the activity/s taking groundwater** while conducting the aquifer interference activity, and the number of works involved.
    For example:
    - extraction using a battery of 15 spear points to dewater a building construction site
    - groundwater extracted from a permanent sump in a building basement
    - groundwater extracted from a trench or excavation
5. Examples of the **means by which the groundwater is taken** include surface pump, airlift, downhole/submersible pump, bailer, water removed with ground materials, water freely draining from a cutting, pit seepage / inflow, evaporation from artificial lake that has filled from groundwater. Where several means of take are involved please identify the number and type of each.
6. Please provide GPS coordinates as longitude and latitude in decimal degrees.
7. Metering equipment must be used to measure volumes. Metering equipment consists of a meter and a data logger. **Telemetry is not required.** However, other metering equipment and standards may be specified by a condition of the water supply work approval.
    In the **event metering equipment becomes faulty**, you must report within 24 hours to WaterNSW at waternsw.com.au/s91i. An offence applies under section 91IA of the *Water Management Act 2000* for failing to report faulty metering equipment within 24 hours.
8. For Section F - I: Duration of dewatering (pumping) is elapsed time between the start and end dates for a period of continuous take. If the period of take extends over more than one water year, annual reporting may be required. This record must be retained for five years.
9. Record the **total volume of groundwater taken** in the water year/s for the groundwater source in either litres (L), kilolitres (kL) or megalitres (ML).

Appendix J – Sears Requirement Declaration Form

SEARs Requirements Declaration: Pockley Avenue

Declaration		
Name	Amy Nyiri	
Qualifications	BSc, MSc, Chartered Environmentalist with the Institution of Environmental Sciences (IES)	
	The undersigned declares that this Hydrogeological Report including Dewatering Management Plan, Groundwater Modelling & Take Assessment has been prepared in response to the following SEARs requirements issued for the Project on 15/11/2024 for SSD-77829461:	
SEARs item no.	SEARs Requirement	Relevant Section of this Report
13. (partial)	Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site, including soil erosion, salinity and acid sulfate soils. Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on: • surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses. • groundwater resources in accordance with the relevant *Groundwater Guidelines*.	Sections 2, 3 and 5
Signed		
Dated	17/04/2025	

Declaration		
Name	Nik Kontos	
Qualifications	BAppSc, BSc (Hons)	
	The undersigned declares that this Hydrogeological Report including Dewatering Management Plan, Groundwater Modelling & Take Assessment has been prepared in response to the following SEARs requirements issued for the Project on 15/11/2024 for SSD-77829461:	
SEARs item no.	SEARs Requirement	Relevant Section of this Report
13. (partial)	Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site, including soil erosion, salinity and acid sulfate soils. Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on: • surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses. • groundwater resources in accordance with the relevant *Groundwater Guidelines*.	Sections 2, 3 and 5
Signed		
Dated	17/04/2025	

SUBCONSULTANT REPORT INSERT – **SEARs REQUIREMENTS DECLARATION**