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**Hydrogeological Report including
Dewatering Management Plan and
Groundwater Seepage Analysis**

35-39 Darley Street East, Mona Vale NSW

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TABLE OF CONTENTS

	Page Number
1. INTRODUCTION	1
1.1 Background and Purpose	1
1.2 Proposed Development	1
1.3 Report Objectives	2
1.4 Scope of Work	2
1.5 Regulatory Framework	3
2. SITE DESCRIPTION	4
2.1 Property Identification, Location and Physical Setting	4
2.2 Surrounding Land Use	4
2.3 Regional Setting	5
2.4 Local Groundwater Use	5
2.5 Potential Sources of Contamination	6
2.5.1 <i>Potential onsite sources</i>	6
2.5.2 <i>Potential offsite sources</i>	7
2.6 Potential Environmental Receptors	8
2.7 Groundwater Dependent Ecosystems	8
3. GROUNDWATER CONDITIONS	9
3.1 Previous Investigations	9
3.2 Hydrogeological Conceptual Model	9
3.3 Pre-Dewatering Groundwater Depth and Hydraulic Gradient	10
3.4 Baseline Groundwater Quality Assessment	11
3.4.1 <i>Monitoring Well Locations</i>	11
3.4.2 <i>Data Quality Assessment</i>	11
3.4.3 <i>Groundwater Sampling Methodology</i>	11
3.4.4 <i>Tested Parameters</i>	13
3.4.5 <i>Assessment Criteria</i>	14
3.4.6 <i>Field-based Water Quality Testing and Observations</i>	14
3.4.7 <i>Laboratory Analytical Results</i>	15
3.4.8 <i>Water Treatment Requirements</i>	15
4. DEWATERING METHODOLOGY	17
4.1 Excavation and Shoring	17
4.2 Groundwater Take Volume, Dewatering Duration & Water Access Licence	17
4.2.1 <i>Predicted Take and Dewatering Duration</i>	17
4.2.2 <i>Water Access Licence Requirements</i>	17
4.3 Cone of Depression Extent, Ground Settlement and Drawdown Monitoring	18
4.4 Dewatering Method	18
4.4.1 <i>Construction Phase Dewatering</i>	18
4.4.2 <i>Operational Phase Dewatering</i>	19
4.5 Discharge Flow and Volume Monitoring	19

4.6	Potential Drawdown-Induced Impacts	19
5.	WATER QUALITY MANAGEMENT	21
5.1	Responsibility	21
5.2	Discharge Water Quality Guidelines	21
5.3	Additional Pre-dewatering Monitoring Event	24
5.4	Discharge Water Quality Monitoring	24
5.4.1	<i>Visual and Odour Monitoring</i>	24
5.4.2	<i>Sample Collection and Analysis</i>	24
5.4.3	<i>Reporting of Water Quality Results</i>	25
5.4.4	<i>Reporting of Other Information</i>	26
5.4.5	<i>Groundwater Level Monitoring</i>	26
5.5	Water Treatment	26
5.5.1	<i>Treatment System Design Considerations</i>	26
5.5.2	<i>Treatment System Maintenance</i>	27
5.6	Reporting of Dewatering Information	27
5.6.1	<i>Interim Report - Construction Dewatering</i>	27
5.6.2	<i>Annual Reporting for Operational Dewatering</i>	27
5.6.3	<i>Dewatering Completion Report</i>	28
6.	SITE MANAGEMENT AND CONTROLS	29
6.1	Deviations from this Plan	29
6.2	Contact Details for Key Personnel	29
6.3	Summary of Specific Activities	29
6.4	Vibration, Noise, and Odour Management	30
6.5	Dewatering Contingencies	30
7.	MINIMAL HARM ASSESSMENT	34
7.1	Consideration of NSW Aquifer Interference Policy	34
7.1.1	<i>Hydrogeological Model Summary</i>	34
7.1.2	<i>Groundwater source category</i>	34
7.1.3	<i>Minimal impact considerations</i>	34
7.1.4	<i>Impact Assessment Conclusions</i>	35
7.2	Assessment Inputs	35
7.3	Operational (Occupational) Phase Dewatering Management	36
7.3.1	<i>Operational Phase Water Treatment</i>	36
7.3.2	<i>Monitoring Frequency and Reporting</i>	37
7.3.3	<i>Monitoring Well Replacement Protocol</i>	38
8.	DEWATERING MANAGEMENT SUMMARY	39
9.	STATEMENT OF LIMITATIONS	41
10.	REFERENCES	42
	ABBREVIATIONS	44

SCHEDULE OF FIGURES (IN-TEXT)

Figure 4-1	Hypothetical layout of a <i>Sump and Pump</i> seepage collection system	18
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SCHEDULE OF TABLES (IN-TEXT)

Table 1-1	Regulatory Framework	3
Table 2-1	Site Identification, Location and Zoning	4
Table 2-2	Local Land Use	4
Table 2-3	Regional Setting Information	5
Table 2-4	List of Notified Sites	7
Table 3-1	Summary of Groundwater Monitoring Results	10
Table 3-2	Summary of Groundwater Sampling Methodology	11
Table 3-3	Summary of Groundwater Quality Test Parameters	14
Table 3-4	Groundwater Field Data (GME date: 18/12/2025)	15
Table 4-1	Assessment of Potential Dewatering Effects	19
Table 5-1	Discharge Water Criteria (DWC)	21
Table 6-1	Mitigation Measures for Potential Dewatering Issues	30
Table 7-1	Assessment inputs summary	35
Table 8-1	Dewatering Management Summary	39

APPENDICES

APPENDIX A – FIGURES

APPENDIX B – TABLES

APPENDIX C – PROPOSED DEVELOPMENT PLANS

APPENDIX D – GROUNDWATER SEEPAGE ANALYSIS & MONITORING REPORT

APPENDIX E – BOREHOLE LOGS

APPENDIX F – REGISTERED BORE SEARCH

APPENDIX G – LABORATORY CERTIFICATES AND ANALYTICAL REPORTS

APPENDIX H – DCR AND WORKS SURRENDER FORM

1. INTRODUCTION

1.1 Background and Purpose

EI Australia (EI) was engaged by The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust ('the client') to prepare a Hydrogeological Report including Dewatering Management Plan and Groundwater Seepage Analysis (the 'report') for 35-39 Darley Street East, Mona Vale NSW ('the site').

The site is located approximately 22km northeast of the Sydney CBD within the local government area of Northern Beaches Council, as shown in **Figure A1, Appendix A**, and is also identified as Strata Plan (SP) 18919. Covering a total area of approximately 2679.4 m² (**Figure A2**), at the time of this report the site was occupied by two, multi-storey, residential apartment buildings.

Site redevelopment will involve the construction of a three level basement, which will likely intercept the local groundwater system; therefore, site dewatering will be required to enable basement construction. Groundwater drawn into the dewatering system is proposed to be appropriately treated to comply with relevant water quality criteria for subsequent discharge into the local municipal stormwater system, subject to Council approval.

Hydrogeological conditions, including baseline groundwater quality and pre-dewatering groundwater levels, are described in **Section 3**, with tabulated field-based and laboratory data presented in **Appendix B**.

Due to characteristically low hydraulic conductivity of the water bearing lithology a drained basement design is proposed for long-term dewatering during the operational phase of the development, as detailed in **Section 4**. Discharge water quality trigger levels, water treatment, monitoring and reporting requirements are described **Section 5**, with tabulated management controls and dewatering contingency measures in **Section 6**.

Cumulative drawdown and potential groundwater quality impacts from long-term dewatering are assessed against the NSW Aquifer Interference Policy (AIP) in **Section 7**. Findings are reviewed for relevant factors including groundwater utility, ground settlement potential and water treatability, to demonstrate compliance with minimal impact considerations, as described in the AIP.

The main purpose of this report is to describe groundwater conditions and management in order to achieve compliance with the requirements of Council and WaterNSW for construction phase and operational phase dewatering.

1.2 Proposed Development

Based on the provided site survey plan and architectural drawings attached in **Appendix C**, EI understands that the proposed development will involve the demolition of the existing site structures and the construction of a multi-storey residential apartment building overlying a three-level, underground basement.

The lowest basement level is proposed to have a Finished Floor Level (FFL) of RL 7.0 m AHD. A Bulk Excavation Level (BEL) of RL 6.70 m is assumed, which includes allowance for the construction of the basement slab. To achieve the BEL, excavation down up to approximately 10 m depth Below Existing Ground Level (BEGl) will be required. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches.

1.3 Report Objectives

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;
- Summarise relevant hydrogeological and groundwater modelling information, with reference to the groundwater seepage analysis (GSA) report, which is attached in **Appendix D**;
- Describe the dewatering methodology, groundwater treatment requirements, monitoring and reporting procedures to be employed during construction phase dewatering;
- Provide effective management and contingency procedures, to ensure that dewatering discharge does not pose unacceptable risks to the receiving environment, in compliance with the *Protection of the Environment Operations Act 1997*;
- Detail post-construction monitoring and reporting procedures for the occupational phase of the development; and
- Provide relevant information on anticipated groundwater impacts, with reference to the NSW Aquifer Interference policy to properly inform the regulatory approval process.

This report will form the basis for a Council permit application for connection and discharge to the municipal stormwater system and a water supply works (dewatering licence) application to WaterNSW and the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

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 hydrogeological, landscape and acid sulfate soil risk maps for the area;
 - Review of previous investigation reports and plans, which included:
 - o A search of registered bores located within a 500 m radius of the site to review local groundwater usage;
 - o Onsite drilling data, including sub-surface stratigraphic data and depth to water bearing zones; and
 - o Details in relation to potential onsite and offsite sources of contamination that may impact on dewatering discharge water quality and the beneficial use category of the groundwater source, particularly in relation to any local water supply bores.
- A groundwater monitoring event (GME) completed to characterise baseline groundwater quality prior to dewatering, with interpretation of laboratory results in relation to the relevant water quality criteria for the expected receiving waters.

This report also refers to information provided in EI's GSA report, which includes the findings from field-based hydraulic testing and computer-based groundwater modelling, including predicted groundwater take volumes and estimates water level drawdown effects. GSA findings are incorporated into various parts of this hydrogeological report.

1.5 Regulatory Framework

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

Table 1-1 Regulatory Framework

NSW Legislation and Regulatory Instruments	Requirements / Objectives
<i>Contaminated Land Management Act 1997 (CLM Act)</i>	Promotes the effective management of contaminated land in NSW by setting out the roles and responsibilities of the NSW EPA and its rules.
<i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i>	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.
<i>Protection of the Environment Operations Act 1997 (POEO Act)</i>	The objective of the <i>POEO Act</i> is to achieve the protection, restoration and enhancement of the quality of the environment.
<i>NSW Water Management (General) Regulation 2025.</i>	Details relating to Water Access License requirements, if relevant.
<i>Water Management Act 2000 and Water Act 1912 (WM Act)</i>	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.
<i>NSW Aquifer Interference Policy (2012)</i>	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.
Northern Beaches Council Plans and Policies	Provides controls and guidelines for development in the area. ▪ <i>Pittwater 21 Development Control Plan</i>; and ▪ <i>Pittwater Local Environmental Plan 2014</i>. <u>Note:</u> 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.
Relevant Guidelines (but not limited to)	▪ ANZG (2018) <i>Guidelines for Fresh and Marine Water Quality</i>; ▪ ANZECC & ARMCANZ (2000) <i>Guidelines for Fresh and Marine Water Quality, Vol. 1, Chapter 3, Aquatic Ecosystems</i>; ▪ DPIE (2022) <i>Minimum requirements for building site groundwater investigations and reporting</i>; ▪ NHMRC (2008) <i>Guidelines for Managing Risks in Recreational Water</i>; and ▪ NSW DEC (2007) <i>Guidelines for the Assessment and Management of Groundwater Contamination</i>.

2. SITE DESCRIPTION

2.1 Property Identification, Location and Physical Setting

Site identification details and associated information are summarised in **Table 2-1**. Figures illustrating the site location and assessment area are provided in **Appendix A**.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	35-39 Darley Street East, Mona Vale NSW
Location Description	Approximately 300m north-west of the Mona Vale Beach foreshore, bound by Darley Street East (north-east) and medium density residential properties (north-west, south-west and south-east). More details on surrounding land uses are provided in Table 2-2 .
Lot and DP	SP18919
Site Area	Approximately 2679.4 m ² (Source: Norton Survey Partners, 2025 https://maps.six.nsw.gov.au/)
Site Coordinates	Northern-eastern corner of site (GDA2020-MGA56): ▪ Easting: 343362.250 ▪ Northing: 6272259.265 (Source: https://maps.six.nsw.gov.au/)
LGA	Northern Beaches Council
Current Zoning	R3 – Medium Density Residential (<i>Pittwater Local Environmental Plan, 2014</i>)
Current Site Use	The site is occupied by two residential buildings.
Typical Soil Profile	Based on current investigation data (see borehole logs in Appendix E), the general sub-surface soil profile comprises a layer of silty sand filling to a maximum depth of 1.5 mBGL, overlying residual silty/sandy clay to a maximum depth of 6.9 mBGL followed by sandstone / laminite bedrock to 15.21 ⁺ mBGL (⁺ the maximum depth of investigation in borehole BH2M).

2.2 Surrounding Land Use

The site is situated within a predominantly residential area, approximately 300m south-east from the Mona Vale industrial district. Surrounding properties within close proximity (<250m) to the site are described in **Table 2-2**.

Table 2-2 Local Land Use

Direction relative to site	Land Use Description
North-east	Darley Street East, a two lane asphalt road followed by medium density residential properties.
South-west	Medium density residential properties then Golf Avenue, a two lane asphalt road and Mona Vale Golf Course.
North-west	Medium density residential properties followed by Barrenjoey Road beyond, a seven lane asphalt road.
South-east	Medium density residential properties, followed by Mona Vale Beach foreshore.

2.3 Regional Setting

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

Table 2-3 Regional Setting Information

Attribute	Description
Topography	The site is situated on a hill top setting, sloping to the north, with surface elevations ranging from approx. RL 17.11 mAHD (southern site corner) to 14.37 mAHD (northern site corner), as shown by spot elevations on the Survey Plan presented in Appendix C .
Site Drainage	Consistent with the general slope of the site, stormwater is anticipated to flow north towards Darley Street East via surface drainage systems discharging to various stormwater easements and the municipal stormwater network.
Regional Geology	With reference to the 1:100,000 scale Geological Series Sheet 9130 (Sydney) the site is likely to be underlain by the Hawkesbury Sandstone formation, which is described as <i>medium to coarse-grained quartz sandstone, very minor shale and laminite lenses</i> . The site is also in close proximity to formations of <i>silty to peaty quartz sand with ferruginous and humic cementation in places, where shell fragments and layers are commonly present</i> .
Soil Landscape	The Soil Conservation Service of NSW Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 1989) indicates that the site overlies the boundary between Erina (er) Erosional Landscape, which typically includes Narrabeen Group sandstones/claystones and Warriewood (wa) Swamp Landscape, characterised by depressions and infilled lagoons on Quaternary sands. Due to the sites locally elevated topography, sub-surface conditions more likely resemble an Erina Erosional Landscape.
Acid Sulfate Soils (ASS) Risk	With reference to the <i>Hornsby/Mona Vale Acid Sulfate Soil Risk Map</i> (1:25,000 scale; Murphy 1997), the subject land lies within the map class description of <i>No Known Occurrence</i> . In such cases, acid sulfate soils (ASS) are not known or expected to occur and "land management activities are not likely to be affected by ASS materials". The Pittwater Local Environmental Plan, 2014 Acid Sulfate Soil Risk Map indicates that the site lies within a Class 5 Area. Development consent is therefore required to carry out: ▪ Works within 500m of adjacent Class 1, 2, 3 or 4 land that is below 5 metres relative to Australian Height Datum (m AHD); and ▪ Works by which the water table is likely to be lowered below 1 m AHD on adjacent Class 1, 2, 3 or 4 land.
Nearest Water Feature	Isolated ponds located Mona Vale Golf Course, the nearest being approximately 300m south of the site, form the closest surface water features to the site. The Tasman Sea at Mona Vale Beach is located approximately 370 m south-east of the site.
Groundwater Flow Direction	Groundwater is anticipated to flow in an easterly direction, towards the Tasman Sea or to the north/north-west towards Winnererremy Bay within Pittwater Estuary. Both are consistent with ground surface topography.

2.4 Local Groundwater Use

An online search of registered groundwater bores was conducted through the Water NSW online data base (Ref. <https://realtimedata.waternsw.com.au/water.stm>) on 15 April 2026. The search identified eighteen registered groundwater bores within an approximate 500m radius of the site, nine of which are recorded as being for domestic or irrigation/recreational water supply

purposes. Identified bores are shown on the marked-up bore location map in **Appendix F**, together with limited bore details from archived WaterNSW data, as summarised in **Table 2-4**.

Table 2-4 Summary of Closest Groundwater Bores

Bore	Drilled Date	Bore Depth (m BGL)	SWL / Salinity / Yield (L/s) (m BGL)	Bore Purpose	Distance from Site
Downgradient of site					
GW018770	1/8/1960	40.2	NR / NR / NR	Waste disposal	115m, northwest
GW108500	10/11/2006	4	2 / NR / 1	Domestic	180m, northeast
GW111105	15/6/2010	5	2 / NR / NR	Monitoring bore	197m, northwest
GW111104	15/6/2010	4	2 / NR / NR	Monitoring bore	215m, northwest
GW105936	19/5/2005	-	NR / NR / NR	Domestic	270m, northeast
GW108158	7/5/2006	6.3	2.6 / NR / 1	Domestic	280m, northeast
GW108888	2/6/2008	73	7 / NR / 14.06	Irrigation/recreation	315m, southwest
GW026026	1/11/1966	51.8	NR / Fresh / NR	Domestic	330m, northwest
GW026027	1/12/1966	61.5	NR / Fresh / NR	Domestic	365m, northwest
GW113213	22/5/2012	2.5	NR / NR / NR	Monitoring bore	365m, north
GW111444	25/2/2008	103	3 / NR / 0.87	Irrigation/recreation	395m, west
GW113212	22/05/2012	2.5	NR / NR / NR	Monitoring bore	400m, north
GW113211	22/5/2012	3	NR / NR / NR	Monitoring bore	410m, north
GW108579	9/3/2007	6.6	4 / Fair / 0.5	Domestic	415m, northeast
GW026581	1/1/1967	92.9	NR / NR / NR	Waste disposal	420m, northwest
GW108558	5/2/2007	4.3	2.8 / NR / 1	Domestic	445m, northeast
Crossgradient of site					
GW035791	1/12/1960	59.4	NR / NR / NR	Waste disposal	72m, east
GW018771	1/11/1960	100.5	NR / NR / NR	Waste disposal	72m, east

Notes: SWL – Standing water level; NR – No data recorded

Registered bore data therefore indicates that groundwater is being utilised as a water supply source in the surrounding area. Due to the distance and depth of groundwater supply bores, any potential drawdown effects are not anticipated to result in significant groundwater access losses.

Potential dewatering impacts on existing water supply bores are addressed in **Section 4.6**, and with reference to the NSW Aquifer Interference Policy, in **Section 7**.

2.5 Potential Sources of Contamination

2.5.1 Potential onsite sources

Based on available historical imagery (<https://portal.spatial.nsw.gov.au/>), a residential building has been on the site at least since 1955. The site was redeveloped around 1971 into the current structures, and the following potential, onsite contamination sources were identified during intrusive investigation:

- Importation of fill of unknown origin and quality placed at the site, based off geotechnical borehole logs (EI, 2026a; **Appendix E**).

It is assumed the following additional sources of contamination may be present with the potential to impact the site:

- Hazardous building products contained within existing site structures;
- Weathering of exposed building fabrics, painted surfaces, and metallic objects from site structures;
- Application of pesticides near surface soil beneath existing buildings;
- Leakage from vehicles through cracks on concrete slab or non-paved parking areas; and
- On-site migration from nearby current and historical potentially contaminating activities via groundwater and/or stormwater run-off.

Given the site was historically used for residential purposes, the potential for localised impacts on site soils is considered to be low. Notwithstanding, potential soil contamination attributed to any of the above issues, would be largely removed during bulk excavation for basement construction, and the potential for residual onsite contamination to adversely impact water quality is considered to be low.

2.5.2 Potential offsite sources

A review of NSW EPA Contamination Land Record of Notices found two service station properties that have been notified under the *duty to report contamination* in accordance with Section 60 of the Contaminated Land Management Act 1997, as outlined in **Table 2-4**. These are the only service stations within 500 m of the site, and both have been deemed by the EPA as not requiring regulation.

Table 2-4 List of Notified Sites

Business Activity	Address	Ground elevation ¹	Management Class	Distance from site	Direction
BP Service Station	32 Barrenjoey Rd, Mona Vale	6 mAHD	Regulation not Required	155 m	Northwest
7-Eleven Service Station	24 Barrenjoey Rd, Mona Vale	8 mAHD	Regulation not Required	170 m	Northwest

Note 1 Ground surface elevations are estimated from regional topography (Source: <https://meconemosaic.au/>)

The service stations were not considered significantly contaminated as regulation under the CLM Act was documented as unwarranted, on the NSW EPA web portal. An auto mechanical workshop (Ken Simpson Motors) was also noted at approximately 330m north to northwest of the site, and considered a potential source of contamination.

Potential impacts on onsite water quality due to onsite migration

Based on an anticipated north to north-westerly groundwater flow direction (as described in **Section 2.3**), the workshop and service stations are located hydraulically downgradient of the proposed dewatering activity. Given the site's topographically higher setting and surrounding residential history, any onsite migration of groundwater from the north is considered unlikely. Notwithstanding, should residual water quality impacts be identified at the site during dewatering monitoring, these would be addressed by appropriate water treatment, as described in **Section 5.5**.

Potential impacts on water quality at groundwater supply bores

Two registered groundwater supply bores (bores GW026026 and GW026027), which were both installed in 1966 and designated for 'domestic' use (as tabulated in **Section 2.4**), were identified at between 330 m and 365 m downgradient (i.e. northwest) of the site. Assuming these bores are still in active use, dewatering-induced contaminant migration from the identified off-site sources toward these potential receptors is considered unlikely due to the significant distance (> 300 m), low hydraulic conductivity of the dewatered strata (see **Section 3.2**), and the elevation difference (site is 6 - 8 m higher in elevation) between the potential sources and

proposed dewatering activity. On this basis, the potential risk to groundwater users and any associated impacts to beneficial use category were considered to be low.

2.6 Potential Environmental Receptors

It is assumed that water extracted from the site during the construction dewatering phase will be pumped through an onsite water treatment system, if required (as described in **Sections 3.4.8 and 5.5**). Treated water may subsequently be discharged into the local municipal stormwater network, which is expected to drain into Winnererremy Bay within the tidally influenced Pittwater Estuary, approximately 1.5km north-west of the site.

Due to tidal influences and its urbanised locality of northern Sydney, Pittwater Estuary is considered a slightly to moderately disturbed marine ecosystem for discharge water quality considerations, as described **Section 5.2**.

2.7 Groundwater Dependent Ecosystems

A search of the NSW Water Sharing Plan for the Greater Metropolitan Region groundwater Sources 2023 – Schedule 4 was conducted on 15 April 2026. Table 4 of Schedule 4 did not list any high priority groundwater dependent ecosystems (GDEs) within 500 m 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.

3. GROUNDWATER CONDITIONS

3.1 Previous Investigations

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

- EI Australia (2026a) *Geotechnical Investigation (GI) 35-39 Darley Street East, Mona Vale, NSW*, Report No. E26992.G03_Rev2, 28 April 2026;
- EI Australia (2026b) *Groundwater Level Monitoring (GLM) Report No. 1 35-39 Darley Street East, Mona Vale, NSW*, Report No. E26992.G11.GW01, 28 April 2026; and
- EI Australia (2026c) *Groundwater Seepage Analysis (GSA) 35-39 Darley Street East, Mona Vale, NSW*, Report No. E26992.G12, 28 April 2026.

The GLM and GSA reports are presented in **Appendix D**. Pertinent details from the above reports are summarised as follows:

- **EI (2025a) Geotechnical Investigation** – Included the drilling of four boreholes (BH1M, BH2M and BH4M), which were converted into groundwater monitoring wells. Borehole and well construction logs are provided in **Appendix E**.
- **EI (2026b) GLM Report No. 1** – Documented continuous groundwater levels for the monitoring period 17 December 2025 to 18 March 2026 for the monitoring wells BH1M, BH2M, BH4M. The data was analysed to quantify the extent of groundwater level fluctuations for the monitoring period and to assess how the groundwater flow regime varied between high and low groundwater depth conditions, as presented in **Section 3.3**.
- **EI (2026c) GSA** – This report provided details of the proposed excavation shoring design, hydraulic conductivity values based on field test results, site-specific groundwater modelling findings including predicted water level drawdowns, expected groundwater inflow and discharge volumes and predicted, drawdown-induced ground settlement rates.

3.2 Hydrogeological Conceptual Model

Based on a review of published hydrogeological data and the findings of previous investigations, the site Hydrogeological Conceptual Model may be summarised as follows:

- Subsurface soil profile:
 - Fill (silty SAND), to a maximum depth of 1.5 mBGL;
 - Residual soil (silty/sandy CLAY), to a maximum depth of 6.9 mBGL; and
 - Bedrock (Sandstone/laminite), encountered as shallow as 5.9 mBGL, extending beyond the maximum investigation depth of 15.21 mBGL.
- Based on two rising head tests completed at each well, hydraulic conductivities for the bedrock aquifer were calculated by Hvorslev analysis (as detailed in the GSA report), as follows:
 - BH1M – between 1.3×10^{-6} and 4.9×10^{-7} m/s;
 - BH2M – between 1.5×10^{-7} and 1.9×10^{-8} m/s; and
 - BH4M – *Insufficient groundwater to perform rising head test.*

3.3 Pre-Dewatering Groundwater Depth and Hydraulic Gradient

EI completed continuous groundwater level monitoring at the wells BH1M, BH2M and BH4M from 17 December 2025 to 18 March 2026 (EI, 2026b).

Monitoring results were reported as hydrographs with rainfall data overlays as shown in the monitoring report attached in **Appendix D**. Maximum and minimum groundwater levels recorded during the continuous monitoring period are summarised in **Table 3-1**. Bold values highlight the highest and lowest recorded groundwater levels for the entire monitoring period.

Groundwater level data at the timing of the maximum and minimum groundwater levels recorded during the continuous monitoring period were used to produce the groundwater contour maps presented in **Figure A3, Appendix A**. The analysis showed that:

- The highest recorded groundwater level occurred at BH2M at 12:00 on 26 December 2025. Based on the contour analysis for water levels at this time, groundwater was inferred to be flowing in a north to north-easterly direction, under a hydraulic gradient of 0.05.
- The lowest recorded groundwater level occurred at BH1M at 17:15 pm on 10 January 2026. Based on the contour analysis for water levels at this time, groundwater was inferred to be flowing generally in a northerly direction, under a flatter hydraulic gradient of 0.02.

Table 3-1 Summary of Groundwater Monitoring Results

Well ID	Average g/water RL (m AHD) ¹	Highest g/water RL (m AHD) / Date / Time	Lowest g/water RL (m AHD) / Date / Time	Contoured Groundwater Levels	
				At time of Highest g/water level (m AHD) ²	At time of Lowest g/water level (m AHD) ³
BH1M	8.91	9.47 11.03.2026 / 09:45	8.62 10.01.2026 / 17:15	8.89	8.62
BH2M	10.74	11.84 26.12.2025 / 12:00	10.18 10.01.2026 / 11:45	11.84	9.80
BH4M	N.A.	N.A.9.92 18.02.2025 / 09:00	9.31 12.02.2026 / 16:15	9.46	9.39

Note 1 – The average groundwater RL, as calculated for the recorded groundwater levels at each well, for the indicated continuous groundwater level monitoring period.

Note 2 - The groundwater RL, at each well, for the exact time that the highest groundwater level was recorded during the continuous monitoring period.

Note 3 – The groundwater RL, at each well, for the exact time that the lowest groundwater level was recorded during the continuous monitoring period.

The groundwater level monitoring data therefore showed no significant variation in flow direction, but a slightly flatter hydraulic gradient under lower groundwater conditions, with minimal fluctuation (ranging to as much as 3.22 m between highest and lowest groundwater levels).

It was noted that the screen interval at well BH1M was set within the silty clay, whereas, the screen intervals in wells BH2M was set within the sandstone bedrock. BH4M was screened partially between the boundary of sandy clay and sandstone bedrock. The fact that the groundwater contouring analysis showed continuity between the data and hydraulic gradient interpretation for all three monitoring points indicated that hydraulic connection probably exists between the bedrock and the overlying silty clay deposits.

Based on groundwater levels observed on site, a design groundwater level (DGL) of 12.9 m AHD was adopted for the groundwater modelling, as described in the GSA report. The adopted DGL allowed for a possible seasonal variation of up to 1.0 m above the highest groundwater

level encountered in the monitoring wells during the monitoring period, which was considered typical for the sandstone bedrock aquifer for this part of Sydney.

3.4 Baseline Groundwater Quality Assessment

3.4.1 Monitoring Well Locations

The data used for the baseline groundwater quality assessment was sourced from the results of the most recent GME carried out on 7 April 2026. This GME involved groundwater level gauging at monitoring wells BH1M, BH2M, BH4M and the collection of samples from wells BH1M and BH2M only, due to insufficient groundwater in the well BH4M. It is noted that while groundwater volumes within BH4M were not adequate for sampling, fluctuation in groundwater levels were observed during the three-month monitoring program, as presented in **Table 3.1**. Sampling, Analysis and Quality Plan

The sampling, analytical and quality plan (SAQP) ensured that the data collected were representative of onsite groundwater quality and provided 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).

3.4.2 Data Quality Assessment

Field and laboratory QA/QC was implemented as described in **Table 3-2**. Internal laboratory QA/QC data are attached with the analytical reports in **Appendix G**. 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.

3.4.3 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	The GME involved water level gauging, well purging, field-based testing of physiochemical parameters during groundwater sampling on 7 April 2026.
Well completion and screen interval depths	▪ BH1M: well depth 6.0 m BGL, screen interval 3.0 – 6.0 mBGL; ▪ BH2M: well depth 11.0 m BGL, screen interval 8.0 – 11.0 mBGL; ▪ BH4M: well depth 7.0 m BGL, screen interval 4.0 – 7.0 mBGL; All depths are approximate and monitoring well construction logs are presented in Appendix E.
Well Gauging	Monitoring wells were gauged prior to groundwater sampling. Gauging was conducted with a water/oil interface probe to assess for the presence of light non-aqueous phase liquid (LNAPL).

Activity/Item	Details
Well Purging, Water Quality Measurements and Sampling	Groundwater was purged and sampled by low-flow / minimal draw-down method, using a peristaltic pump with dedicated tubing. During the well purging process, continuous field measurements were obtained for water temperature (Temp), electrical conductivity (EC), reduction-oxidation potential (Redox), dissolved oxygen (DO) and water pH, using a <i>Hanna Multi Parameter 9829</i> probe positioned within an open flow-through cell. Once water quality parameters stabilised (i.e. within $\pm 10\%$ for DO, $\pm 3\%$ for EC, ± 0.05 for pH, $\pm 0.2^\circ$ for temperature and $\pm 20\text{mV}$ for Redox), the measured values were recorded. Groundwater sampling was then undertaken by diverting the outlet of the pump (immediately before the flow cell) to the laboratory-supplied sampling vials and bottles for sample collection.
Decontamination Procedure	Sampling equipment (interface probe and water quality kit probes) were decontaminated between sampling locations by washing in a solution of potable water and <i>Decon 90®</i>, followed by rinsing with potable water. Decontamination was not required for the sampling pump, as dedicated disposable tubing was used for sampling at each individual well. Dedicated gloves were used for the handling of equipment and collection of each sample.
Sample Preservation	Laboratory prepared sample containers were supplied for each sample, as follows: - one, 500 mL amber glass, acid-washed and solvent-rinsed bottle; - one, 500 mL HDPE, unpreserved bottle; - two, 40ml glass vials, pre-preserved with dilute hydrochloric acid and Teflon-sealed; - one, 150mL, HDPIE bottle, pre-preserved with dilute nitric acid (1mL); - Additional bottles and preservatives were used for the more detailed suite of tested parameters, as listed and described in Section 3.4.5. Samples for metals analysis were field-filtered using 0.45 μm pore-size membrane filters. All containers were filled with sample to the brim then capped and stored in insulated chests (containing chilled and sealed 'ice' bricks), until completion of the fieldwork and during sample transit to the laboratory.
Sample Transport	After sampling, the chilled chests were transported to SGS Pty Ltd (SGS; the primary laboratory) using strict chain-of-custody (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 (QC), Laboratory Analysis and Sample Transport	Groundwater samples were analysed by SGS for the requested analytes as detailed on the COC form. All samples were analysed within the required holding period, as documented in the corresponding laboratory reports (included in Appendix G). In addition to an inter-laboratory duplicate sample (analysed by Envirolab Services Pty Ltd, the secondary laboratory), QC analyses also included a blind (intra-laboratory) field duplicate sample that was analysed by SGS.

Activity/Item	Details
Field QA/QC	Field QA/QC was maintained through: ▪ Strict adherence to the SAQP and industry-standard procedures, with all works undertaken by experienced personnel and supported by accurate field documentation. ▪ Sampling integrity was ensured by collecting samples at designated well locations using appropriate containers, followed by immediate preservation and transport under chain-of-custody protocols. ▪ Equipment and instrument control included routine calibration and thorough decontamination between samples, verified through equipment rinsate blanks, as appropriate. ▪ Potential cross-contamination during handling and transport was assessed using trip blanks and trip spikes, while data reliability was verified through field duplicates (intra- and inter-laboratory) with RPD evaluation. Overall data quality was confirmed against key DQIs (accuracy, precision, completeness, comparability, and representativeness), with any minor non-conformances documented and deemed not to affect data usability, resulting in data considered fit for interpretative purposes.
Laboratory QA/QC	Laboratory QA/QC was maintained through: ▪ The use of NATA-accredited laboratories applying standard analytical methods with appropriate detection limits; ▪ Internal batch QC procedures including calibration standards, method blanks, laboratory control samples, matrix and surrogate spikes, and laboratory duplicates to verify accuracy and precision. ▪ Sample integrity was ensured through compliance with holding times and chain-of-custody requirements. Data quality was validated against DQIs, with any minor non-conformances identified, justified, and not considered to materially affect data usability.

3.4.4 Tested Parameters

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

The *Extended Baseline 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 (SO₄), chloride (Cl), carbonates (CO₃), 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 SiO₂), silver (Ag), strontium (Sr), uranium (U), vanadium (V), zinc (Zn);
- **Nutrients:** Ammonia (NH₃), nitrate (NO₃), nitrite (NO₂), 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 additional parameters were also analysed as part of the site characterisation process:
 - Volatile Organic Compounds (VOCs), including Chlorinated VOCs (CVOCs);
 - Total cyanide and 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, semi-volatile organic compounds (SVOCs), chlorinated aliphatic compounds (which include CVOCs and low volatility chlorinated compounds, e.g. chlorinated paraffins and chlorinated pesticides), Total cyanide and total phenols.

Table 3-3 Summary of Groundwater Quality Test Parameters

Sampling Date	Monitoring Well	Testing
07/04/2026	BH1M	Standard suite
	BH2M	Extended suite

3.4.5 Assessment Criteria

Given the tidal nature of the receiving water body it was deemed equivalent to a marine ecosystem (as described in **Section 2.6**), water quality results were assessed against the default guideline values (DGVs) for marine ecosystems, as published under the *Australian and New Zealand Guidelines (ANZG) for Fresh and Marine Water Quality* (Ref. ANZG, 2018 and subsequent updates). These were the 95% Marine Default Guideline Values (DGVs) and 99% Marine DGVs for bio-accumulative toxicants (cadmium, mercury and benzo(a)pyrene). For parameters that are not currently addressed under the ANZG marine water DGVs, relevant alternative criteria were adopted, as detailed in **Section 5.2**.

These criteria would be applied as the discharge water criteria (the 'DWC') during site dewatering, and DWC values are presented alongside the groundwater analytical results in the corresponding summary tables (**Table B1** and **Table B2** in **Appendix B**).

3.4.6 Field-based Water Quality Testing and Observations

The field water quality parameters DO, pH, EC, Temperature and Redox potential, were measured onsite using a flow cell and recorded as presented in **Table 3-4**. The groundwater samples were also evaluated on the basis of odour and visual signs of contamination, with the following observations noted:

- Groundwater samples were visually observed to be transparent and light yellow to orange in colour, with low to moderate turbidity;
- No hydrocarbon odours or visual evidence of contamination were detected during well purging and groundwater sampling of both sampled wells; and
- A portable photo-ionisation detector (PID) was used to screen the top of each well for VOCs and PID readings were low (<1ppm, i.e. less than background levels).

The field water quality data indicated that groundwater beneath the site is acidic (pH: 3.05 – 4.64), fresh to marginal in terms of water salinity (EC 432 – 890 $\mu\text{S}/\text{cm}$), oxygen depleted (DO < 4 mg/L), and under oxidising conditions as indicated by the positive Eh values (245 – 342 mV).

Table 3-4 Groundwater Field Data (GME date: 18/12/2025)

Well ID	DO ¹ (mg/L)	pH	EC ($\mu\text{S}/\text{cm}$)	Temperature (°C)	Eh ² (mV)
BH1M	NA	4.6	890	20.29	342.40
BH2M	1.5	4.5	432	19.25	245.03

Notes:

DO – Dissolved Oxygen; EC – Electrical Conductivity;

¹ Dissolved Oxygen field readings were not recorded due to equipment malfunction, however, the laboratory result for BH2M is presented.

² Eh (mV) - values were calculated by adjusting field Redox (mV) readings to Standard Hydrogen Electrode (SHE) by adding field electrode potential (205mV).

3.4.7 Laboratory Analytical Results

Laboratory documentation is attached in **Appendix G**. With reference to the results summary tables presented as **Table B1** and **Table B2 (Appendix B)**, the results of the 7 April 2026 GME showed compliant groundwater concentrations with the discharge water criteria (DWC) in most samples, with the following exceptions:

- Dissolved copper at BH1M (150 $\mu\text{g}/\text{L}$) was above the DWC value (6 $\mu\text{g}/\text{L}$).
- Dissolved aluminium at both BH1M (140 $\mu\text{g}/\text{L}$) and BH2M (89 $\mu\text{g}/\text{L}$) was above the DWC value (37 $\mu\text{g}/\text{L}$).
- Turbidity at both BH1M (78 NTU) and BH4M (230 NTU) was above the DWC value (10 NTU); and
- Field pH and laboratory pH were outside the adopted DWC range 6.5 – 8.4 at both BH1M (field 4.6, lab 5.2) and BH4M (field 4.5, lab 4.9), which confirmed the acidic nature of the groundwater across the site.

3.4.8 Water Treatment Requirements

Water treatment during construction dewatering

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

- pH;
- Turbidity; and
- Dissolved metals (particularly copper and aluminium).

In many cases neutralising water pH and lowering water turbidity through appropriate water treatment can significantly reduce the levels of other elevated water quality parameters. Potential water treatment options include pumping the water through a sediment settlement tank, where the following could also be implemented:

- Addition of flocculent/coagulant for settlement of suspended particles, to lower water turbidity and assist in the control of metals. Selection of treatment chemicals should be undertaken with care, however, as some additives may increase concentrations of specific water quality parameters.
- pH correction via the addition of sodium hydroxide (or equivalent) solution, implemented concurrently to increase water pH to the required range.

- Adjustment of the flow rate to allow sufficient residence time for flocculation/coagulation and sediment 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 appropriate technologies for site specific conditions. It would be appropriate to engage the water treatment specialist early to allow sufficient time for the design and mobilisation of the water treatment system.

Testing of treated water quality is required prior to discharge to confirm that water treatment procedures are effectively achieving compliant discharge water quality. Further details on water quality monitoring and management are provided in **Section 5.4**. Additional information in regards to water treatment system design and maintenance are provided in **Section 5.5**.

Water treatment during operational dewatering

The water quality data set at the conclusion of the construction dewatering phase will be used to inform water treatment requirements, to ensure compliant discharge waters for the operational phase, as described in **Section 7.3**.

4. DEWATERING METHODOLOGY

4.1 Excavation and Shoring

As stated in **Section 1.2**, the proposed development will include a three level basement, with an estimated BEL as deep as 10 m BGL (6.7 m AHD), and locally deeper excavations for footings, service trenches, crane pads and lift overrun pits.

With reference to the GSA report (**Appendix D**), the shoring system is assumed to be a soldier pile wall. The excavation face adopted in the groundwater model was therefore assumed to be designed as a fully permeable shoring system that is free to drain inflowing groundwater seepage.

The seepage analysis did not assess the overall stability of the shoring system and advised that should the shoring design be updated the GSA should be revised accordingly.

4.2 Groundwater Take Volume, Dewatering Duration & Water Access Licence

4.2.1 Predicted Take and Dewatering Duration

As described in the GSA report, groundwater seepage analysis was undertaken using the software package PLAXIS 2D (Version 2024.1.0.1060). PLAXIS 2D is a finite element software package, which is appropriate for non-complex sites with laterally uniform subsurface conditions. The model 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.

Based on a specific set of assumptions and field test data, which included determination of the design groundwater level (**Section 3.3**), as well as the onsite, layer-specific hydraulic conductivities, groundwater seepage flow draining through and beneath the shored walls into the excavation is predicted to be **2.2 ML** over a projected 365 days of construction dewatering (i.e. $5.89 \text{ m}^3 / \text{day}$). This will be followed by an ongoing 2.2 ML per year during the operational phase of the development.

4.2.2 Water Access Licence Requirements

Under the *Coastal Construction of Infrastructure Dewatering Exemption* and in accordance with the *NSW Water Management (General) Regulation 2025*, any volume of groundwater may be extracted per calendar year for the construction phase of property development projects, without the need for a Water Access License (WAL), until 30 June 2029, provided that:

- The groundwater taken is in connection with the construction (but not ongoing maintenance) of buildings and infrastructure in designated coastal areas; and
- Construction must occur within the coastal water sharing plan areas (i.e. generally east of the Great Dividing Range) and meet all relevant conditions, including that all water taken is recorded and reported.

For groundwater take during the operational (occupational) phase of a project, a WAL is required where the estimated groundwater take is more than 3 ML/year, in the absence of any relevant exemption. Given that the basements will be designed as drained structures, and based on the modelled operational seepage volume (i.e. 2.2 ML/yr), a WAL will not be required for post-construction dewatering.

4.3 Cone of Depression Extent, Ground Settlement and Drawdown Monitoring

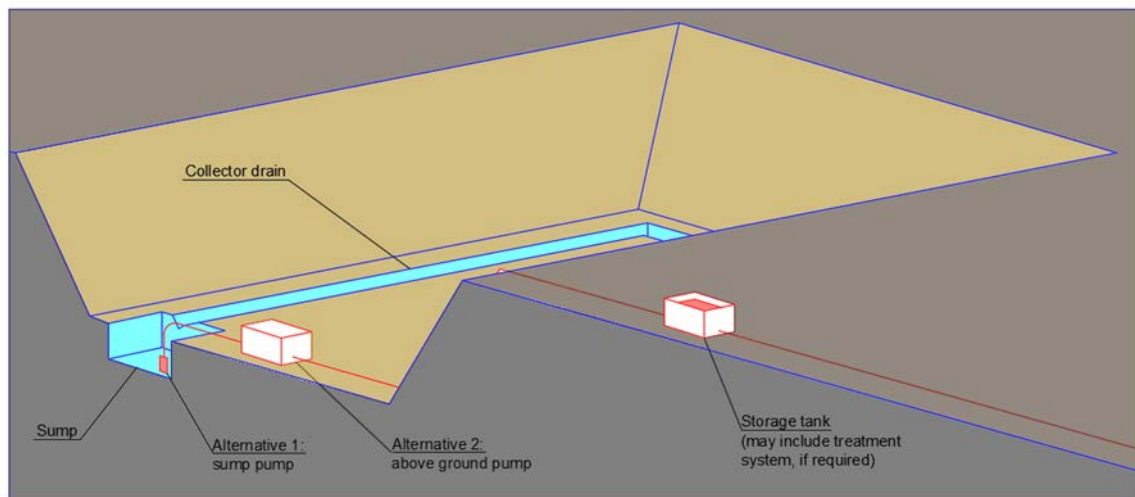
Groundwater modelling indicated the predicted maximum drawdown behind the shoring wall, surrounding the basement boundaries is 5.8 m, with an estimated radius of influence (cone of depression extent) of 50 m from the shoring wall. Based on the modelling results, dewatering-induced ground settlement immediately outside the basement wall is estimated at 8.4 mm, decreasing with increasing distance from the wall. Ground settlements of less than 10 mm are considered to pose a 'negligible' risk in terms of the category of damage risk, as described in GSA Report Section 3.3.

Groundwater depth will be monitored periodically during the construction dewatering period in selected monitoring wells by electric water contact meter during each dewatering monitoring event, as described in **Section 5.4**.

4.4 Dewatering Method

Due to the characteristically low hydraulic conductivity characteristics of the fractured bedrock, a sump and pump system will be used for the control of water seepage into the excavation during basement construction. A typical sump-and-pump setup is 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, seepage water is to be collected and appropriately treated prior to discharge to the stormwater system. A collection sump is typically located at the lowest part of the excavation, from which collected seepage waters are pumped into a storage tank for sediment settling. The preferred tank type will require capacity to accommodate the rate of groundwater seepage inflow during basement construction, which was modelled at 5.89 m³/day (**Section 4.2**).

Groundwater treatment will be undertaken either in the settling tank, or via a water treatment system installed close to the tank 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 authority.

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

The Site Manager, Dewatering Contractor and Water Treatment Specialist must agree on a dewatering strategy and appropriate locations for the dewatering treatment system and water retention tanks to be set up, prior to the commencement of the excavation works.

4.4.2 Operational Phase Dewatering

A drained basement design will require the collection of groundwater seepage via onsite detention storage (OSD tank, or equivalent), with discharge to the municipal stormwater system for the operational life of the project.

It is understood that WaterNSW/DCCEEW may consider an application for long-term, operational phase dewatering, where minimal impact considerations under the NSW Aquifer Interference Policy (AIP) are satisfied. An assessment against the AIP was undertaken, which found minimal impact requirements would be satisfied, as described in **Section 7**.

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.

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 5.6**), 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 until consistent water quality is confirmed, as described in **Section 7.3**.

4.6 Potential Drawdown-Induced Impacts

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

Table 4-1 Assessment of Potential Dewatering Effects

Attribute	Description
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 nine domestic or irrigation/recreation supply bores, between approximately 180m and 445m from the site. Given the low hydraulic conductivities of the water bearing strata (see Section 3.2), the elevated topography at the site in relation to the supply bore locations, bore depth and distances from the proposed dewatering activity, significant water level drawdowns and associated water supply losses are deemed unlikely.
Potential impacts on groundwater quality resulting from contaminant migration	Two service stations and a mechanical auto workshop business operating approximately 155 to 330m north to northwest of the site were identified as potential contamination sources, as described in Section 2.5.2 . As a number of the groundwater supply bores are relatively deeper bores (51.8m to 103m in depth) as tabulated in Section 2.4 , are located at greater distances from the site (180 – 445m), draw water from strata with characteristically low hydraulic conductivities, in addition to the dewatering site being at a higher

Attribute	Description
	ground elevation than the potential contamination sources, it is unlikely that groundwater quality impacts would cause degradation of the beneficial use category of the groundwater source, specifically due to the proposed site dewatering activity. Potential on-site soil contamination sources will be removed during basement excavation, thereby limiting the risk of groundwater impacts from onsite conditions.
Proximity of Groundwater Dependent Ecosystems (GDEs)	No high priority groundwater dependent ecosystems were documented within a 500m radius of the site that would be at risk from dewatering induced groundwater drawdown, as described in Section 2.7 .
Potential subsidence of neighbouring structures	Drawdown-induced ground settlement for the proposed development was estimated to be less than 10mm close to the shoring wall, and decreasing at further distances from the basement (Section 4.3). Ground settlements less than 10mm are considered to pose a 'Negligible' risk in regards to category of damage risk due to dewatering, as described in the GSA report.
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.

5. WATER QUALITY MANAGEMENT

5.1 Responsibility

The Principal Contractor or Site Manager, appointed for the construction works, will be responsible for implementing the water quality management procedures 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**).

5.2 Discharge Water Quality Guidelines

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

The nearest receiving water body for stormwater is Winnererremy Bay within the Pittwater Estuary, which is a moderately disturbed marine ecosystem (**Section 2.6**). The ANZG 95% *Marine Default Guideline Values (DGVs)* were therefore adopted as the Discharge Water Criteria (DWC), with the 99% DGVs to be adopted for bio-accumulative toxicants. These will be the water quality 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 that are not currently addressed by the ANZG marine DGVs, relevant alternative criteria have been adopted as the default DWC, as detailed in **Table 5-1**.

The listed parameters and corresponding criteria will apply for all water being discharged to the storm water system during dewatering. It is noted however, that the testing of specific analytical parameters is not mandatory after the baseline groundwater quality assessment, as stated in Appendix A of DPIE (2022). The appointed water quality specialist may therefore adjust the testing regime subject to consistent results, to maintain the required level of water quality monitoring.

Table 5-1 Discharge Water Criteria (DWC)

Analyte	DWC (µg/L) ¹
Dissolved Metals	
Aluminium (Al)	37
Antimony (Sb)	9 ²
Arsenic III (As III)	94 ²
Arsenic V (As V)	42 ²
Barium (Ba)	20,000 ⁹
Beryllium (Be)	600 ⁹
Boron (B)	1500 ²
Cadmium (Cd)	0.7
Chromium III (Cr III)	27
Chromium VI (Cr VI)	4.4

Cobalt (Co)	1
Copper (Cu)	6 ³
Iron (Fe)	540
Lead (Pb)	4.4
Lithium (Li)	No Relevant Criteria
Manganese (Mn)	80
Mercury (total) (Hg)	0.1
Molybdenum (Mo)	34 ²
Nickel (Ni)	70
Selenium (Se)	18 ²
Silica (dissolved SiO ₂)	No Relevant Criteria
Silver (Ag)	1.4
Strontium (Sr)	No Relevant Criteria
Uranium (U)	0.5 ²
Vanadium (V)	100
Zinc (Zn)	80 ³
Petroleum Hydrocarbons / Total Recoverable Hydrocarbons (TRH)	
Oil and grease	No visible sheens, surface films or oil and grease ⁴
Volatile TPH (C ₆ – C ₉)	No Relevant Criteria
Semi-volatile to heavy TPH (C ₁₀ – C ₄₀)	No Relevant Criteria
Monocyclic Aromatic Hydrocarbons (BTEX)	
Benzene	700
Toluene	180
Ethylbenzene	80
o - xylene	470 ²
p - xylene	250 ²
m - xylene	75
Polycyclic Aromatic Hydrocarbons (PAH)	
Benzo(a)pyrene	0.1
Naphthalene	70
Microbiological Organisms	
Faecal coliforms	No Relevant Criteria
Faecal streptococci	No Relevant Criteria
Escherichia coli (E. coli)	Not detectable in 100 mL ⁹
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 Nitrogen (NH ₃ as N)	910
Nitrate Nitrogen (NO ₃)	38,000 ⁵
Nitrite Nitrogen (NO ₂)	30,000 ⁹
Oxidised Nitrogen (NO _x)	5 ⁸
Total Nitrogen (TN)	120 ⁸
Total Phosphorus (TP)	25 ⁸
Reactive Phosphorus (FRP)	10 ⁸
Other	
Total Cyanide	4
Phenol	400
PFOS	0.9
PFOA	220 ¹⁰
Physiochemical Parameters	
pH (pH units)	6.5 to 8.4 ⁶
Turbidity (NTU)	10 ⁷
Note 1 Discharge water criteria are the ANZG (2018+) 95% Default Guideline Values (DGVs) for the protection of slightly to moderately disturbed marine ecosystems, with the 99% DGVs applied for the bio-accumulative parameters benzo(a)pyrene, cadmium and mercury, unless otherwise indicated. The ANZG (2018+) only provides marine criteria at an 'unknown' level (%) of species protection for manganese; therefore, these DGVs are applied. Note 2 The ANZG (2018+) 90% Freshwater DGVs for highly disturbed freshwater ecosystems are applied for the indicated parameters (arsenic, boron, selenium, o – xylene and p - xylene), in the absence of marine water criteria. The ANZG (2018+) only provides freshwater criteria at an 'unknown' level (%) of species protection for antimony, molybdenum and uranium; therefore, these DGVs are applied. 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% Marine DGVs, discharge water criteria are set at one order of magnitude (10 x) higher than the ANZG DGV. Note 4 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 5 In the absence of ANZG (2018+) marine criteria for nitrate the ANZG 2025 freshwater 90% DGV is adopted, assuming hard water (>150 mg/L CaCO₃) for marine environments. Note 6 In the absence of ANZG (2018+) criteria for pH, the ANZECC / ARM CANZ (2000) Table 3.3.2 Default trigger values for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems are applied. The adopted pH range is between the lower and upper limit values for Marine water settings. Note 7 In the absence of ANZG (2018+) criteria for turbidity, the ANZECC & ARM CANZ (2000) Table 3.3.3 upper default trigger value for estuarine and marine ecosystems is applied. Note 8 In the absence of ANZG (2018+) criteria, alternative criteria from ANZECC / ARM CANZ (2000), Table 3.3.2, Default trigger values for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems. The marine criteria for total oxidised nitrogen (NO_x), total phosphorus (TP), reactive phosphorus (FRP) and total nitrogen (TN) were adopted. Note 9 For chemical parameters not addressed by either ANZG (2018+) or ANZECC / ARM CANZ (2000), i.e. nitrite, barium and beryllium, the NHMRC (2011) Australian Drinking Water Guidelines, Vers. 3.8, Rev 2022, Table 10.6 Guideline values for physical and chemical characteristics, address potential discharge to recreational beach settings. The criteria are set at one order of magnitude (10 x) higher than the Drinking water health-based value, or 10 x the aesthetic-based value, in the absence of a drinking value. Note: The <i>Table 10.5 Performance measure threshold</i> is applied for the microbiological parameter E. coli. Note 10 DWC value for PFOA is the Interim Marine guideline value at the 95% species protection level for slightly to moderately disturbed marine water systems derived from Table 5 in the <i>National Environmental Management Plan for PFAS</i> (2020).	

5.3 Additional Pre-dewatering Monitoring Event

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

5.4 Discharge Water Quality Monitoring

5.4.1 Visual and Odour 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 treatment equipment, including inspection that short-circuiting of water around baffles and filter media is not occurring within sediment retention tanks;
- No petrochemical sheens are visible on the water surface and no hydrocarbon odours are being generated by the treated groundwater or sediment; and
- No green, blue or extremely clear effluent, potentially indicating high levels of dissolved aluminium (if used in the treatment process).

The Site Manager must keep a 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 construction 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 stormwater system.

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 include the parameters listed in **Table 5-1 (Section 5.2)** and/or the parameters in accordance with *Appendix A – Routine water quality monitoring lists* (DPIE, 2022). Certain parameters may be removed from the testing suite, subject to laboratory analytical results, as advised by the appointed water quality specialist / environmental consultant.

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:
 - Water pumped from the seepage collection sump will be initially diverted into the excavation, until a reduction in suspended sediments is observed;
 - Once less turbid water is achieved, water from the sump may be pumped into the sediment settlement tank and passed through the water treatment system;
 - Samples of the treated water will be collected and laboratory analysed for the routine DPIE 2022 water quality parameters, including those found to be outside of the DWC during the baseline water quality assessment (as discussed in **Section 3.4.8**); and
 - After confirmation that treated water quality complies with the DWC, the treated water may be discharged to the municipal storm water system, using the Council-approved connection point.

- As a minimum, two samples of treated water will be collected per week for the first two weeks during the designated trial-run period. The analytical results will be compared to the DWC to assess the performance of the water treatment system and to make adjustments where necessary.
- Sampling for trial run purposes will cease once the target parameters stabilise (i.e. consecutive treated water tests are within $\pm 10\%$ of the previous test results) and contaminant concentrations are within the DWC 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 DWC (**Table 5-1**).
- 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 groundwater seepage (including treated water) should be retained on-site and stored in appropriate bulk containers. No collected water should be discharged until it is proven to meet the adopted DWC.

Construction Phase - Monitoring Frequency (Weekly, Fortnightly and Monthly)

- After the Trial-Run Period, and subject to statutory authority approval, treated water may be discharged to the storm water system. 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 DWC. 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 - Monitoring Frequency (Annual)

- Provided that the Discharge Monitoring Period 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 water quality results exceed the DWC 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 DWC (**Table 5-1**). Discharge water quality reporting will be required as follows:

- **Interim Monitoring Reports** will be prepared and issued to the Site Manager (during the construction phase), 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 DWC and provide recommendations on corrective actions, when required.
- **Interim Dewatering Completion Report** - Following completion of construction dewatering activities, an *Interim Dewatering Completion Report* ('interim DCR') will be prepared by the

appointed Environmental Consultant, as described in **Section 5.6.1**. The interim report will report on construction phase dewatering and must include copies of all analytical results and laboratory water quality test reports issued during the construction phase dewatering period. The interim DCR will be prepared using the pro-forma available for download through the WaterNSW website, as described in **Section 5.6**, and will be submitted to Council and Water NSW.

- **Annual Dewatering Monitoring Reports** will be prepared as described in **Section 5.6.2**, 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 must also be compiled using the DCR pro-forma (see **Section 5.6**).

5.4.5 Groundwater Level Monitoring

Groundwater levels will be measured at each monitoring well during the dewatering period to monitor groundwater level drawdown. The data will be recorded and included in the DCR.

5.5 Water Treatment

5.5.1 Treatment System Design Considerations

Baseline groundwater quality data to date (**Section 3.4**) indicate that treatment of seeped groundwater will be necessary in relation dissolved metals (particularly aluminium and copper), pH and turbidity, which have been detected at levels that are outside of the DWC, as described in **Section 5.4.2**.

It is recommended that the selection and design of the preferred water treatment system is made by the Dewatering Contractor / Water Treatment Specialist, in collaboration with the appointed Environmental Consultant. Alternative and/or additional water treatment options may be implemented, if necessary, 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 **Section 4.4.1**);
- Water filtration to reduce fine particulates;
- If applicable, automated in-line chemical dosing systems for the addition of buffering solutions and/or coagulants for the adjustment of pH, turbidity and other parameters, which may be required as described in **Section 6.5 Dewatering Contingencies**;
- Other water treatment to ensure that discharge water quality meets the DWC values and ranges specified in **Table 5-1**;
- Spare retention tank(s) (if required) 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 accurate determination of total discharge volume.

The water treatment system should be installed, tested and operational prior to the commencement of dewatering, to ensure that only treated water that meets the discharge water quality criteria is allowed to drain to the storm water network.

5.5.2 Treatment System Maintenance

The groundwater 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) 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 H**).

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 (a copy of this form is also provided in **Appendix H**).

6. SITE MANAGEMENT AND CONTROLS

6.1 Deviations from this Plan

The Site Manager should seek advice from the Environmental Consultant if deviation from the agreed monitoring program is considered. To ensure the monitoring data set and the early warning objectives of the DMP are not compromised, variations will only be considered where technical justification exists, and any deviations that may be accepted will be documented within the corresponding reports, and must include all justifications for the variation accepted.

Should deviations from the DWC be considered technically justifiable, approval from Council and/or WaterNSW must be obtained 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: EI Australia	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 inspection of the recharge well(s), stormwater diversions and sediment / erosion control devices, ensuring it is 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 DA 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 DA conditions, the site specific environmental management plan and the *Protection of Environmental Operation Act 1997*.
- Give consideration to the noise emission of 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	Preventive / Corrective Actions
Water Quality Criteria Non-compliance	
<i>Water Quality Criteria Exceedance</i> Laboratory analytical report for any monitoring event reveals that treated water quality does not satisfy the Water Quality Trigger Values.	<u>Water quality trigger values</u>, also referred to as the discharge water criteria (DWC), are detailed in Section 5.2, Table 5-1. Immediate action must be taken to halt the release of water into receiving water bodies, where water quality is found not to meet the DWC. Discharge of water must be suspended to enable the following procedure to be implemented: 1) Water will be redirected to storage retention basin/tanks; 2) A water sample will then be collected and sent to the laboratory for confirmation analysis for the non-compliant parameter(s) on an express (24hr) results turn-around basis; 3) Should the analytical result for the confirmation sample show that the previously non-compliant parameter(s) is/are now meet the DWC, the treated water outlet may be redirected to receiving water bodies; however 4) Should the analytical result for the confirmation sample show

Anticipated Problems	Preventive / Corrective Actions
	that the discharge water quality does not comply with the DWC, the environmental consultant / water treatment specialist will be required to modify the water treatment system, in order to achieve compliant discharge water quality. Collection of further treated water samples will be required to confirm the effectiveness of the modifications; 5) After laboratory confirmation that the revised treated water quality complies with criteria, extracted groundwater may be redirected to receiving water bodies; and 6) Weekly monitoring of treated discharge water quality monitoring will be required, until such time that contaminant concentrations are within the DWC values for three consecutive sampling events. Once this is achieved, 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.
<i>Visible and Olfactory Impacts</i> 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 an alternative retention vessel, while the treatment system is adjusted. It may be necessary to have collected waters removed by a licensed wastewater contractor, should retained quantities exceed the on-site 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.
<i>Repeated Criteria Exceedances</i> After three non-compliances for discharge water quality.	Retain extracted water onsite in appropriate bulk containers for subsequent removal by a licensed wastewater contractor. Determine an alternative discharge method, if necessary, updating this report accordingly.
Groundwater Take Non-compliance	
<i>Excessive Extraction</i> The predicted daily inflow rate (specified in Section 4.2) is exceeded.	<u>Groundwater take trigger levels</u> are provided to ensure that appropriate measures are implemented to minimise the risk of exceeding the groundwater take limit, which would form a breach of the conditions of the WaterNSW Statement of Approval. The following trigger levels are based on the regular flow meter readings that are recorded during the dewatering monitoring program, as described in Section 5.6: <u>Trigger 1</u>: when the flow meter data indicates that 70% of the total approved groundwater take limit has been extracted, the monitoring manager is to notify the Site Manager and the Dewatering Contractor, to activate a review of construction progress against dewatering rate and to make adjustments if necessary, so as not to exceed the approved groundwater take limit. <u>Trigger 2</u>: at 80% of the total approved groundwater take limit, if basement construction is not close to completion, the monitoring consultant is to engage site management and the dewatering contractor to review the reasons for the increased dewatering rate and to explore options and take action to achieve sufficient lowering of the dewatering rate for compliance with the groundwater take limit. <u>Trigger 3</u>: at 90% of the total approved groundwater take limit, if effective reductions in dewatering rate cannot be implemented,

Anticipated Problems	Preventive / Corrective Actions
	WaterNSW should be contacted to review options, which may include a combination of: ▪ Applying for an increase to the groundwater take limit, which may require a Water Access License to be acquired. ▪ Temporary retention of tail water onsite in appropriate bulk containers for subsequent removal by a licensed waste contractor; ▪ Aquifer re-injection after obtaining regulatory approval; and/or ▪ Fast-tracking of construction works to complete dewatering sooner than the scheduled timeframe.
Drawdown-Induced Ground Settlement Risk	
<i>Excessive Water Level Drawdown</i>	Groundwater drawdown trigger levels will also apply to minimise the risk of unforeseen impacts in relation to ground settlement on neighbouring land. As documented in the GSA report (Appendix D), dewatering is expected to have negligible, adverse impact on the neighbouring properties, given that dewatering will occur in competent bedrock materials. Notwithstanding, should groundwater level monitoring during site dewatering reveal declining groundwater levels greater than the predicted, maximum drawdown outside of the basement boundary, the following contingency measures will apply at the indicated trigger levels: <u>Trigger 1:</u> when monitoring of groundwater levels indicates that the maximum predicted groundwater drawdown level has been reached in the vicinity of the shored excavation boundary wall, and groundwater levels are still falling, excavation works should cease (HOLD POINT) and the monitoring manager is to notify the Site Manager and the Geotechnical Engineer to review construction progress and confirm that works can effectively continue without significant, additional groundwater level decline. The review may find that further groundwater level decline may be greater than 25% of the predicted maximum drawdown outside of the shoring wall. <u>Trigger 2:</u> should the Trigger 1 review indicate that further groundwater level decline may be greater than 25% of the predicted maximum drawdown outside the shoring wall, the appointed Structural Engineer will be notified to assesses whether this water level decline potentially poses adverse risks to neighbouring structures that would warrant mitigation measures to be implemented, and if so, to recommend relevant mitigation options for consideration and action prior to continuation of deepening the excavation.
System Performance Issues	
Dewatering System Failures	Ensure that spare equipment (where practical) is 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.

Anticipated Problems	Preventive / Corrective Actions
Unexpected contaminants found during monitoring	Contact the appointed environmental consultant / water quality expert and collect samples for analysis, to assess the identified concentrations against relevant criteria. If the contaminant is found to exceed the DWC, follow the corrective actions corresponding to <i>Water Quality Criteria Exceedance</i> above. Expand the DWC accordingly.
Chemical/fuel spill and leaks from machinery	Stop earthworks, notify site 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 seek advice from environmental consultant in regard to assessment and treatment requirements.
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.
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 odours and volatile emissions using photo-ionisation detectors (PID), if applicable.
Complaint management	Notify client, site manager and environmental consultant (if required) logging and following up complaint. Reporting should follow management procedures. Implement control measures to address reason of complaint (if possible) and notify complainant of outcome.

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 2012 Aquifer Interference Policy (the 'NSW AIP') *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.*

Baseline groundwater salinity was shown to be low with a maximum laboratory TDS of 470 mg/L (see **Table B1**). Modelled inflow to the basement is predicted to be 0.07 L/sec (i.e. 5.89 m³ / day, **Section 4.2**), during the construction and occupational 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, with groundwater under pressure, 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 Impact Assessment 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:

- Registered bore data indicates that groundwater is utilised in the surrounding area by existing bores located between 180m and 445m from the site (**Section 2.4**); however, due to low hydraulic conductivities of water bearing strata, bore distance and depth and relatively higher topographic elevations at the site, any potential drawdown effects are not anticipated to result in groundwater access losses and *Level 1 minimal impacts* with respect to drawdown will therefore be achieved.
- A maximum drawdown of 5.8 m has been modelled (**Section 4.3**) for the basement boundary during site dewatering activities, based on the estimated 50 m cone of depression extent. As the drawdown close to the site 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.
- Potential off-site contamination sources (**Section 2.5.2**) were identified within 500 m of the site; however, given the low hydraulic conductivity of the bedrock aquifer, the deeper design of most bores (51.8 to 103 m BGL), the elevated topography at the site, and the distances of the potential sources from the site (155 to 330 m), site dewatering would be unlikely to adversely impact the beneficial use category of the groundwater source at existing water supply bore locations. *Level 1 minimal impact* conditions with respect to water quality would therefore be maintained.
- Any potential onsite contamination sources will be effectively removed during basement excavation, and any residual groundwater impacts will be treated to comply with the approved discharge water criteria, prior to stormwater discharge.
- There is no documented, high priority, groundwater dependant ecosystem within 500 m of the site that would be at risk from any impacts arising from the dewatering activity.
- As the basement will be designed as a draining structure, potential groundwater mounding impacts as a result of the constructed structure are unlikely.

In addition to the above, the routine monitoring of treated water quality, groundwater drawdown and water take, as well as the dewatering contingencies tabulated in **Section 6.5**, are designed to ensure that potential 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	As detailed in Section 4.2 , the water take volume is estimated to

Assessment Items	Comments
	be 2.2 ML per year during the construction and operational phases of the development.
2. Suitability of volume estimation	Use of PLAXIS 2D (a finite element computer model), implemented by experienced Geotechnical Engineer and reviewed by Senior Geotechnical Engineer (see also the GSA report in Appendix D).
3. Ground elevation across the site	The site slopes to the north, with surface elevations ranging from approx. RL 17.11 mAHD (southern site corner) to 14.37 mAHD (northern site corner) (Source: Norton Survey Partners, 2025)
4. Geotechnical ground characterisation	Refer to GSA report in Appendix D .
5. Water level measurements	Groundwater levels were measured at depths 8.62 m AHD (minimum) to 11.84 m AHD (maximum), as detailed in Section 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 5.4.5 .
6. Required water level draw down and potential impacts	The GSA (EI, 2026c) determined approximately 5.8 m drawdown at the site boundary as a result of the site dewatering. Due to competent bedrock conditions however, less than 10 mm of drawdown induce ground settlement is predicted (Section 4.3). Potential impacts are tabulated in Sections 4.6 and 7.1.4 .
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	Sandstone/laminite 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	Construction dewatering is estimated to last 365 days, and will be followed by ongoing dewatering during operational dewatering for the life 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 characterised by routine monitoring during construction phase dewatering. To confirm for which parameters water treatment is still necessary, a pre-treatment water sample will be collected 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 non-compliant water quality parameter(s). 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 by strata management 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 and the name of the person conducting the monitoring.

Should it be discovered 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 and 24 months of operation). Treated water samples will be laboratory analysed for the priority discharge water quality parameters (**Table 5-1**), to confirm that DWC compliance and show that discharge water quality is not deteriorating with time. Given that the groundwater is to be treated prior to offsite discharge, the risks presented to the human health and environment for the construction phase of the development are considered low and acceptable. Groundwater assessment of water quality parameters is required at the end of the construction phase to verify concentrations, and review or amend proposed operational phase water treatment if required.
- **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. If this is not the case then the dewatering program will be reviewed accordingly.

The appointed environmental consultant will provide notification to Council to document the termination or continuation of monitoring at this stage. Should monitoring be continued, a review of monitoring frequency will be undertaken and appropriate notification to Council will be issued by the appointed environmental consultant, through Strata management.

7.3.3 Monitoring Well Replacement Protocol

EI notes that all three monitoring wells (BH1M, BH2M and BH4M) are located outside the basement footprint. At least one of these wells (and if practical, all) should be preserved to enable groundwater level monitoring close to the basement.

Should the existing wells be damaged during the construction works, installation of a new 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 report are summarised in **Table 8-1**.

Table 8-1 Dewatering Management Summary

Item	Requirement / Procedure
Objective of the 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 take assessment and dewatering drawdown impacts. ▪ Refer to Appendix D for groundwater seepage analysis model. Provide relevant information demonstrating that post-construction, operational dewatering would pose minimal harm to the groundwater source: ▪ See Section 7.3 for operational phase dewatering management.
Person Responsible for Implementation of this Report	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 the Site Manager (yet to be determined).
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.
Geotechnical Monitoring Report	The geotechnical monitoring report, detailing the current, continuous groundwater level monitoring results, is presented as an appendix in the GSA report in Appendix D.
Discharge Water Quality Criteria	All groundwater to be discharge 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 Discharge Water Criteria (DWC) prior to release into the storm water network, which discharges to receiving water bodies. 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* <i>*provided the analytical results indicate treated water quality meets the DWC, 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.</i>
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 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 The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust, 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 The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust.

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.

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ABBREVIATIONS

AHD	Australian Height Datum
AIP	Aquifer Interference Policy
ANZECC	Australian and New Zealand Environment Conservation Council
ANZG	Australian and New Zealand Governments
ASS	Acid Sulfate Soil
B EGL/BGL	Below Existing Ground Level
BEL	Bulk Excavation Level
BTEX	Benzene, Toluene, Ethyl benzene, Xylene
CVOC	Chlorinated Volatile Organic Compounds
DGV	Default Guideline Values
DO	Dissolved Oxygen
DP	Deposited Plan
DWC	Discharge Water Criteria
EC	Electrical Conductivity
EI	EI Australia
FFL	Finished Floor Level
GME	Groundwater Monitoring Event
GSA	Groundwater Seepage Analysis
LGA	Local Government Area
LOR	Limit of Reporting (limit of laboratory reporting for analytical method; see PQL)
m	metres
ML	Megalitres
mg/L	Milligrams per Litre
µg/L	Micrograms per Litre
µS/cm	Microsiemens per Centimetre
N/A	No Available Criterion
NATA	National Association of Testing Authorities
NTU	Nephelometric Turbidity Units
PAHs	Polycyclic Aromatic Hydrocarbons
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
pH	Potential Hydrogen (a measure of the acidity or basicity of an aqueous solution)
PID	Photo-ionisation Detector
PQL	Practical Quantitation Limit (limit of reporting for analytical method; see LOR)
RL	Reduced Level
TDS	Total Dissolved Solids
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
VOCs	Volatile Organic Compounds

(Note: Some of the above abbreviations may not have been used in this report)

Appendix A – Figures



LEGEND Note: All locations are approximate  Site Location		 Practical Solutions for Built Environments Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088		Drawn: L.J.	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust Dewatering Management Plan 35-39 Darley Street, Monavale NSW Site Locality Plan		Figure: A1
				Approved: N.K.			Project: E26992.E16_Rev0
				Date: 28/04/2026			



Map Source: DCS Spatial Services, accessed 14/04/2026

LEGEND Note: Areas are approximate		 eiaustralia Practical Solutions for Built Environments Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088	Drawn:	L.J.	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust Dewatering Management Plan 35-39 Darley Street, Mona Vale NSW Sampling Location Plan	Figure: A2
 Site Boundary	 Groundwater Monitoring Well (EI, 2025)		Approved:	N.K.		Project: E26992.E16_Rev0
 Proposed Basement Boundary			Date:	28/04/2026		
 Proposed Fire Water Tank						



Appendix B – Tables

Table B1 – Summary of Baseline Groundwater Quality Results: Physical Parameters

Sample ID	Date sampled	Measurements & Analyses																		Visual Assessment				
		Sodium Adsorption Ratio (SAR)	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)	Total Dissolved Solids (mg/L)	Total Suspended Solids (TSS) (mg/L)	Turbidity (NTU)	Hardness (mg CaCO3/L)	Total Organic Carbon (TOC) as NPOC (mg/L)	Field Water Temperature (°C)	Electrical Conductivity EC (µS/cm)		pH		Redox (mV)		Dissolved Oxygen (DO mg/L)		Field Oil & Grease (Present/Absent)
																Field	Lab	Field	Lab	Field	Lab (Eh ⁺)	Field	Lab	
Groundwater Monitoring Event (EI, 2026)																								
BH1M	7/4/2026	NA	NA	NA	NA	NA	NA	NA	NA	470	NA	78	40	NA	20.29	890	610	4.6	5.2	137.4	NA	NVL	NA	No
BH2M		5.7	<5	<5	<5	<5	<5	<5	<5	250	230	230	25	0.9	19.25	432	230	4.5	4.9	40.3	371	NVL	1.5	No
Discharge Water Criteria																								
DWC - Marine												10						6.5 - 8.4	6.5 - 8.4					No visible sheens, surface films or oil and grease

Notes:
All values are in units as shown.
All parameters which state 'Field' were tested onsite using portable water quality test meters and probes, all other parameters were tested in the laboratory.
NA Not analysed
NVL Not validated
Water quality criteria are based on the ANZG, 2018 (Rev. Jan 2024) 95% marine water DGVs, or relevant default guidelines where ANZG marine water DGVs are not currently available, as explained in the footnotes to **Table 5-1**, in **Section 5** of the DMP.

¹ Eh in units of millivolts (mV) - Adjusted redox potential relative to Standard Hydrogen Electrode (SHE), calculated as field Redox probe reading plus field probe potential (205 mV).

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



Table B2 - Summary of Baseline Groundwater Quality - Chemical Parameters

E26992 - Mona Vale

Sample ID	Sampling Date	Metals																				BTEX					VOCs	Chlorinated VOCs							
		Total As	Cd	¹ Total Cr	Cu	Pb	Hg	Ni	Zn	Al	Sb	Ba	Be	B	Co	Fe	Li (mg/L)	Mn	Mo	Se	SiO ₂ (mg/L)	Ag	Sr	U	V	Benzene	Toluene	Ethylbenzene	m,p-xylene	o-xylene	Total VOCs	Pentachloroethane, PCE	Trichloroethylene, TCE	trans-1,2-dichloroethene	Vinyl Chloride
Groundwater Investigation - Round 1 (EI, 2025)																																			
BH1M	7/4/2026	<1	0.2	<1	150	<1	<0.0001	9	22	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	<0.5	<0.5	<1	<0.5	NA	NA	NA	NA	NA	
BH2M		<1	<0.1	<1	6	<1	<0.0001	5	6	89	<1	9	<1	47	1	230	<0.005	30	<1	<1	14	<1	23	<1	<1	<0.5	<0.5	<0.5	<1	<0.5	<10	<0.5	<0.5	<0.5	<0.3
Discharge Water Criteria																																			
DWC - Marine		94 (As III) 42 (As V)	0.7	27 (Cr III) 4.4 (Cr VI)	6	4.4	0.1	70	80	37	9	20000	600	1500	1	540		80	34	18		1.4		0.5	100	700	180	80	470	275		70		330	

Sample ID	Sampling Date	Petroleum Hydrocarbons			PAHs		Microbiological Organisms			Total Phenols	Total Cyanide	PFAS			Major Cations				Major Anions				Ionic Balance (%)	Nutrients										
		Oil & Grease	TPH C6 - C9	TPH C10 - C40	Total PAHs	Benzo(a)pyrene	Naphthalene	Faecal coliforms (CFU/100mL)	Faecal streptococci			E. coli (E. coli)	PFOS	PFOS x PFHs	PFOA	Fluoride (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Bromide (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)		Potassium (mg/L)	Ammonia Nitrogen # N as N	Nitrate Nitrogen NO3-N (mg/L)	Nitrite Nitrogen NO2-N (mg/L)	Total Oxidised Nitrogen NOx-N	Total Kjeldahl Nitrogen	Total Nitrogen (calcd)	Total Phosphorus (Kjeldahl) as P	Phosphorus as P		
Groundwater Investigation (EI, 2025)																																		
BH1M	7/4/2026	NA	<40	<50	<0.5	NA	NA	NA	NA	<0.05	<0.004	NA	NA	NA	NA	NA	NA	4.7	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2M		NA	<40	<50	<0.5	<0.1	<0.1	NA	NA	<0.5	<0.05	NA	0.02	0.03	0.06	<0.1	73	58	0.55	1	5.4	65	0.6	-0.76	<0.01	2.30	0.01	2.3	0.2	2.5	0.15	0.01		
Discharge Water Criteria																																		
DWC - Marine		No detectable oil or grease	If TPH is detected analysis for BTEX and PAH is required				0.1	70		None detectable in 100mL	400	4	0.9		220								910	38	30	5		120	25	10				

Notes:

All values are µg/L unless stated otherwise

NA = Not Analysed

Water quality criteria are based on the ANZG, 2018+ 95% marine water DGVs, or relevant default guidelines where ANZG marine water DGVs are not currently available, as explained in the footnotes to Table 5-1, in Section 5 of the DMP.

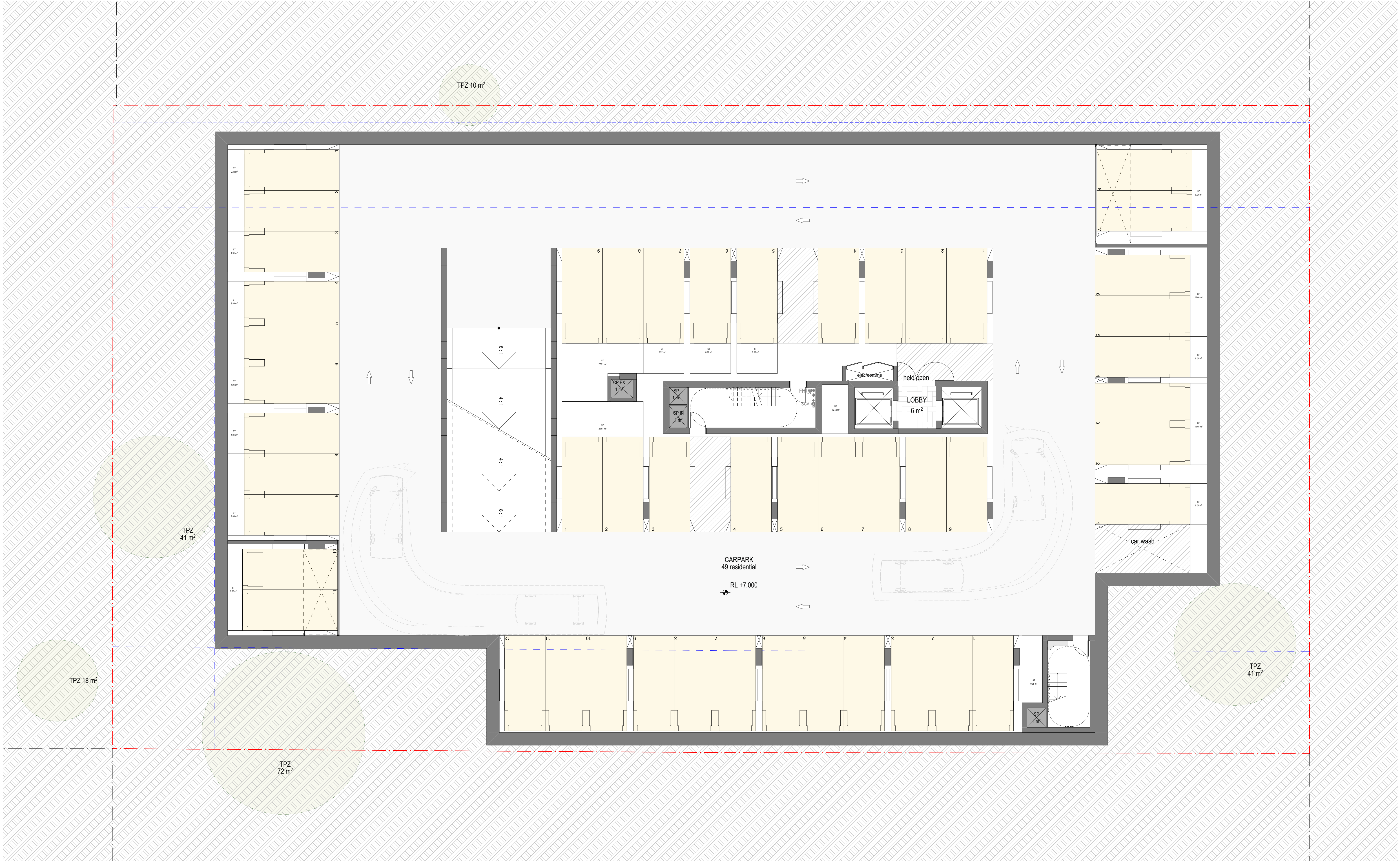
1 This result was for Total Chromium.

2 TRH result was obtained using silica gel clean-up method, to allow quantification of petroleum impacts only.

Highlighted value does not meet the adopted criteria

No relevant criteria are currently available

Appendix C – Proposed Development Plans



REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue		
03	03	Issue		
04	04	Issue		
A	A	SSDA SUBMISSION - SSD-11387290	WS	JW
			WS	JW

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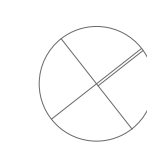
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CLIENT

The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust

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JW

CHECKED

JW

DRAWN

WS

DRAWING TITLE

**GENERAL FLOOR PLAN -
BASEMENT 03**

PROJECT NUMBER

20895

DRAWING NUMBER

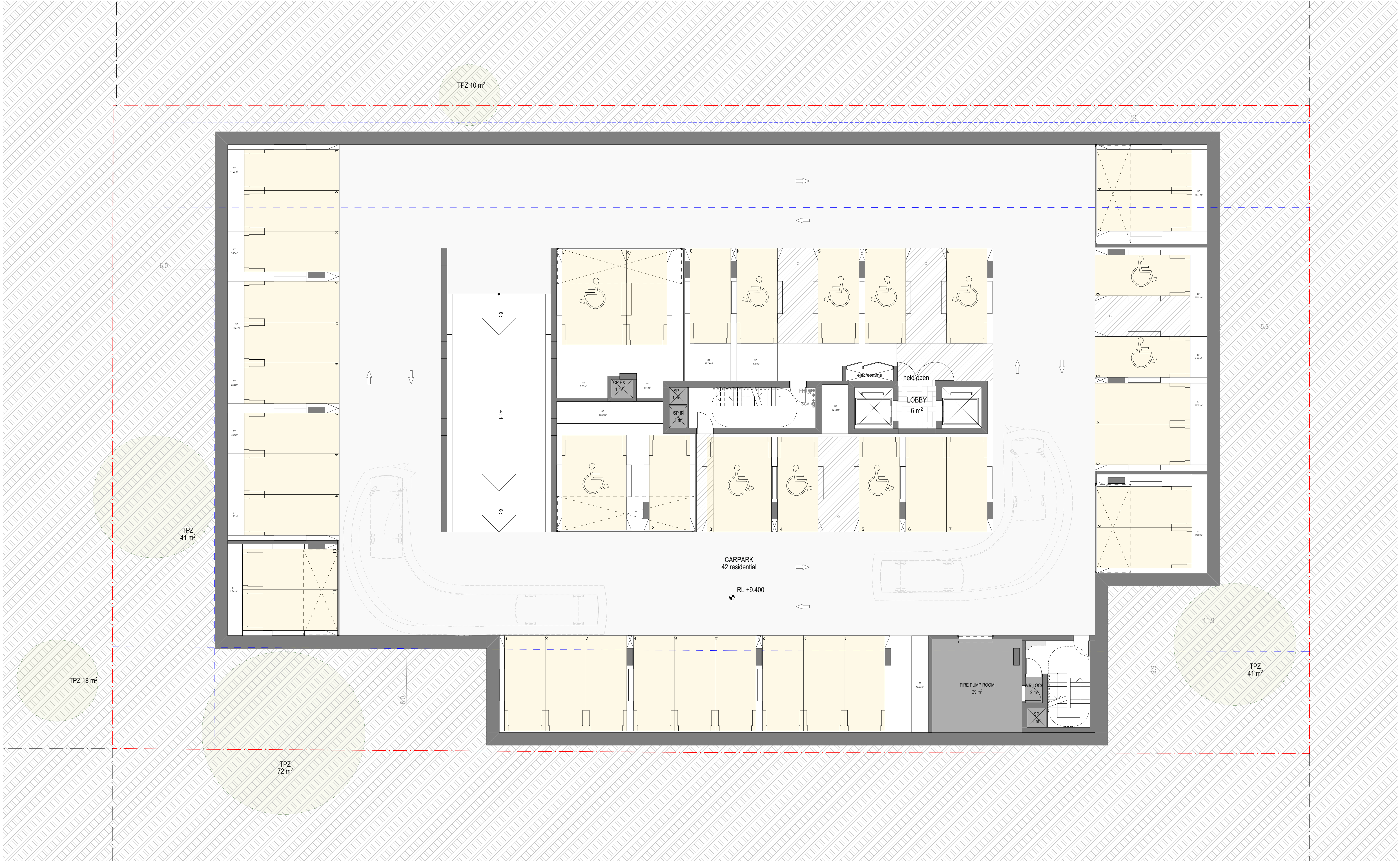
PLA-DA-10B3

STAGE

DA

REVISION

A



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01	01	Issue		
02	02	Issue		
03	03	Issue		
04	04	Issue		
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CLIENT

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DRAWING TITLE

**GENERAL FLOOR PLAN -
BASEMENT 02**

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-10B2

STAGE

DA

REVISION

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REV	DATE	REVISION DESCRIPTION	BY	CHK
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03	03	Issue		
04	04	Issue		
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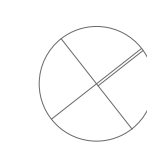
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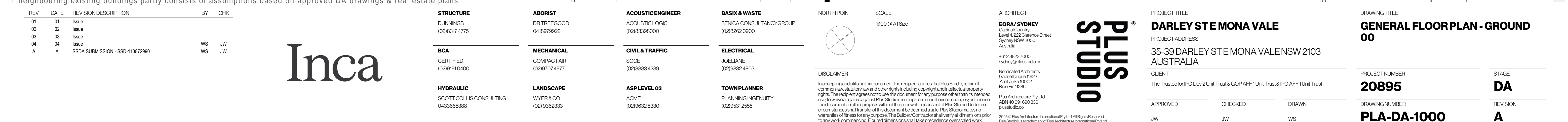
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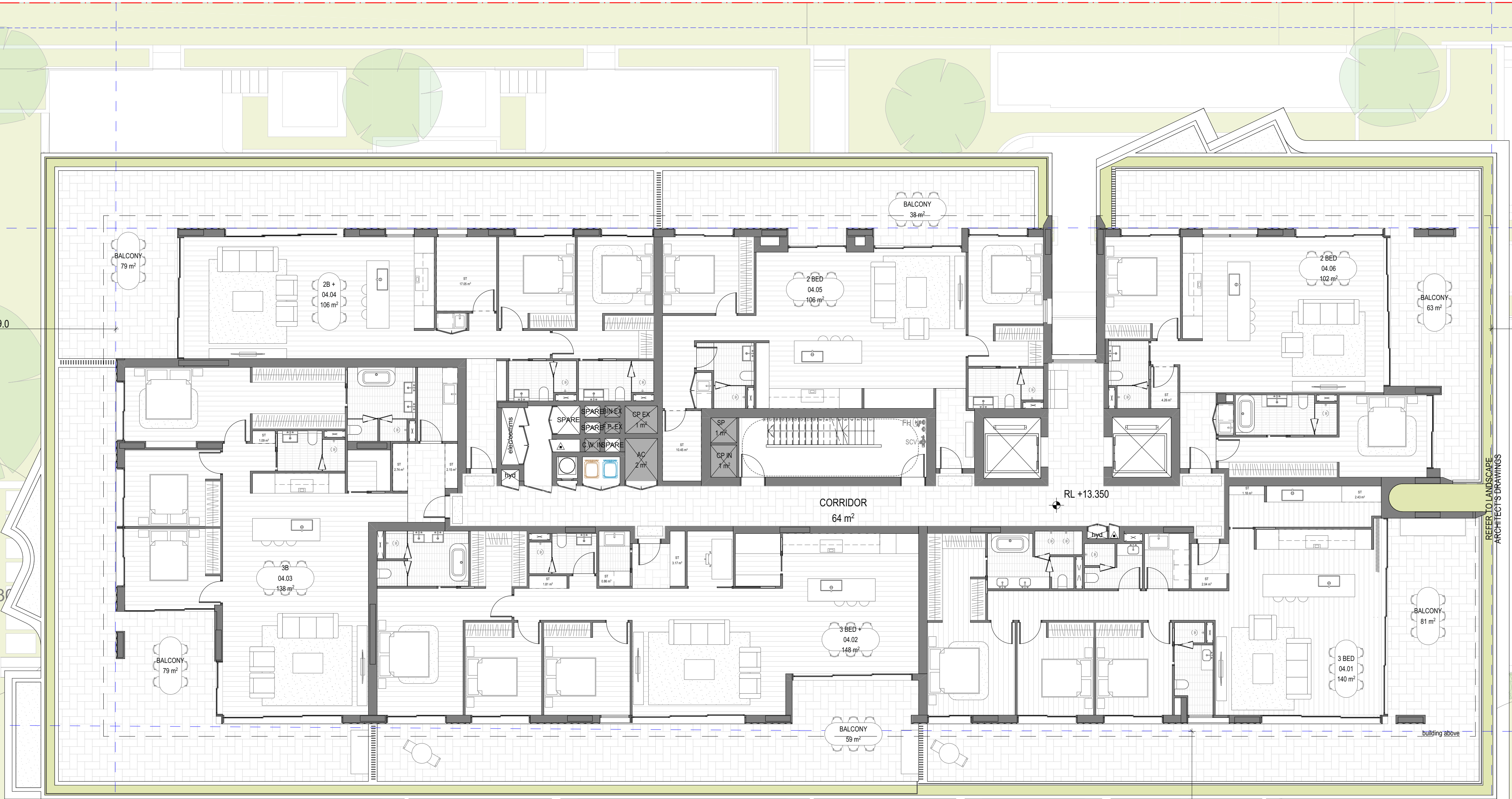
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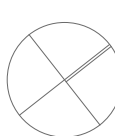
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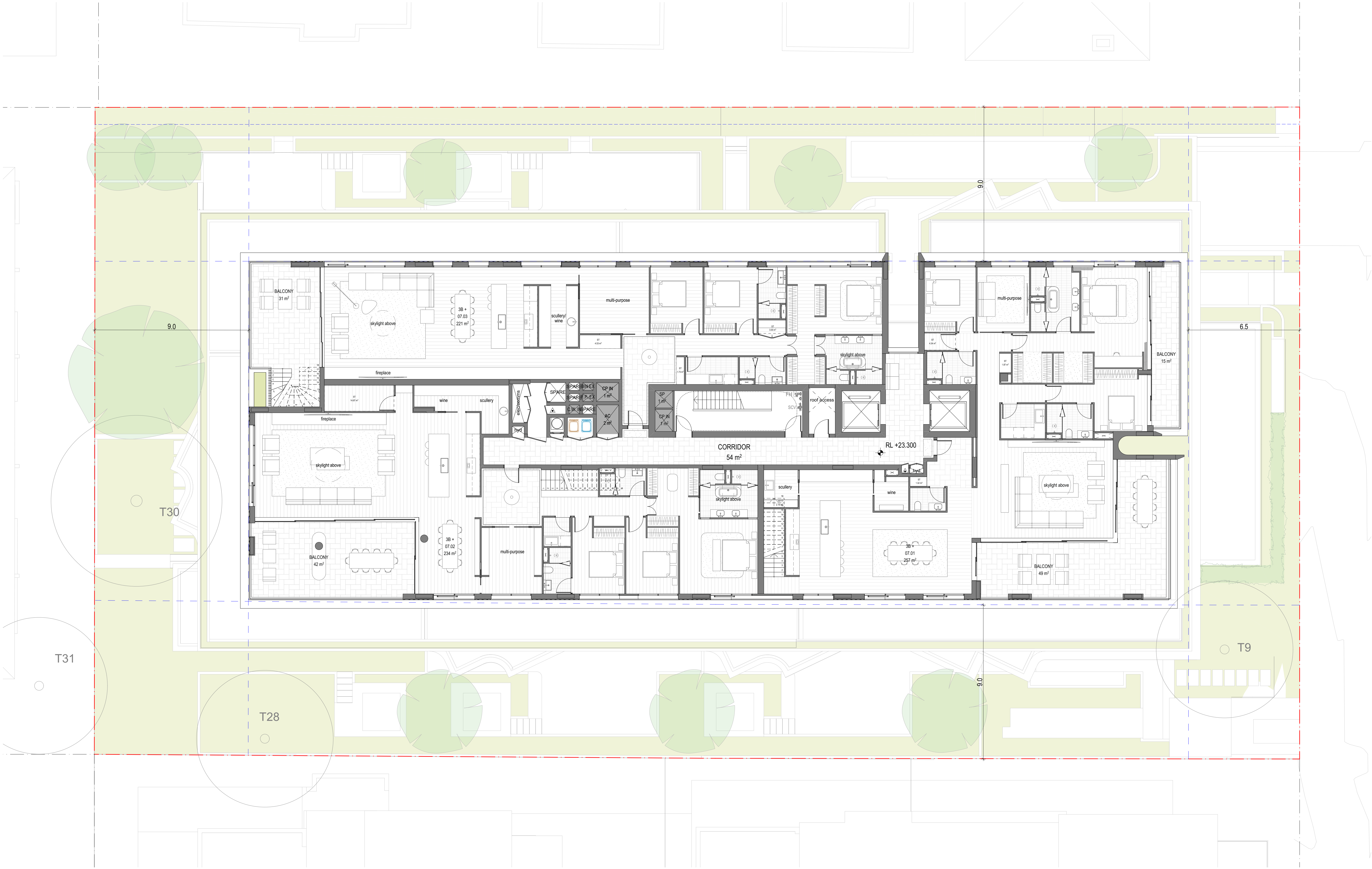
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20895
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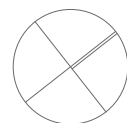
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GENERAL FLOOR PLAN - LEVEL 07

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-1007

STAGE

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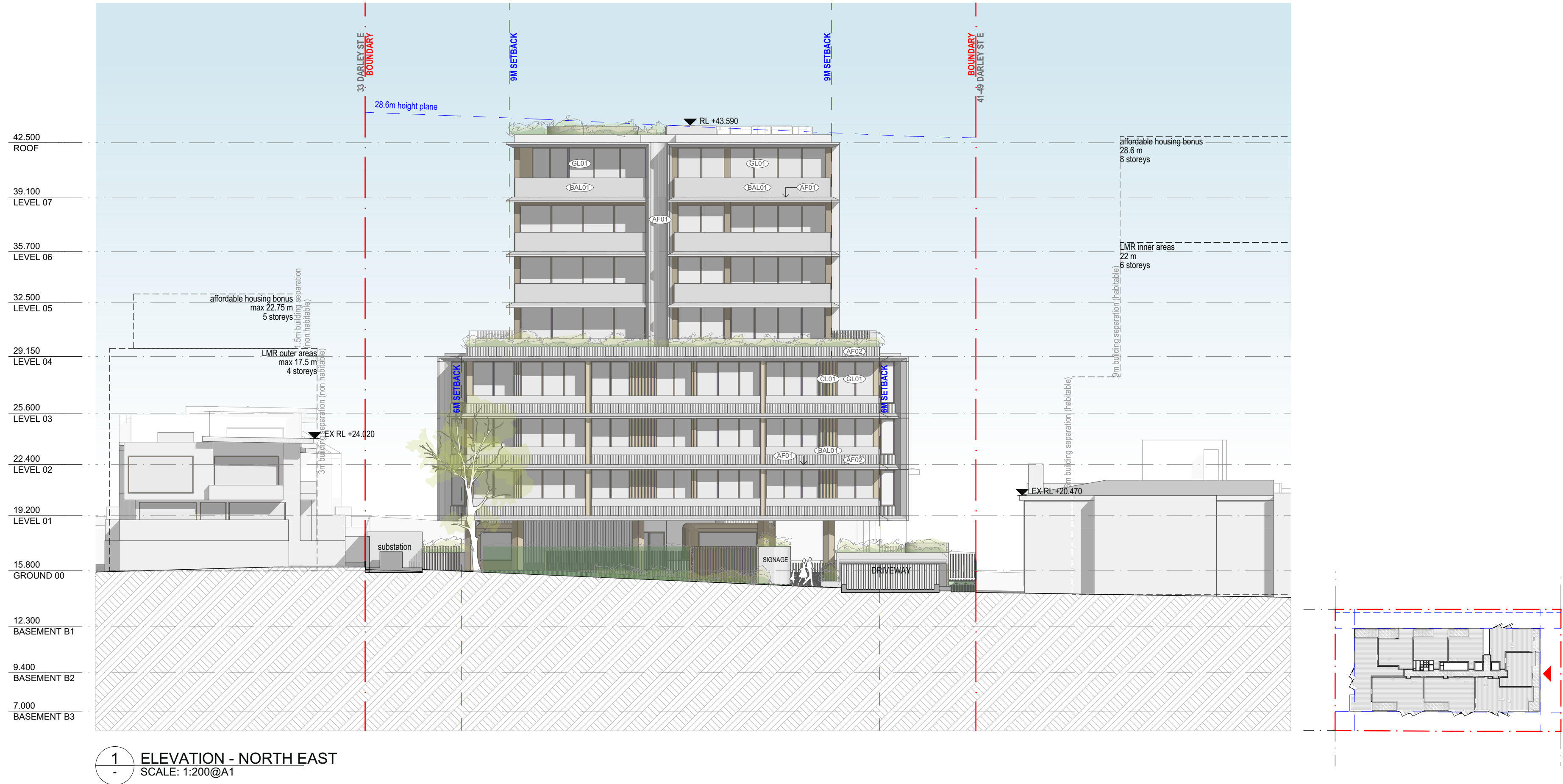
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CL02 - CLADDING TYPE 02, OFF-WHITE

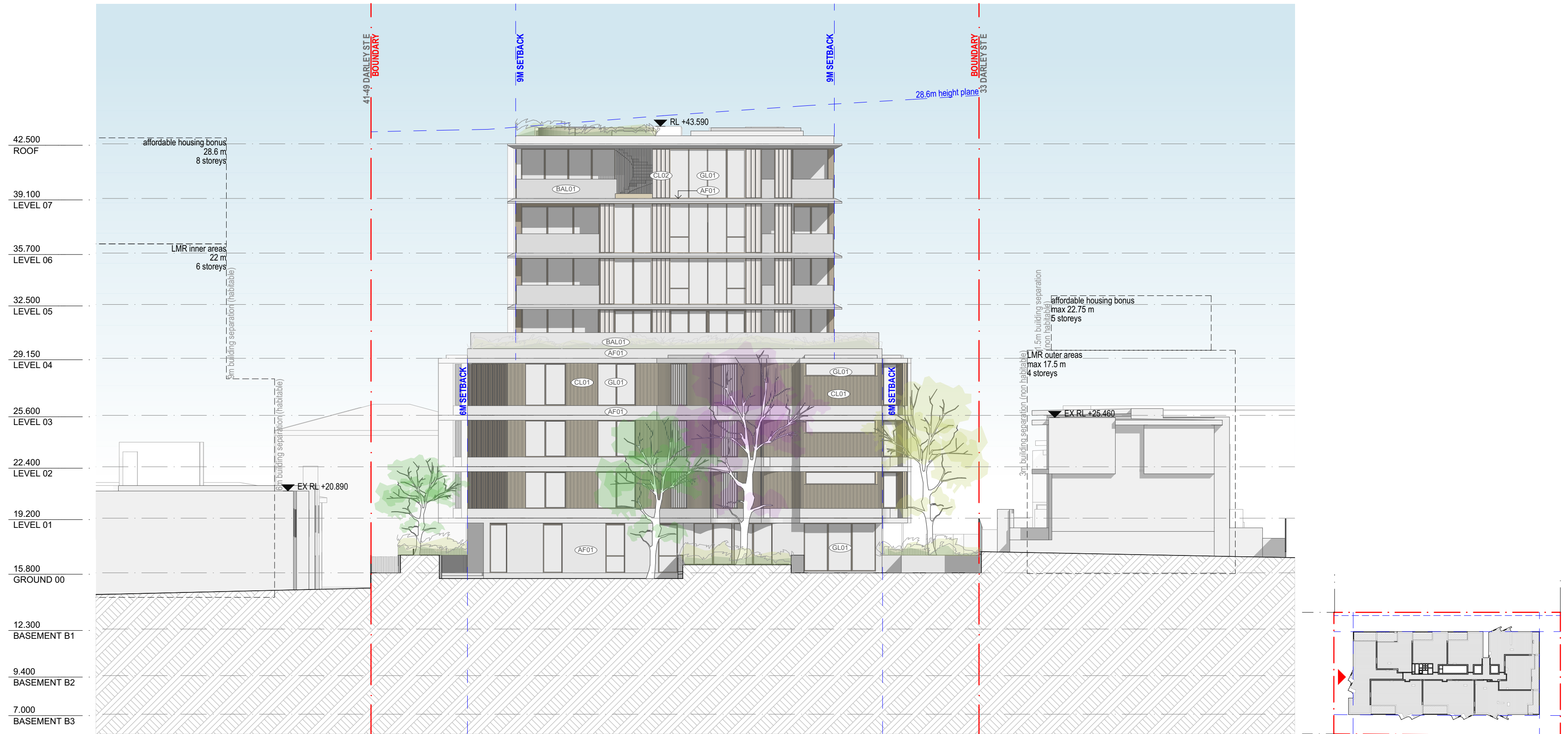
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GLAZING

BAL01 - BALUSTRADE TYPE 01, CLEAR
GLAZING



1 ELEVATION - NORTH EAST
SCALE: 1:200@A1



2 ELEVATION - SOUTH WEST
SCALE: 1:200@A1

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ELEVATIONS - SHEET 01
PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-2000
STAGE
DA
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MATERIALS LEGEND

CL01 - CLADDING TYPE 01, BRONZE
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AF01 - APPLIED FINISH 01, OFF-WHITE
AF02 - APPLIED FINISH 02, OFF-WHITE
VERTICAL PROFILE

GL01 - GLAZING TYPE 01, CLEAR
GLAZING

BAL01 - BALUSTRADE TYPE 01, CLEAR
GLAZING



1 ELEVATION - NORTH WEST
SCALE: 1:200@A1



2 ELEVATION - SOUTH EAST
SCALE: 1:200@A1

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ELEVATIONS - SHEET 02

PROJECT NUMBER

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DRAWING NUMBER

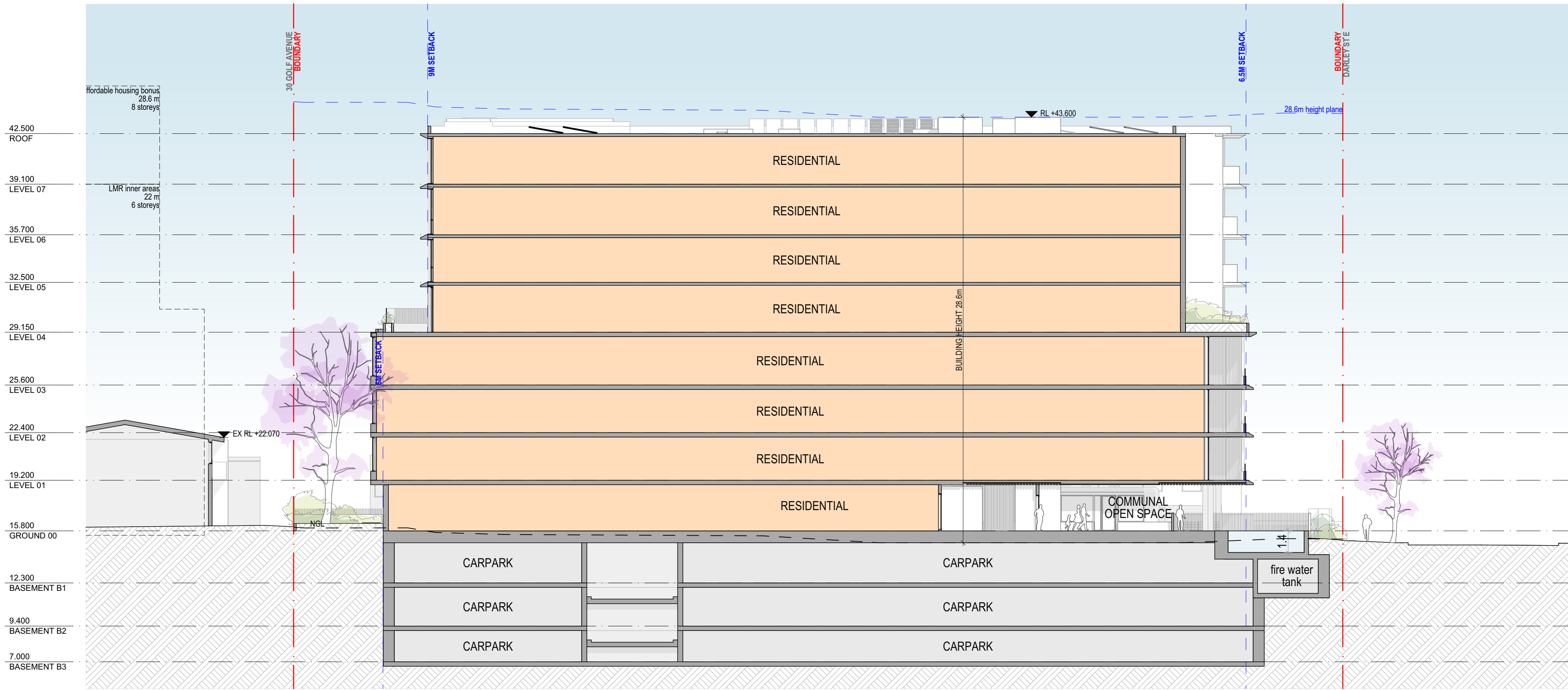
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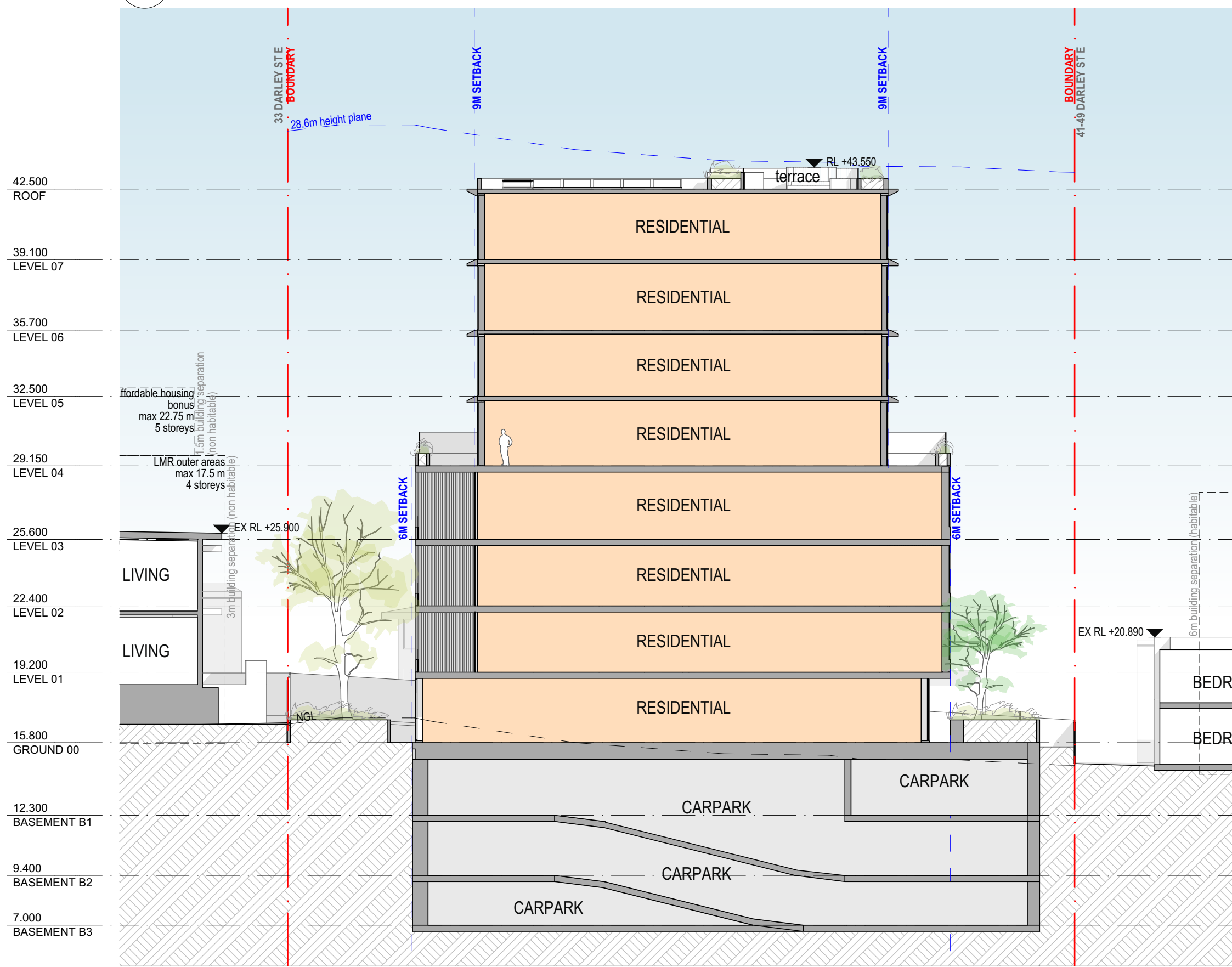
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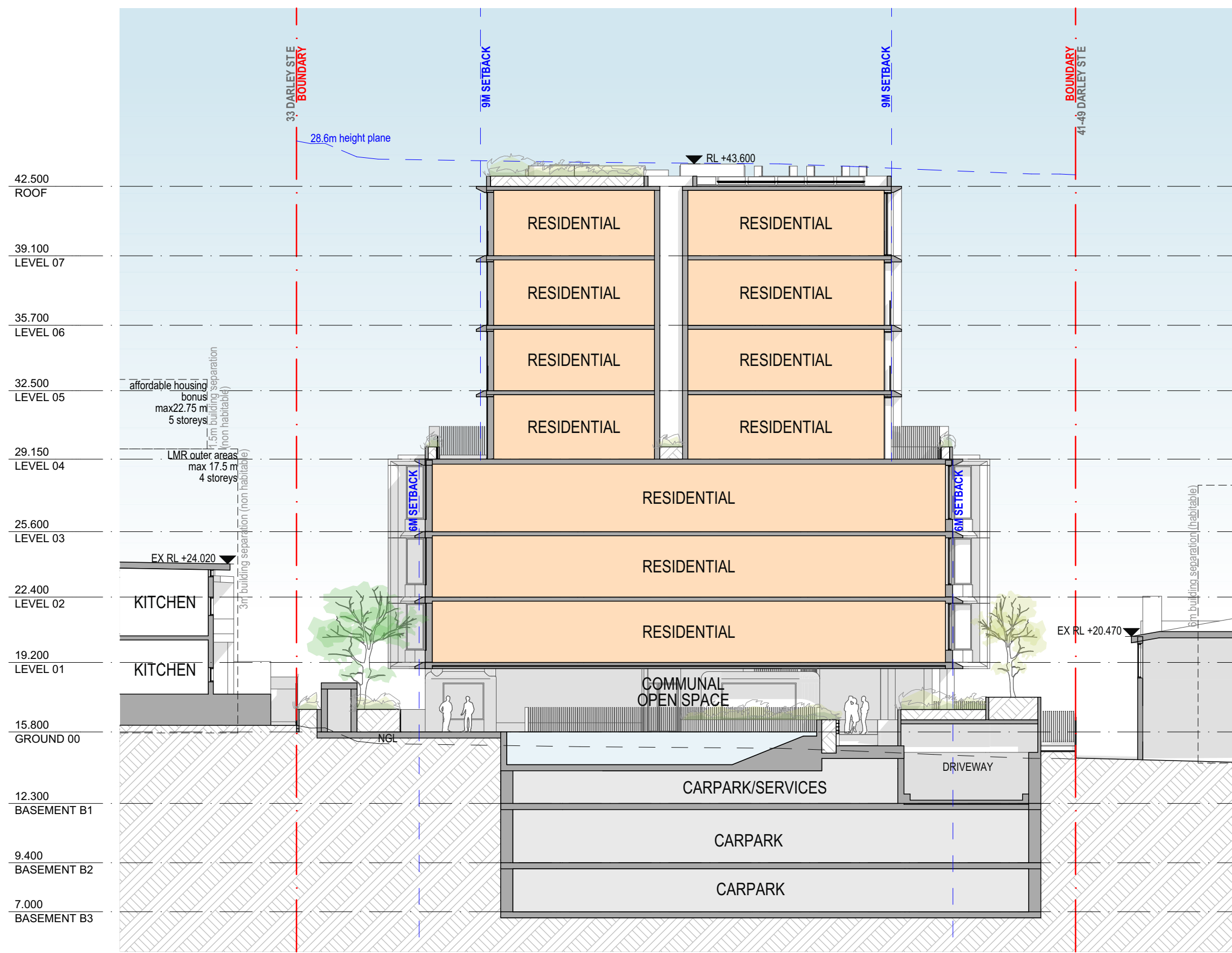
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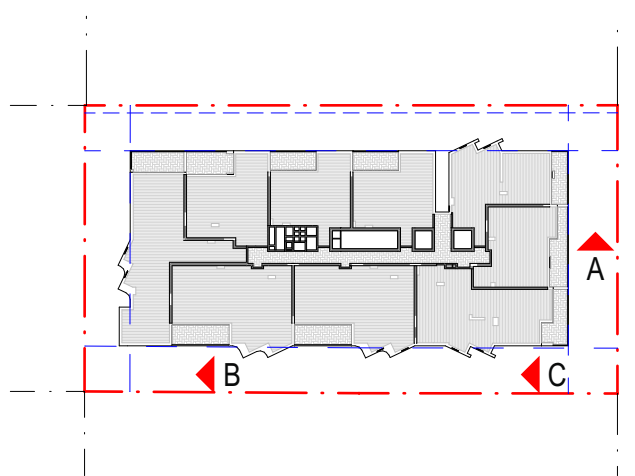
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1 SECTION C-C
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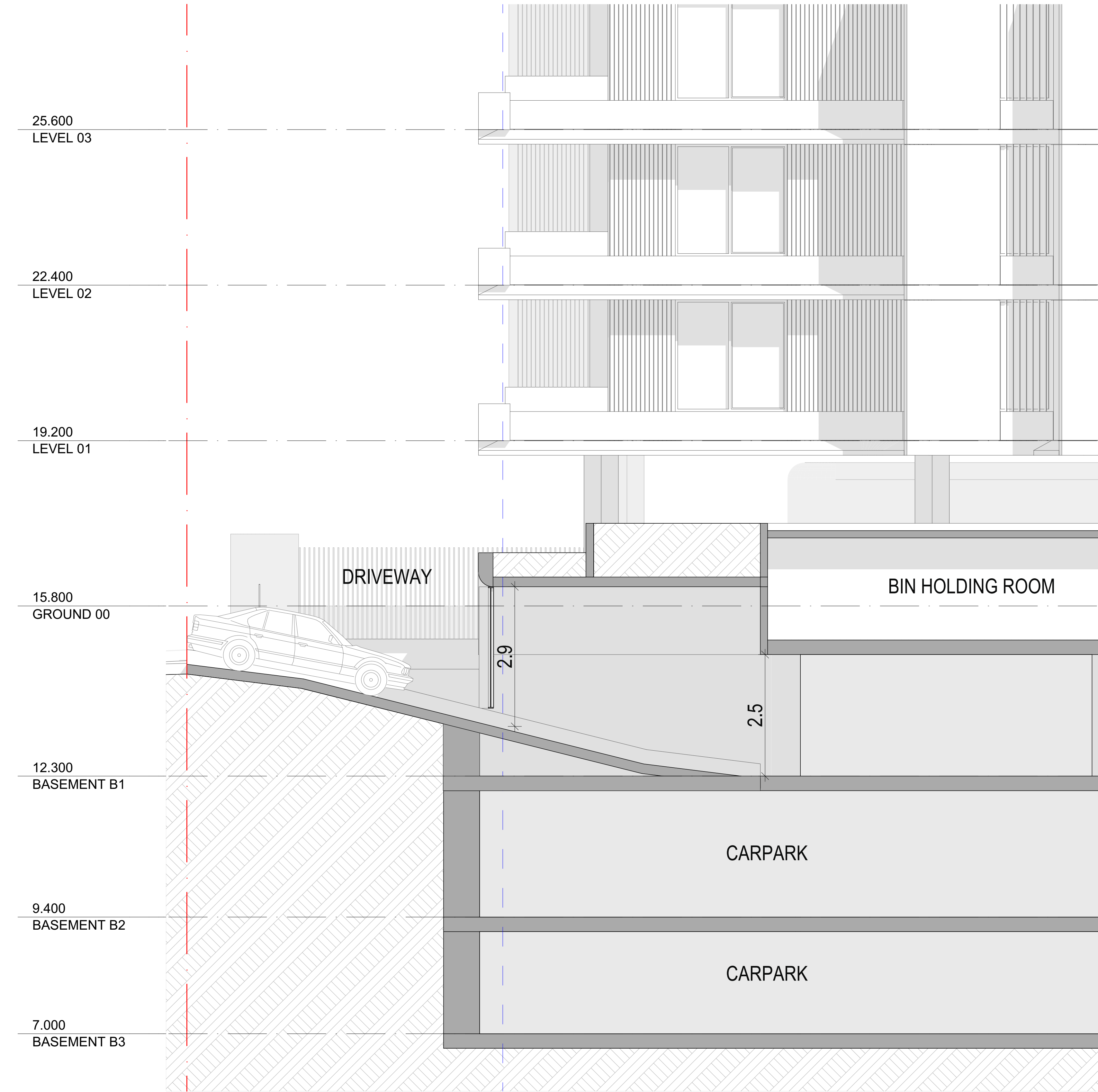
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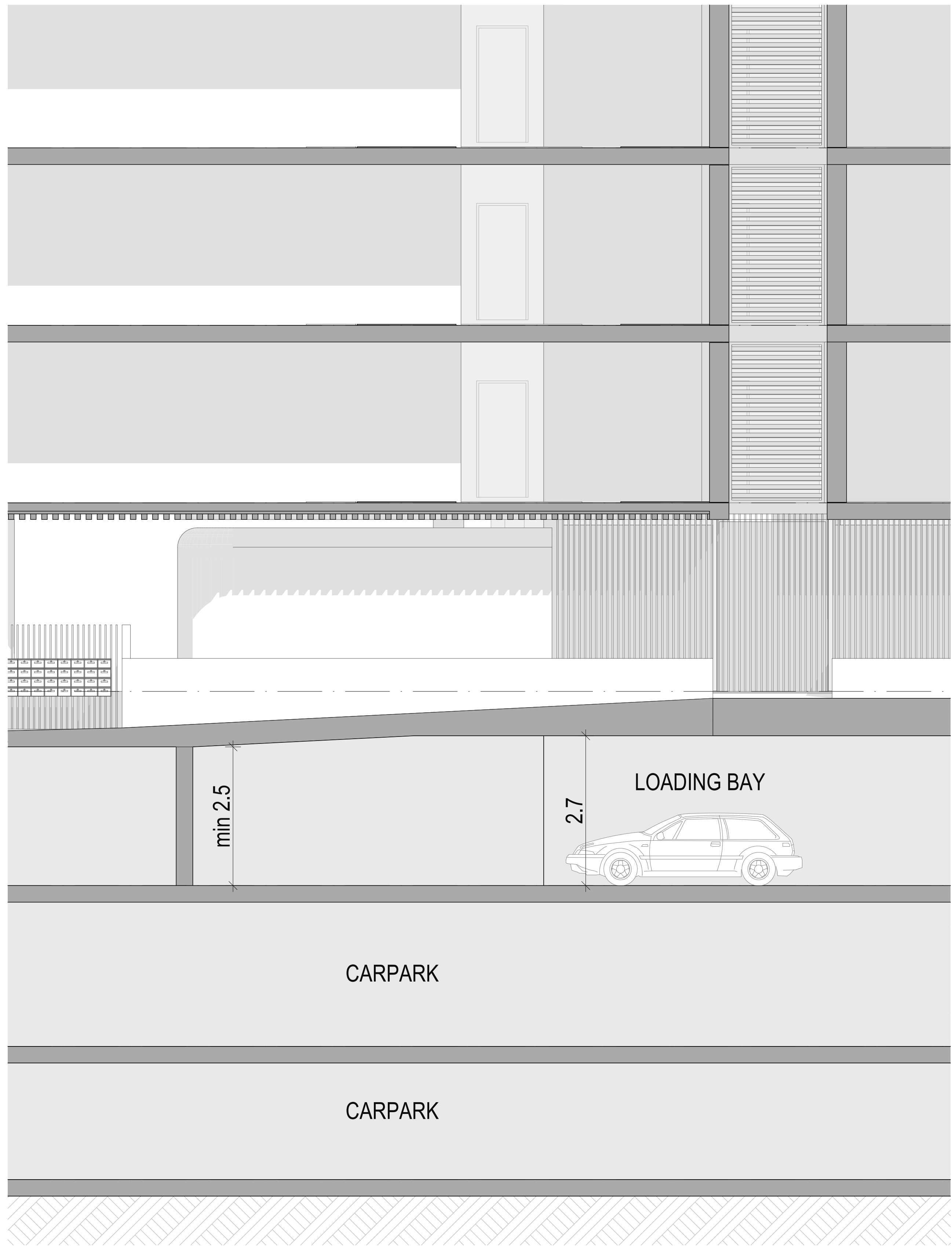
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DRAWING TITLE SECTIONS - SHEET 01	PROJECT NUMBER 20895	STAGE DA
DRAWING NUMBER PLA-DA-3000	REVISION A	



1 DRIVEWAY SECTION
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2 LOADING BAY SECTION
SCALE: 1:50@A1

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DRAWING TITLE CARPARK SECTIONS
PROJECT NUMBER 20895
DRAWING NUMBER PLA-DA-3001
STAGE DA
REVISION A

Appendix D – Groundwater Seepage Analysis & Monitoring Report

28 April 2026
E26992.G12

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Groundwater Seepage Analysis Proposed Development at 35-39 Darley Street East, Mona Vale NSW

1 INTRODUCTION

1.1 Background

At the request of The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust (the Client), EI Australia (EI) has prepared this Groundwater Seepage Analysis (GSA) report for a proposed development at 35-39 Darley Street East, Mona Vale NSW (the site). The objective of this GSA is to provide an estimation of the groundwater take volume that require pumping out during the construction and operational phases of the development, estimation of the groundwater drawdown as a result of the dewatering, and any associated ground settlements.

1.2 Proposed Development

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

- Architectural drawings prepared by Plus Architecture Pty Ltd - Project No. 20895, Revision 3, undated; and
- Survey Plan prepared by Norton Survey Partners – Reference No. 53120, Sheet 1 of 2, dated 28 August 2025.

The datum in the above documents is in Australian Height Datum (AHD), then all Reduced Levels (RL) mentioned in this report are henceforth in AHD.

Based on the provided documents, EI understands that the proposed development involves the demolition of the existing site structures and the construction of a multi-storey residential apartment building overlying a three-level basement. The lowest basement level is proposed to have a Finished Floor Level (FFL) of RL 7.0 m AHD. A Bulk Excavation Level (BEL) of RL 6.70 m is assumed, which includes allowance for the construction of the basement slab. To achieve the BEL, excavation down up to approximately 10.0 m depth Below Existing Ground Level (BEGl) will be required. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches

EI has also prepared the following documents to assist in preparation of this report:

- Geotechnical Investigation (GI) report – Reference No. E26992.G03_Rev2, dated 28 April 2026; and
- Groundwater Level Monitoring Report No. 1 – Reference No. E26992.G11.GW01, dated 28 April 2026.

2 SITE MODEL

Due to the site is located in a gently sloping topography, a cross **Section A-A** with average elevation was adopted as a representative section in this seepage analysis. This section runs throughout the entire perimeter of the proposed basement excavation. The location of the modelled section is shown in **Figure 1**.

2.1 Subsurface Conditions

For the purpose of this GSA, the average subsurface conditions outlined in EI's GI report have been adopted. A summary of the permeability values which were adopted for the assessment of groundwater take volumes are presented in **Table 1** below.

Table 1 Summary of Subsurface Conditions and Adopted Design Parameters

Unit	Material ¹	RL of Top of Unit (m AHD) ²	Adopted Permeability $k_{\text{Horizontal}}$ (m/s)	$k_{\text{vertical}}/k_{\text{Horizontal}}$
1 and 2	Fill (Silty sand) / Residual Soil (Silty/Sandy clay) ³	16.5	1.0×10^{-6}	1.0
3 to 7	Bedrock ⁴	8.8	1.9×10^{-7}	0.5

Notes:

- 1 For more detailed descriptions of subsurface conditions reference should be made to the EI's GI report.
- 2 RL of bedrock (units 3 to 7) was averaged from all available boreholes including BH1M, BH2M, BH3 and BH4M.
- 3 The permeability value of Fill/Residual soil has been adopted based on the average value of the rising head test values observed in borehole BH1M as discussed in Section 2.2.
- 4 Permeability value of bedrock has been adopted based on the highest value of rising head test result encountered in borehole BH2M presented in Section 2.2.

2.2 Groundwater Observations and Rising Head Tests

As a part of the GSA scope, EI completed rising head tests in the existing monitoring wells installed by EI (BH1M and BH2M). The test involved initial removal of water from the well, then measuring the rise in water level at regular time intervals to assess the rate of water level recovery. 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 **Attachment B**). The monitoring wells and rising head test results are summarised in **Table 2**.

Table 2 Monitoring Well Details and Rising Head Test Results

Monitoring Well/ Borehole ID	Total Well Depth (m BEGL)	Effective Screen Length (m)	Screened Section	Date of Test	Calculated Permeability (m/s)
BH1M	6.0	0.64-0.74	Fill/Residual Soil	18 March 2026	4.9×10^{-7}
				31 March 2026	1.3×10^{-6}
BH2M	11.0	3.00	Bedrock	18 March 2026	1.9×10^{-7}
				31 March 2026	1.5×10^{-7}

Additionally, long-term continuous groundwater monitoring was carried out using data loggers installed in monitoring wells BH1M, BH2M and BH4M between 17 December 2025 and 18 March 2026. The full report and a summary of this continuous groundwater levels are provided in **Attachment C** and **Table 3**, respectively.

Table 3 Summary of Continuous Groundwater Monitoring

Monitoring Well/ Borehole ID	Average Groundwater RL (m AHD)	Highest Groundwater RL (m AHD)	Lowest Groundwater RL (m AHD)
BH1M	8.91	9.47	8.62
BH2M	10.74	11.84	10.18
BH4M	- ¹	- ¹	- ¹

Notes:

- 1 Based on the groundwater monitoring report, groundwater was not observed during the monitoring period.

Based on the observed groundwater level, a design groundwater level of RL 12.9 m AHD has been adopted, derived from the highest groundwater level observed in BH2M, with an additional 1 m allowance for seasonal variation in long-term condition.

2.3 THE MAXIMUM EXTENT OF THE CONE OF DEPRESSION

The Mona Vale beach and nearest creek is more than 400 m away from the site boundary. Thus, the estimated maximum extent of the cone of depression has been determined using Sichardt's Formula, as follows:

$$R = 3000 (H - h)\sqrt{k}$$

Where:

- R = Maximum extent of the cone of depression (m).
- H = Highest design groundwater level (m).
- h = Estimated groundwater level at the BEL due to full duration of dewatering (m).
- k = Hydraulic conductivity of the aquifer (m/s).

Based on the formula above, the maximum extent of the cone of depression is estimated to be approximately 19 m from the basement outline. For conservative, an extent of 50 m was adopted in the numerical model as a distance from the basement perimeter to the constant head boundary.

2.4 Shoring System

At the time of this assessment, no detailed shoring designs were available. Hence, EI assumed that a soldier pile wall. This shoring system is considered as permeable wall i.e., it allows groundwater to freely seepage through the wall and from the base of the excavation.

This assessment does not assess the overall stability of the shoring system. Once final design is made available, this assessment should be revised accordingly.

3 GROUNDWATER TAKE ASSESSMENT

3.1 Groundwater Seepage Volumes during Construction Phase

Groundwater seepage analysis during construction has been undertaken using PLAXIS 2D. PLAXIS 2D is a commercially available finite element package intended for 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. 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 were horizontal along the site and a representative **Section A-A** is considered in the analysis running along the basement perimeter.
- The permeability values presented in **Table 1** were adopted for modelling each of the units.
- The shoring system is assumed to be a permeable wall.
- Dewatering was undertaken to the bulk excavation level of RL 6.7 m AHD.
- The bottom boundary of the model was set at RL 0.0 m AHD.
- The design groundwater level as provided at Section 2.2 of this report was assumed to be constant at 50 m away from the shoring wall as outlined in the Section 2.3 of this report.
- A "No-Flow" boundary is defined along the symmetric line (the centre of the excavation), at about 13.0 m from the basement excavation.

- The basement perimeter surrounding the basement excavation has a total length of about 190 m.

The PLAXIS 2D results are presented in **Attachment A. Table 4** below provides the estimated groundwater inflow rate into the basement. The estimated groundwater inflow during construction phase is approximately 2.2 ML/year.

Table 4 Summary of Analysis Results

Inflow per m length of perimeter wall (m ³ /day/m)	Inflow into excavation (m ³ /day)	Total Inflow per year (ML/year)
0.031	5.89	2.2

3.2 Assessment of Groundwater Take During Operational Phase

It is assumed that the basement will be designed as a drained structure. Therefore, the estimated total inflow per year during the operational phase of the development is expected to be the same as during construction phase (about 2.2 ML/year).

3.3 Groundwater Drawdown Induced Settlement

Based on the analysis result, groundwater drawdown surrounding the excavation boundary due to the proposed dewatering is predicted up to 5.8 m, gradually decreasing to be negligible further away. The predicted dewatering drawdown contour plan is presented in **Figure 2**. The maximum ground settlement resulting from the groundwater drawdown outside the basement boundary is estimated to be about 8.4 mm. 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**. It should be noted that these predicted settlement accounts **only for water drawdown** and does not consider other factors, such as shoring wall deflection, surcharge loading, and other construction-related influences.

<i>Risk category^a</i>	<i>Maximum settlement (mm)^b</i>	<i>Building tilt^c</i>	<i>Anticipated effects</i>
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)

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.

4 CONCLUSIONS AND COMMENTS

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

- Construction phase groundwater take will be approximately 2.2 ML/year for the proposed development.
- The above estimate is based on the following assumptions:
 - ▶ The shoring wall system is a permeable wall as per **Section 2.4** of this report;
 - ▶ Continuous dewatering in order to maintain the groundwater at BEL during construction phase; and
 - ▶ This assessment does not take into consideration any excavation that may be required for footings, service trenches, lift pits, or crane pads. This additional excavation, if required, is not expected to affect the retention or the dewatering system.
- The operational phase groundwater take with a drained basement system is estimated to be identical to the construction groundwater take, i.e. 2.2 ML/year.
- The groundwater drawdown surrounding the basement boundary is predicted to be up to approximately 5.8 m, gradually decreasing to negligible further away.
- The predicted ground settlement behind the shoring wall due to groundwater drawdown is estimated to be approximately 8.4 mm, gradually decreasing to marginal with increasing distance from the dewatering activity. This level of settlement falls within the 'negligible' damage risk category associated with drawdown-induced ground settlement. **It would therefore be prudent for a qualified and experienced structural engineer to be engaged to assess the potential risks to neighbouring structures and to advise on appropriate control measures to mitigate the risks.**

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 The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust 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 The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust.

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

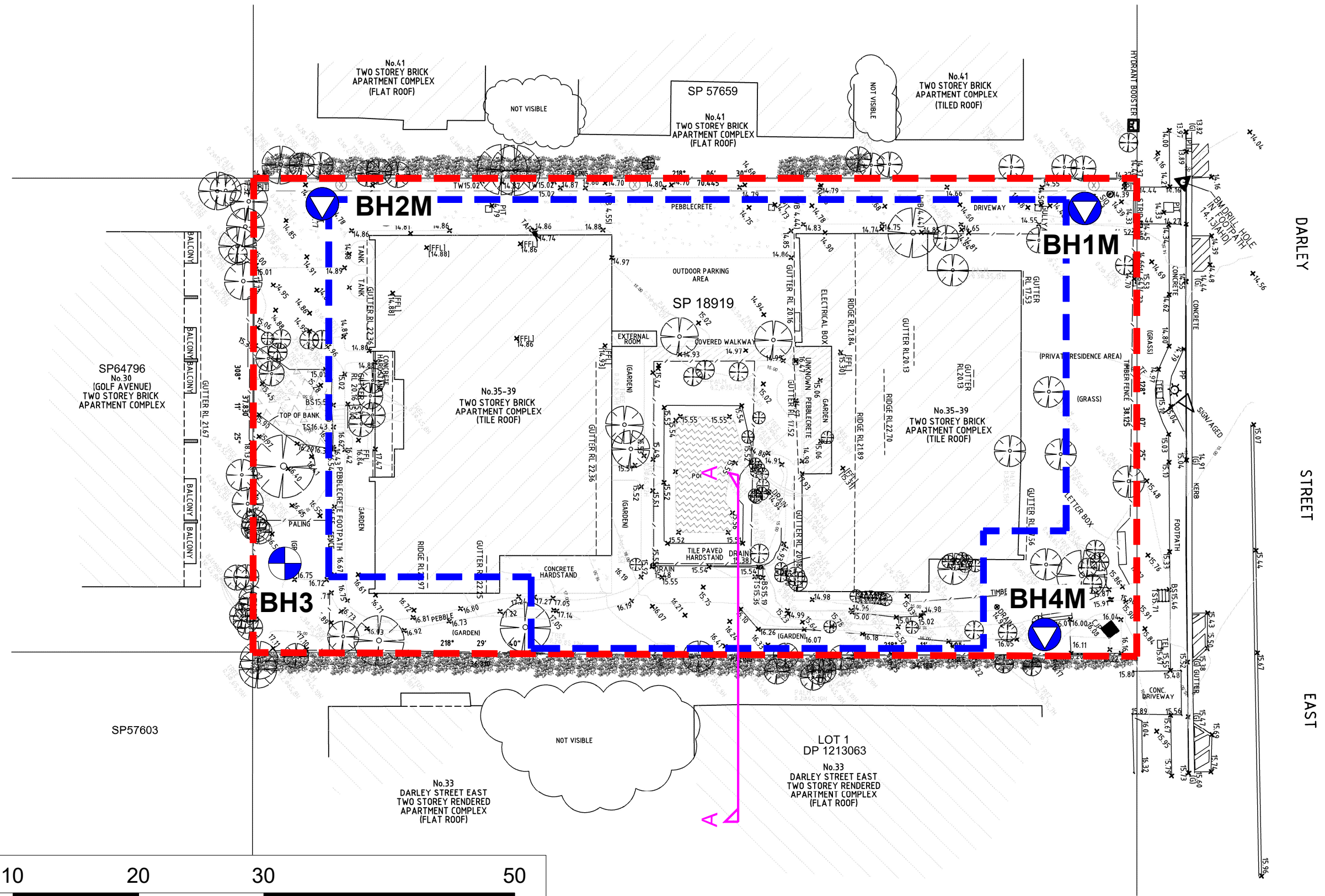
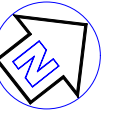
Author	Technical Reviewer
	
Ernest Widjaja Geotechnical Engineer	Huu Dang Principal Design Engineer

Attachments:

Figure 1 – Analysed Section Plan
Figure 2 – Dewatering Drawdown Contour Plan
Attachment A – PLAXIS 2D Model and Results
Attachment B – Rising Head Tests
Attachment C – Groundwater Level Monitoring Report
Attachment D – Important Information

Figures

- | | |
|----------|----------------------------------|
| Figure 1 | Analysed Section Plan |
| Figure 2 | Dewatering Drawdown Contour Plan |



Map Source: Survey Plan prepared by Norton Survey Partners – Reference No. 53120, Sheet 1 of 2, dated 28 August 2025

LEGEND (All Locations are Approximate)

- Site Boundary
- Proposed Basement Boundary
- PLAXIS Cross Section
- Borehole location
- Borehole/monitoring well location



Drawn: E.W.
Approved: H.D.
Date: 2-4-2026

The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust
Groundwater Seepage Analysis
35-39 Darley Street East, Mona Vale NSW
Analysed Section Plan

Figure:

1

Project: E26992.G12



LEGEND (All locations are Approximate)

- Site Boundary
- Proposed Basement Boundary
- Predicted Drawdown Contour (Drawdown shown in metres), 0.0 m indicates cone of depression extent 50 m from basement boundary



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Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn: E.W.

Approved: H.D.

Date: 9-4-2026

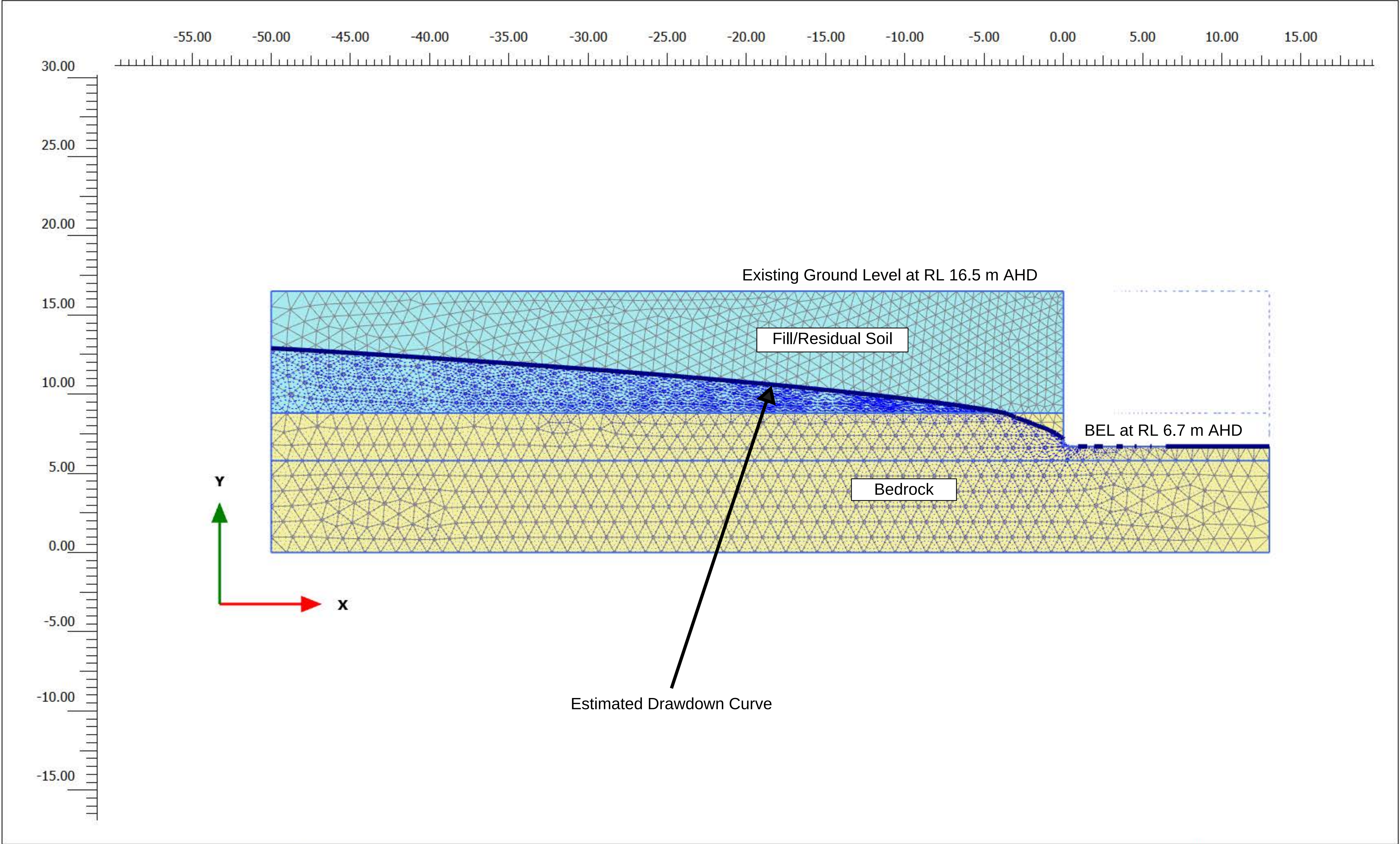
**The Trustee for IPG Dev 2 Unit Trust & GOP AFF
1 Unit Trust & IPG AFF 1 Unit Trust**
Groundwater Seepage Analysis
35-39 Darley Street East, Mona Vale NSW
Dewatering Drawdown Contour Plan

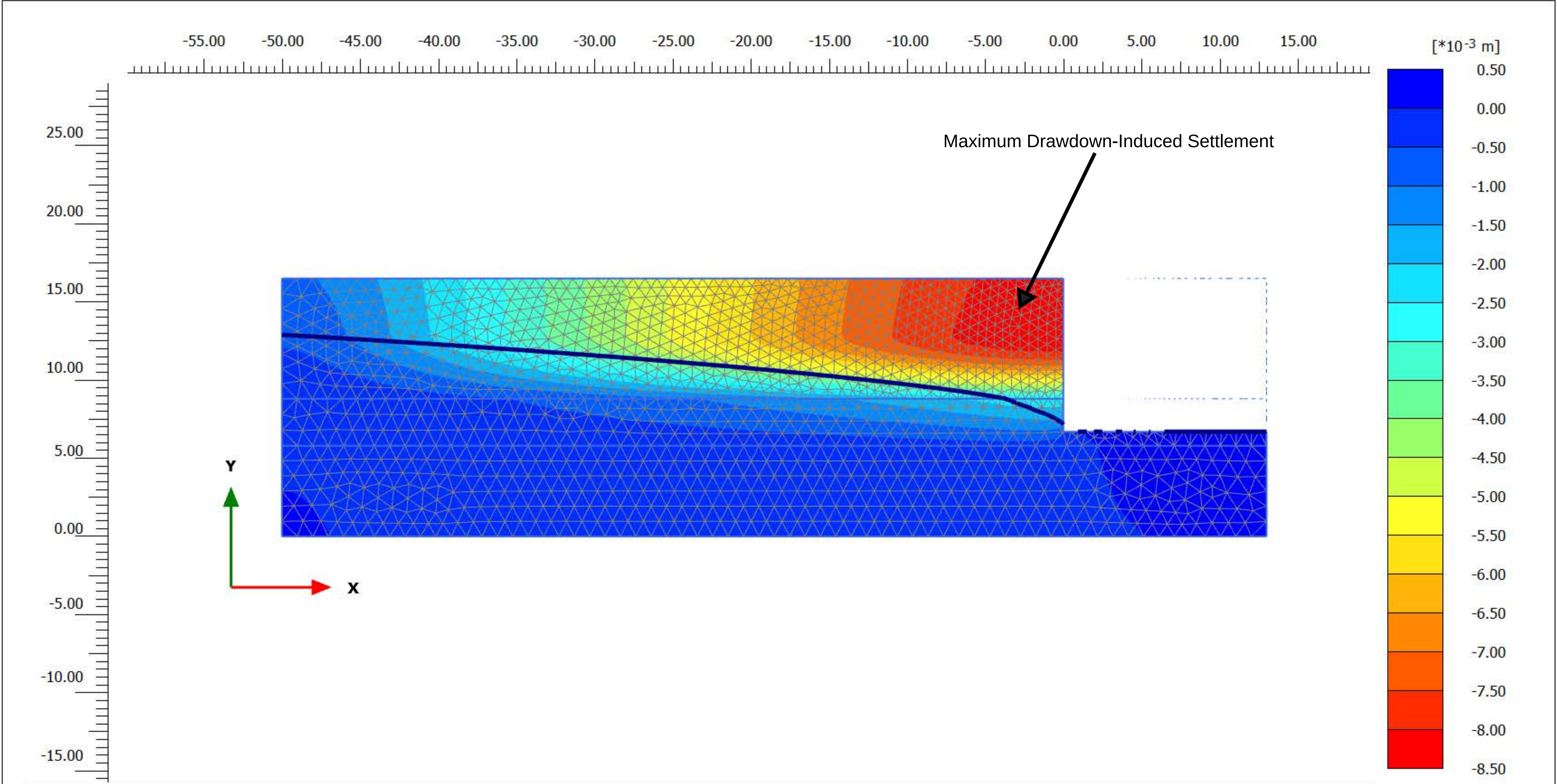
Figure:

2

Project: E26992.G12

Attachment A – PLAXIS 2D Model and Results





Total displacements u_y (scaled up 200 times)

Maximum value = 0.04282×10^{-3} m (Element 2183 at Node 23123)

Minimum value = -8.402×10^{-3} m (Element 1549 at Node 20118)

Attachment B – Rising Head Tests

Rising Head Permeability Test



El Job No.	E26992.G12	Test Date	18/03/2026
By	JO	Location	BH1M

Borehole Detail

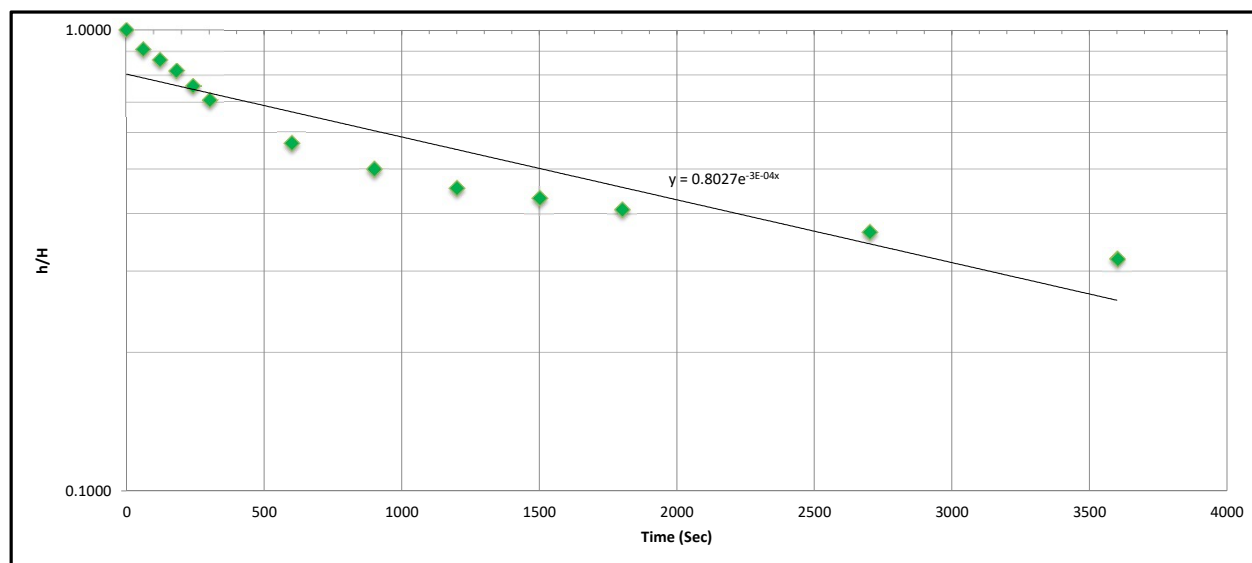
BH No.	BH1M
Casing Stick-up (m)	-0.14
Effective Piezo Screen Length (m)	0.74
Piezo Radius r (m)	0.025
Bore radius (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	6.00
Static Water Level (m BToC)	5.12
Lag time T0 (sec)	2580.46

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

Calculated Permeability k **4.86E-07** m/sec

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			5.12		
0	0	19.00	5.79	0.67	1.0000
1	60	18.80	5.73	0.61	0.9091
2	120	18.70	5.70	0.58	0.8636
3	180	18.60	5.67	0.55	0.8182
4	240	18.47	5.63	0.51	0.7591
5	300	18.36	5.60	0.48	0.7091
10	600	18.05	5.50	0.38	0.5682
15	900	17.90	5.46	0.34	0.5000
20	1200	17.80	5.43	0.30	0.4545
25	1500	17.75	5.41	0.29	0.4318
30	1800	17.70	5.39	0.27	0.4091
45	2700	17.60	5.36	0.24	0.3636
60	3600	17.50	5.33	0.21	0.3182



Rising Head Permeability Test



El Job No.	E26992.G12	Test Date	31/03/2026
By	MS	Location	BH1M

Borehole Detail

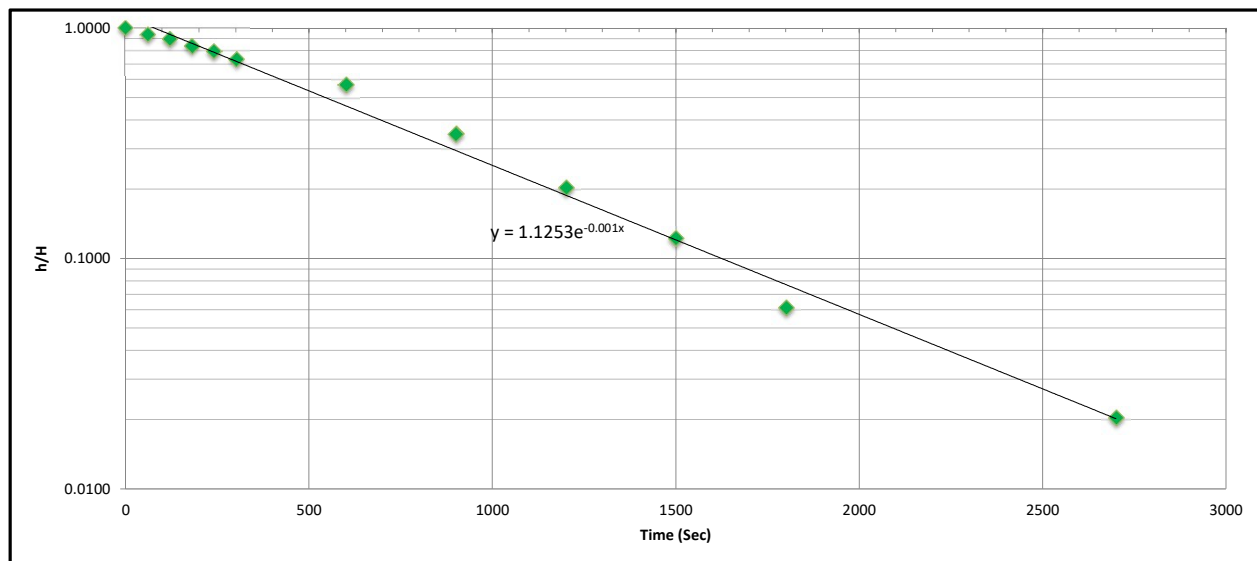
BH No.	BH1M
Casing Stick-up (m)	-0.14
Effective Piezo Screen Length (m)	0.64
Piezo Radius r (m)	0.025
Bore radius (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	6.00
Static Water Level (m BToC)	5.22
Lag time T0 (sec)	1112.40

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

Calculated Permeability k **1.24E-06** m/sec

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			5.22		
0	0		5.71	0.49	1.0000
1	60		5.68	0.46	0.9388
2	120		5.66	0.44	0.8980
3	180		5.63	0.41	0.8367
4	240		5.61	0.39	0.7959
5	300		5.58	0.36	0.7347
10	600		5.50	0.28	0.5714
15	900		5.39	0.17	0.3469
20	1200		5.32	0.10	0.2041
25	1500		5.28	0.06	0.1224
30	1800		5.25	0.03	0.0612
45	2700		5.23	0.01	0.0204



Rising Head Permeability Test



El Job No.	E26992.G12	Test Date	18/03/2026
By	MS	Location	BH2M

Borehole Detail

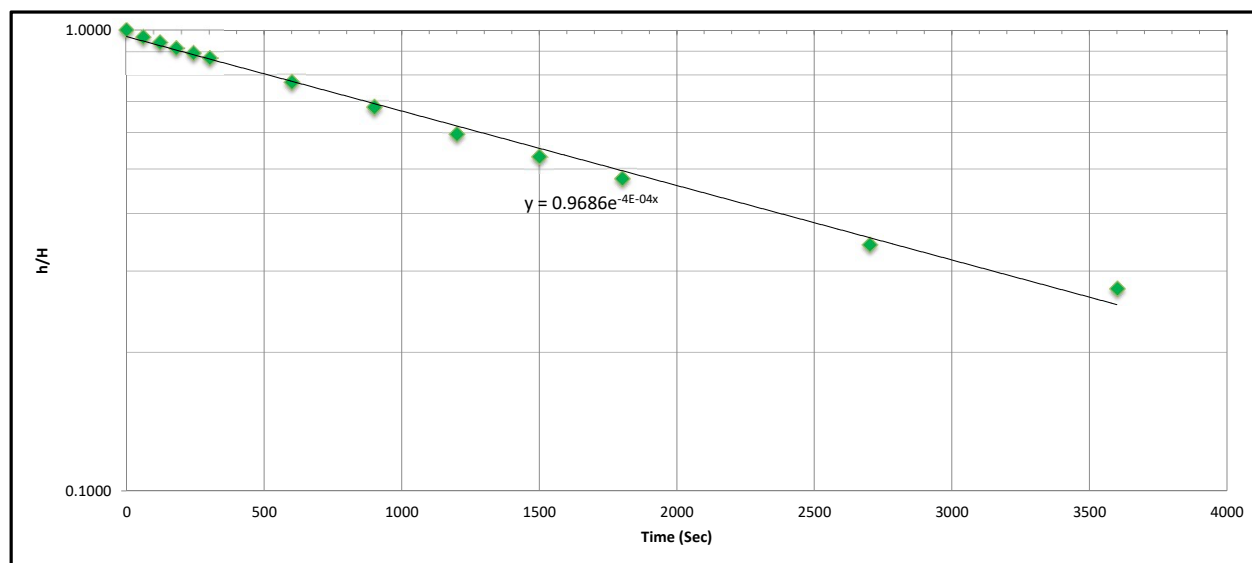
BH No.	BH2M
Casing Stick-up (m)	-0.11
Effective Piezo Screen Length (m)	3
Piezo Radius r (m)	0.025
Bore radius (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	11.00
Static Water Level (m BToC)	3.20
Lag time T0 (sec)	2409.80

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

Calculated Permeability k **1.89E-07** m/sec

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			3.20		
0	0	31.80	9.69	6.49	1.0000
1	60	31.10	9.48	6.28	0.9671
2	120	30.55	9.31	6.11	0.9413
3	180	30.03	9.15	5.95	0.9169
4	240	29.55	9.01	5.81	0.8944
5	300	29.10	8.87	5.67	0.8732
10	600	26.95	8.21	5.01	0.7723
15	900	25.00	7.62	4.42	0.6808
20	1200	23.20	7.07	3.87	0.5962
25	1500	21.80	6.64	3.44	0.5305
30	1800	20.65	6.29	3.09	0.4765
45	2700	17.80	5.43	2.23	0.3427
60	3600	16.35	4.98	1.78	0.2746



Rising Head Permeability Test



El Job No.	E26992.G12	Test Date	31/03/2026
By	MS	Location	BH2M

Borehole Detail

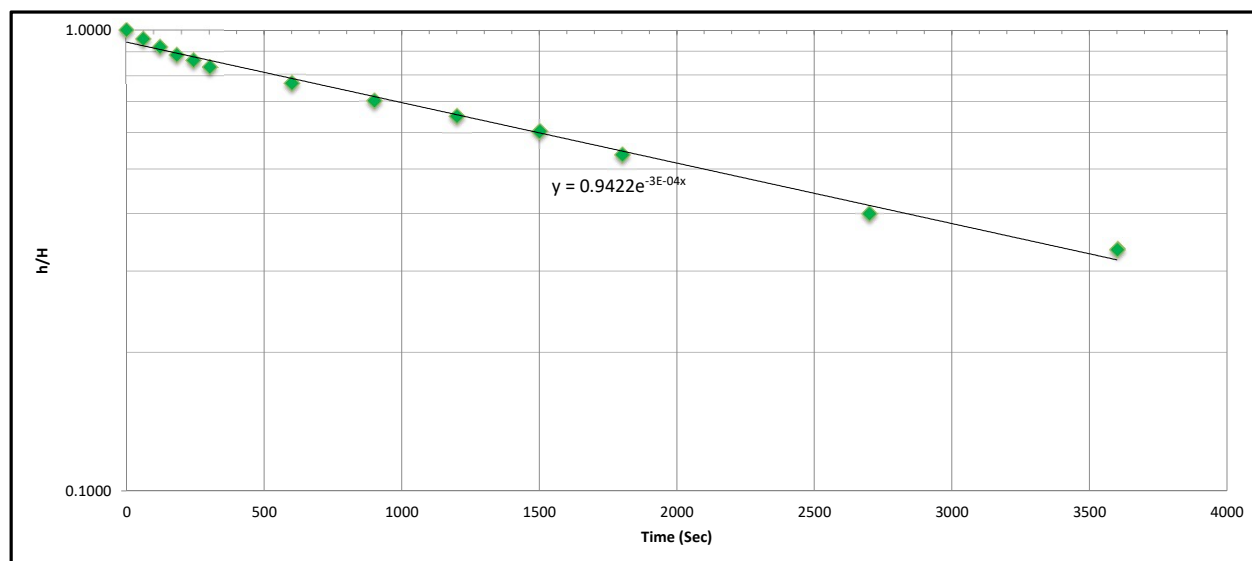
BH No.	BH2M
Casing Stick-up (m)	-0.11
Effective Piezo Screen Length (m)	3
Piezo Radius r (m)	0.025
Bore radius (Auger Radius) (m)	0.038
Depth of the piezometer (m BGL)	11.00
Static Water Level (m BToC)	4.11
Lag time T0 (sec)	3112.72

Based on Hvorslev Method

$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

Calculated Permeability k **1.46E-07** m/sec

Time (mins)	Time (sec)	Depth to water (ft BToC)	Depth to water (m BToC)	Change in Level (m)	h/H
Static			4.11		
0	0		10.11	6.00	1.0000
1	60		9.86	5.75	0.9583
2	120		9.64	5.53	0.9217
3	180		9.43	5.32	0.8867
4	240		9.29	5.18	0.8633
5	300		9.12	5.01	0.8350
10	600		8.71	4.60	0.7667
15	900		8.32	4.21	0.7017
20	1200		8.01	3.90	0.6500
25	1500		7.73	3.62	0.6033
30	1800		7.32	3.21	0.5350
45	2700		6.51	2.40	0.4000
60	3600		6.12	2.01	0.3350



Attachment C – Groundwater Level Monitoring Report

28 April 2026
E26992.G11.GW01

Robin Walker
The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust
PO Box 1414
BYRON BAY 2481

Groundwater Level Monitoring Report No. 1 35-39 Darley Street East, Mona Vale 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 17 December 2025 to Wednesday 18 March 2026.

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

Table 1 Summary of Data Logger & Standpipe Installation Details

Monitoring Standpipe ID	Top of Standpipe RL (mAHD)	Existing Ground RL (mAHD)	Standpipe Stickup (m)	Standpipe Depth Below Ground (m) ¹	Sensor RL (mAHD)
BH1M	14.25	14.40	-0.15	6.00	8.55
BH2M	14.70	14.80	-0.10	11.00	4.20
BH3M	15.90	16.00	-0.10	7.00	9.30

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

Table 2 Summary of Groundwater Levels

Monitoring Standpipe 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	8.91	9.47	8.62	4.93	5.78
BH2M	10.74	11.84	10.18	2.96	4.62

Groundwater was not observed in monitoring well BH4M during the monitoring period and therefore, no groundwater data for the monitoring well (BH4M) is presented in this report.

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

For and on behalf of:

EI AUSTRALIA

Author



Jacky Ong-Phung
Graduate Geotechnical Engineer

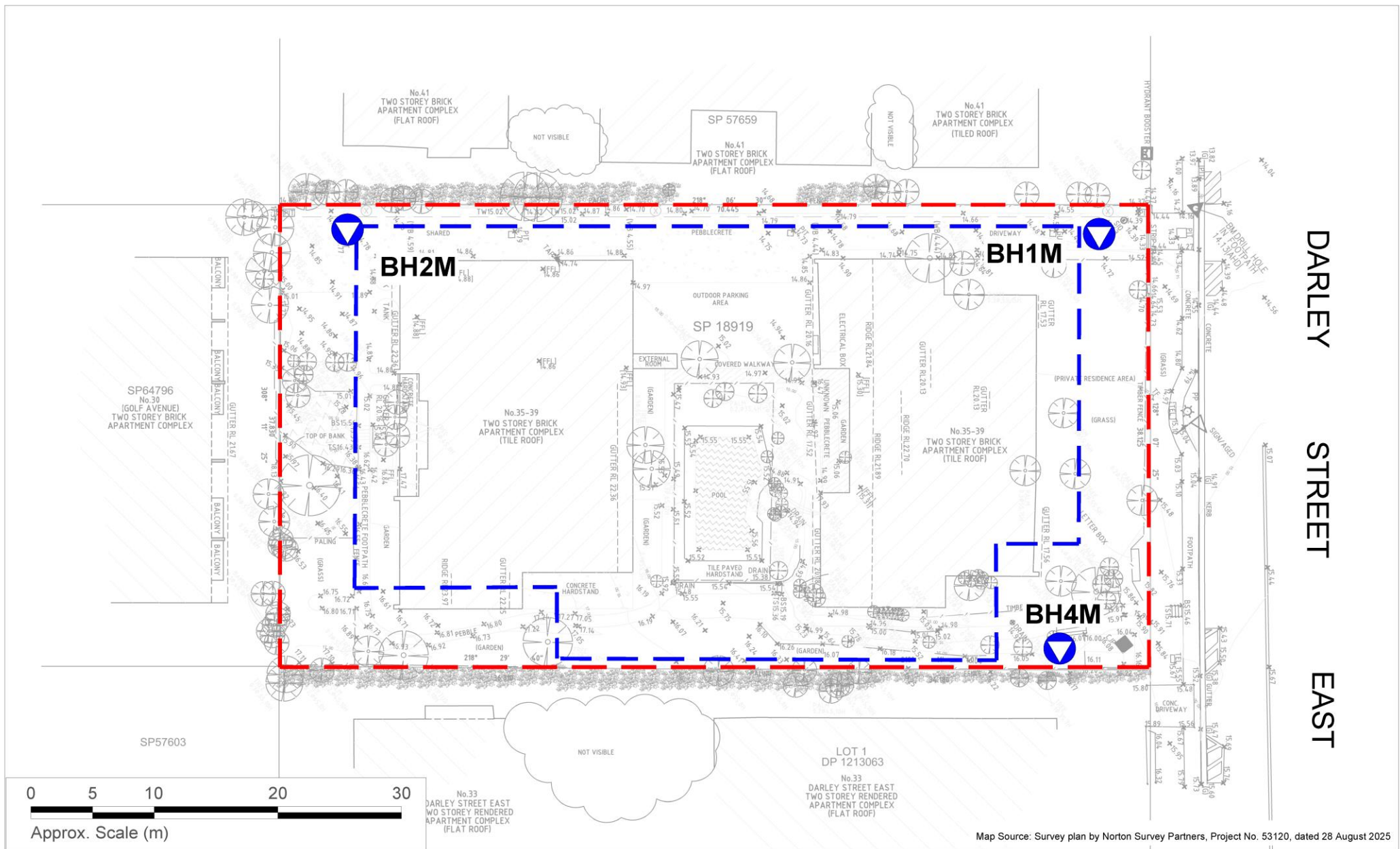
Reviewer



Gokul Pothineni
Geotechnical Engineer

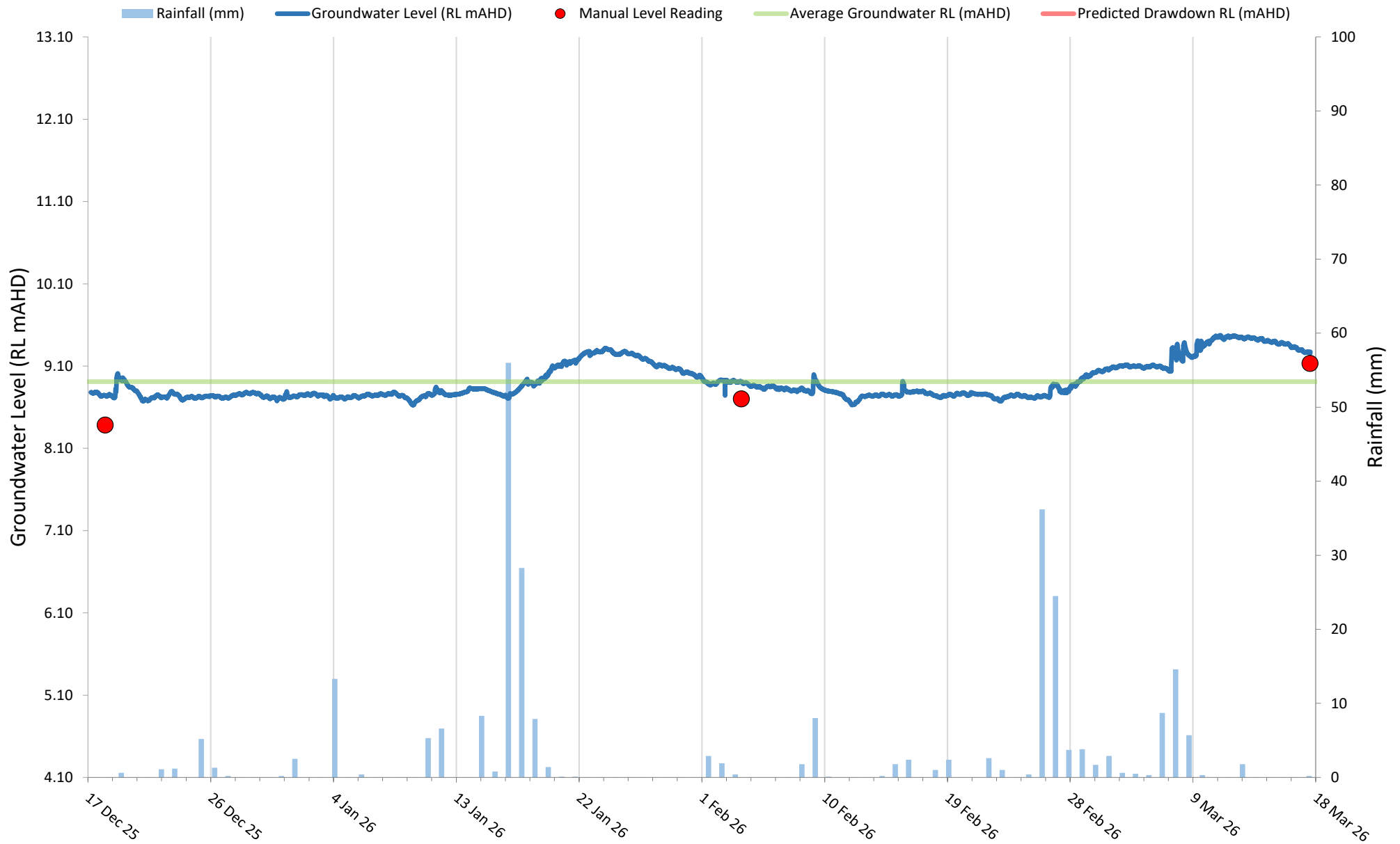
Attachments:

Figure 1: Data Logger Location Plan
Figure 2-4: Groundwater Level, Daily Rainfall vs. Time From 17 December 2025 to 18 March 2026
Important Information



LEGEND (All Locations are Approximate)

- Site Boundary
- Basement Boundary
- ▼ Monitoring Standpipe Location



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Drawn:

JO

Approved:

GP

Date:

28/04/2026

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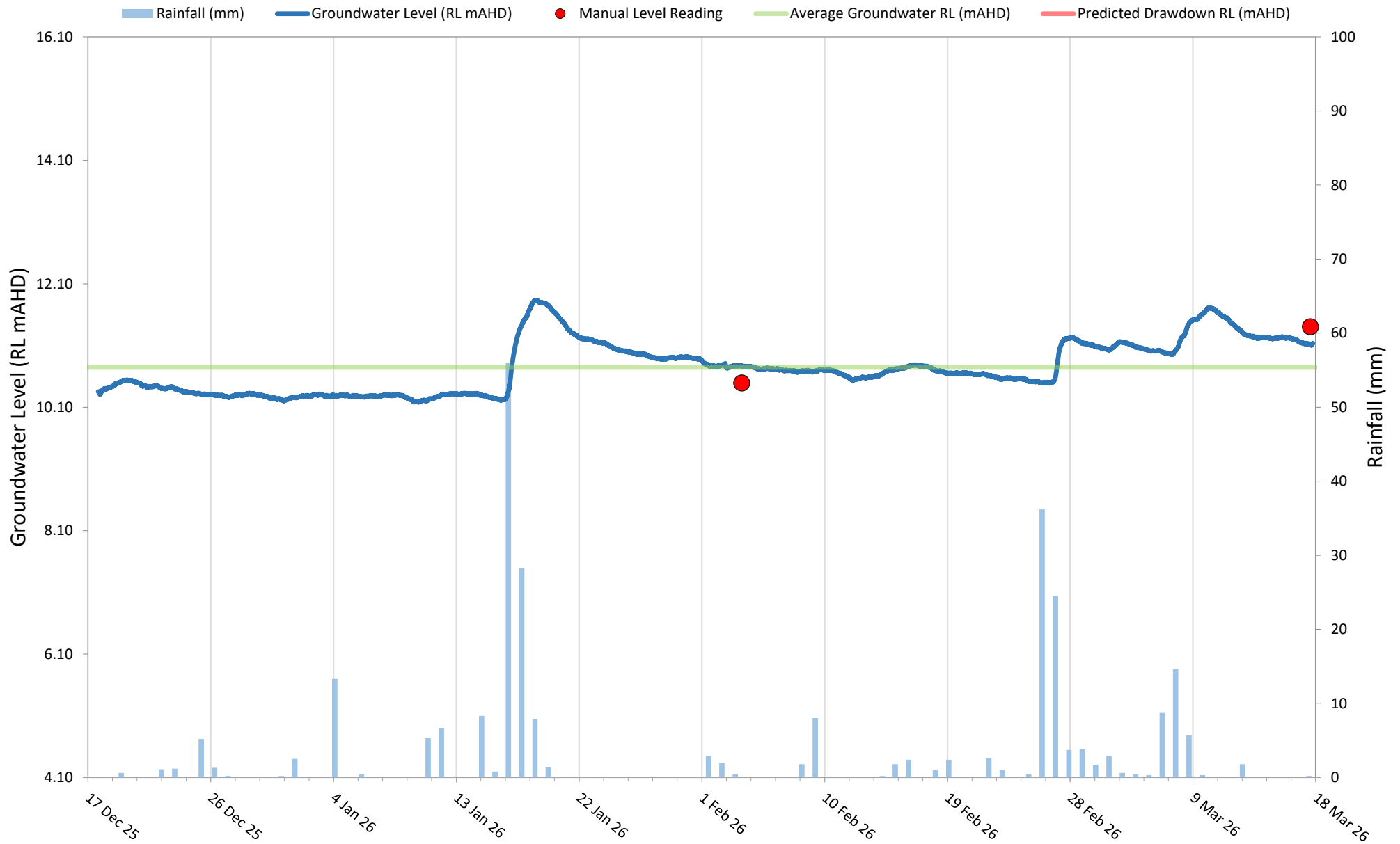
Groundwater Level Monitoring
35-39 Darley Street East, Mona Vale NSW

BH1M

Figure:

2

Project: E26992.G11.GW01



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Ph. (02) 9516 0722 Fax (02) 9518 5088

Drawn:

JO

Approved:

GP

Date:

28/04/2026

The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust

Groundwater Level Monitoring
35-39 Darley Street East, Mona Vale NSW

BH2M

Figure:

3

Project: E26992.G11.GW01

Attachment D – Important Information

SCOPE OF SERVICES

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

RELIANCE ON DATA

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

GEOTECHNICAL ENGINEERING

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

LIMITATIONS OF SITE INVESTIGATION

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

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

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

VERIFICATION OF SITE CONDITIONS

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

REPRODUCTION OF REPORTS

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

REPORT FOR BENEFIT OF CLIENT

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

OTHER LIMITATIONS

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

Appendix E – Borehole Logs



BOREHOLE LOG

BH ID: BH1M

Location	35-39 Darley Street East, Mona Vale NSW	Started	08 December 2025
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust	Completed	08 December 2025
Job No.	E26992.G03	Logged By	GL Date 08 December 2025
Sheets	1 of 2	Review By	ML Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈14.40 m (AHD) Northing 6272278.2 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	Inclination	90° Easting 343336.2 (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		14.40	CONCRETE: 600mm thick	-		CONCRETE
				0.60		13.80	FILL: Silty SAND: fine to medium grained, grey,	M		FILL
		BH1M_1.50-1.95 SPT 1.50-1.95 2,7,9 N=16		1.50		12.90	Silty CLAY: medium plasticity, pale grey mottled orange, with some sub-rounded ironstone gravels.			RESIDUAL SOIL
				2.00						increasing drilling resistance
		BH1M_3.00-3.45 SPT 3.00-3.45 9,12,13 N=25		2.50		11.90	From 2.50m, low plasticity, with extremely weathered iron stained sandstone gravels.		VSt	
				3.00						
				4.00						
		BH1M_4.50-4.52 SPT 4.50-4.52 2/20 mm HB N=R		5.00						
				5.90		8.50				
				6.00						
				7.00						
				8.00						
				9.00						
				10.00						

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



BOREHOLE CORE LOG

BH ID: BH1M

Location	35-39 Darley Street East, Mona Vale NSW			Started	08 December 2025	
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust			Completed	08 December 2025	
Job No.	E26992.G03			Logged By	GL	Date 08 December 2025
Sheets	2 of 2			Review By	ML	Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈14.40 m (AHD)	Northing	6272278.2 (MGA 2020 Zone 56)	
Plant	Comacchio Geo 205	Inclination	90°	Easting	343336.2 (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	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				0			Log continued from previous page.		VL ₀₋₁ L ₀₋₃ M ₁ H ₃ VH ₁₀ EH		30 100 300 1000 3000
				1							
				2							
				3							
				4							
				5							
				6			SANDSTONE: fine to medium grained, orange red/ grey	HW		5.97: JT 10° PR RO CN 6.10-6.13: XWZ 5° 6.16: JT 5° PR RO CN 6.18-6.20: XWS 6.24-6.26: XWS 6.30-6.65: XWZ 6.65-6.86: FZ 6.87-7.00: XWZ	
	60%	100	0	7						7.20-7.25: CZ	
				7.30		7.10	NO CORE: 280mm thick	-			
				7.58		6.82	SANDSTONE: fine grained, pale grey, indistinctly bedded, occasional siltstone laminations.	MW		7.63: JT 5° IR RO CN 7.68: JT 2-5° CU RO CN 7.73: JT 5° PR RO CN 7.77: BP 2° 7.80: BP 3° 7.84: JT 5° PR RO SN 7.97: JT 5° PR RO CN 8.00-8.18: FZ 8.25-8.30: BP 3° 8.50: JT 5° PR RO CN 8.55: JT 2° PR RO CL 8.68: JT 2° PR RO CL 8.73: JT 2° PR RO CL 8.84: JT 5° PR RO CL 8.87: JT 2-5° CU RO 9.00: HB 9.09: JT 2° PR RO CN 9.56-9.74: XWZ	
	95%	89	32	8							
				9.00		5.40	MUDSTONE: dark grey.	HW			
				10		4.60	Terminated at 9.80m. Target Depth Reached.				

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

MONITORING WELL LOG

BH ID: BH1M

Location	35-39 Darley Street East, Mona Vale NSW	Started	08 December 2025
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust	Completed	08 December 2025
Job No.	E26992.G03	Logged By	GL Date 08 December 2025
Sheets	1 of 1	Review By	ML Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈14.40 m (AHD)
Plant	Comacchio Geo 205	Inclination	90°
		Northing	6272278.2 (MGA 2020 Zone 56)
		Easting	343336.2 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
		0.00		14.40	CONCRETE: 600mm thick	-	Void 0.00m - 0.20m	Well Stickup =0.15m (RL 14.55m)
		0.60		13.80	FILL: Silty SAND: fine to medium grained, grey,	M	Sand 0.20m - 2.00m	
	BH1M_1.50-1.95 SPT 1.50-1.95 2,7,9 N=16	1.50		12.90	Silty CLAY: medium plasticity, pale grey mottled orange, with some sub-rounded ironstone gravels.		Bentonite 2.00m - 2.50m	-0.15m - 3.0m PVC casing (50mm Ø)
		2.50		11.90	From 2.50m, low plasticity, with extremely weathered iron stained sandstone gravels.	M < PL		
	BH1M_3.00-3.45 SPT 3.00-3.45 9,12,13 N=25	3.00					Sand 2.50m - 6.50m	3.0m - 6.0m PVC screen (50mm Ø)
		5.90		8.50	SANDSTONE: fine to medium grained, orange red/ grey		Bentonite 6.50m - 7.50m	PVC end cap
		7.30		7.10	NO CORE: 280mm thick			
		7.58		6.82	SANDSTONE: fine grained, pale grey, indistinctly bedded, occasional siltstone laminations.			
		9.00		5.40	MUDSTONE: dark grey.		Sand 7.50m - 9.80m	
				4.60	Terminated at 9.80m. Target Depth Reached.			

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



BOREHOLE LOG

BH ID: BH2M

Location	35-39 Darley Street East, Mona Vale NSW	Started	08 December 2025
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust	Completed	09 December 2025
Job No.	E26992.G03	Logged By	GL Date 09 December 2025
Sheets	1 of 3	Review By	ML Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈14.80 m (AHD) Northing 6272231.1 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	Inclination	90° Easting 343299.5 (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
D	H			0.00		14.80	CONCRETE: 100mm thick			CONCRETE
				0.10		14.70	FILL: Silty SAND: dark grey, fine to medium grained	M	-	FILL
		BH2M_0.50-0.95 SPT 0.50-0.95 3,5,5 N=10		1.00		13.80	Sandy CLAY: medium plasticity, orange/brown, trace of sub-rounded gravels.			RESIDUAL SOIL
		BH2M_1.50-1.95 SPT 1.50-1.95 5,6,11 N=17		1.20		13.60	From 1.20m, orange/red mottled pale grey, angular to sub-angular gravels.	M > PL		
		BH2M_3.00-3.45 SPT 3.00-3.45 5,13,15 N=28		1.50		13.30	From 1.50m, pale grey mottled orange. with iron indurated			
				2						
				3						
				4						auger resistance increase
				4.50		10.30	From 4.50m, low plasticity, pale grey, trace of sub-rounded sandstone gravels and tree roots.	M < PL	VSt	
		BH2M_4.50-4.95 SPT 4.50-4.95 4,10,12 N=22		5						
				6						
				7						
				7.30		7.50	Log continued on next page.			
				8						
				9						
				10						

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



BOREHOLE CORE LOG

BH ID: BH2M

Location	35-39 Darley Street East, Mona Vale NSW			Started	08 December 2025	
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust			Completed	09 December 2025	
Job No.	E26992.G03			Logged By	GL	Date 09 December 2025
Sheets	2 of 3			Review By	ML	Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈14.80 m (AHD)	Northing	6272231.1 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205		Inclination	90°	Easting	343299.5 (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	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				0			Log continued from previous page.		VL 0-1 L 0-3 M 1 H 3 VH 10 EH		30 100 300 1000 3000
				1							
				2							
				3							
				4							
				5							
				6							
				7							
				7.72		7.08	SANDSTONE: fine to medium grained, pale grey (iron stained bands), distinctly bedded at 1°.	MW		7.40-7.47: FZ 7.55-8.00: BP 2-5°	
				8.00		6.80	From 7.72m, medium grained, red, massive.				
				8.04		6.76	NO CORE: 40mm thick				
				8.41		6.39	SANDSTONE: medium grained, red, massive.	MW		8.31: JT 1° PR RO CN 8.40-8.42: FS 8.48: BP 0° 8.56: BP 2° 8.70: JT 4° PR RO CN 8.84: JT 2° PR RO CN 9.04: JT 80° PR RO OP 9.08-9.17: FS	
				9			LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey.				
				9.17		5.63					
				9.32		5.48	NO CORE: 150mm thick	-			
							LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey.	HW			
								FR			
NMLC	95% Water	100	0								
	70% Water	92	62								

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



BOREHOLE CORE LOG

BH ID: BH2M

Location	35-39 Darley Street East, Mona Vale NSW			Started	08 December 2025	
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust			Completed	09 December 2025	
Job No.	E26992.G03			Logged By	GL	Date 09 December 2025
Sheets	3 of 3			Review By	ML	Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈14.80 m (AHD)	Northing	6272231.1 (MGA 2020 Zone 56)	
Plant	Comacchio Geo 205	Inclination	90°	Easting	343299.5 (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	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
NMLC	70% Water	100	54	11			LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey.	FR	VL 0-1 L 0-3 M 1 H 3 VH 10 EH	10.20: BP 1° 10.24: BP 1° 10.37: JT 2° CU RO CN 10.44: JT 4° PR RO CN 10.48-10.55: BP 0° 10.69: JT 1° PR RO CN 10.87: JT 70° PR RO CN 11.17: JT 40-80° ST RO CN 11.79: JT 5° CU RO CN 11.90: JT 10° PR RO CN 12.34: JT 2° PR RO CN 12.50: JT 2-7° IR RO OP 12.54: JT 2° PR RO CN 12.75: JT 0-2° CU RO OP 12.79: JT 50° CU RO CN 12.94: JT 80° PR RO CN 13.15: JT 70-90° CU RO CN 13.31: JT 4° CU RO CN 13.33: JT 2° PR RO CN 13.49: JT 3° PR RO CN 13.71: JT 1° PR RO CN 13.75-13.79: JT 1° PR RO CN 13.83-13.85: IS Clay 13.98: JT 2° PR RO CN 14.12: JT 0° PR RO CN 14.26: JT 0° PR RO CN 14.75: JT 0° PR RO CN 15.08: JT 0° PR RO CN	30 100 300 1000 3000
		100	85	14.00		0.80	SANDSTONE: fine to medium grained, grey/pale grey with iron staining				
				15		-0.41	Terminated at 15.21m. Target Depth Reached.				
				16							
				17							
				18							
				19							
				20							

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



MONITORING WELL LOG

BH ID: BH2M

Location	35-39 Darley Street East, Mona Vale NSW	Started	08 December 2025
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust	Completed	09 December 2025
Job No.	E26992.G03	Logged By	GL Date 09 December 2025
Sheets	1 of 2	Review By	ML Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈14.80 m (AHD) Northing 6272231.1 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	Inclination	90° Easting 343299.5 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
	BH2M_0.50-0.95 SPT 0.50-0.95 3,5,5 N=10	0.00 0.10		14.80 14.70	CONCRETE: 100mm thick FILL: Silty SAND: dark grey, fine to medium grained	M		Well Stickup =0.0m (RL 14.80m)
	BH2M_1.50-1.95 SPT 1.50-1.95 5,6,11 N=17	1.00 1.20 1.50		13.80 13.60 13.30	Sandy CLAY: medium plasticity, orange/brown, trace of sub-rounded gravels. From 1.20m, orange/red mottled pale grey, angular to sub-angular gravels. From 1.50m, pale grey mottled orange. with iron indurated	M > PL		
	BH2M_3.00-3.45 SPT 3.00-3.45 5,13,15 N=28	2.00 3.00					Sand 0.00m - 7.00m	0.0m - 8.0m PVC casing (50mm Ø)
	BH2M_4.50-4.95 SPT 4.50-4.95 4,10,12 N=22	4.00 4.50 5.00 6.00 7.00				M < PL		
		7.30		7.50 7.00	SANDSTONE: fine to medium grained, pale grey (iron stained bands), distinctly bedded at 1°. From 7.72m, medium grained, red, massive.		Bentonite 7.00m - 7.50m	
		7.72 8.00 8.04		7.80 6.80 6.70	NO CORE: 40mm thick SANDSTONE: medium grained, red, massive.			
		8.04 8.41		6.60 6.30	LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey.			
		8.41 9.00 9.17 9.32		5.60 5.30 5.40	NO CORE: 150mm thick LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey.		Sand 7.50m - 11.00m	8.0m - 11.0m PVC screen (50mm Ø)
		9.32 10.00		5.40 5.00				

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



MONITORING WELL LOG

BH ID: BH2M

Location	35-39 Darley Street East, Mona Vale NSW			Started	08 December 2025	
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust			Completed	09 December 2025	
Job No.	E26992.G03			Logged By	GL	Date 09 December 2025
Sheets	2 of 2			Review By	ML	Date 02 February 2026
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈14.80 m (AHD)	Northing	6272231.1 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205		Inclination	90°	Easting	343299.5 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
		11			LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey.			
		12						
		13						
		14						
		14.00		0.80	SANDSTONE: fine to medium grained, grey/pale grey with iron staining			
		15						
		15.21		-0.41	Terminated at 15.21m. Target Depth Reached.			
		16						
		17						
		18						
		19						
		20						

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



BOREHOLE LOG

BH ID: BH4M

Location	35-39 Darley Street East, Mona Vale NSW			Started	18 December 2025	
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust			Completed	18 December 2025	
Job No.	E26992.G03			Logged By	GL	Date 18 December 2025
Sheets	1 of 3			Review By	ML	Date 02 February 2026
Drilling Contractor	Systech Drilling	Surface RL	≈16.00 m (AHD)	Northing	6272256.1 (MGA 2020 Zone 56)	
Plant	MI2	Inclination	90°	Easting	343360.8 (MGA 2020 Zone 56)	

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE			0.00		16.00	FILL: Silty SAND: fine to medium grained, brown, with trace of rootlets	M	-	FILL
		BH4M_0.50-0.95 SPT 0.50-0.95 5,6,8 N=14		0.40		15.60	Silty CLAY: medium plasticity, pale grey mottled orange.	M > PL	St	RESIDUAL SOIL
		BH4M_1.50-1.65 SPT 1.50-1.65 10/150 mm HB N=R		1.65		14.35	Sandy CLAY: low plasticity, fine to medium grained, pale grey, with angular to sub-angular gravels.		H	
		BH4M_3.00-3.45 SPT 3.00-3.45 9,29,13 N=42		3.20		12.80	From 3.20m, orange/red.	M		
		BH4M_4.50-4.95 SPT 4.50-4.95 8,9,18 N=27		4.50		11.50	From 4.50m, grey, mottled yellow, with iron indurated		VSt	
		BH4M_6.00-6.45 SPT 6.00-6.45 11,16,12 N=28		6.00		10.00	From 6.00m, brown/grey.			
				6.45		9.55	Log continued on next page.			
				7						
				8						
				9						
				10						

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

BOREHOLE CORE LOG

BH ID: BH4M

Location 35-39 Darley Street East, Mona Vale NSW
Client The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust
Job No. E26992.G03
Sheets 2 of 3

Started 18 December 2025
Completed 18 December 2025
Logged By GL **Date** 18 December 2025
Review By ML **Date** 02 February 2026

Drilling Contractor Systech Drilling **Surface RL** ≈16.00 m (AHD) **Northing** 6272256.1 (MGA 2020 Zone 56)
Plant MI2 **Inclination** 90° **Easting** 343360.8 (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	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				0			Log continued from previous page.		VL 0-1 L 0-3 M 1 H 3 VH 10 EH		30 100 300 1000 3000
				1							
				2							
				3							
				4							
				5							
				6							
				7			SANDSTONE: fine to medium grained, banded red brown and pale grey with some bands of clay, laminite and low strength iron indurated sandstone	HW	▼	6.50: BP 1° 6.68: JT 2° PR RO CN 6.83-7.00: FZ 7.00-7.04: XWS 7.10: BP 2° 7.22: JT 0-2° CU RO CN 7.33-7.43: FZ 7.56-7.59: XWS	
		100	37	7.40		8.60	LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), grey	DW	▼	7.77: JT 0-5° CU RO CN 7.83: BP 3° 7.91-7.97: FS 8.03-8.08: JT 5° PR RO CN 8.14: JT 12° PR RO CN 8.20: BP 1° 8.35: JT 1° PR RO CN 8.42: BP 1° 8.47-8.51: CS 8.57-8.61: CS 8.78: BP 2° 9.00: HB 9.06: JT 4° PR RO CN 9.13: BP 3° 9.19: JT 2° PR RO CN 9.28: JT 0° PR RO CN 9.40: JT 3° PR RO CN 9.47-9.82: JT 2° PR RO CN	
				8							
				9			SANDSTONE: fine to medium grained, banded orange and pale grey	FR	▼		
				9.05		6.95					
				9.70		6.30	LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey		▼		
				10							

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

MONITORING WELL LOG

BH ID: BH4M

Location	35-39 Darley Street East, Mona Vale NSW	Started	18 December 2025
Client	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust	Completed	18 December 2025
Job No.	E26992.G03	Logged By	GL Date 18 December 2025
Sheets	1 of 2	Review By	ML Date 02 February 2026

Drilling Contractor	Systech Drilling	Surface RL	≈16.00 m (AHD)	Northing	6272256.1 (MGA 2020 Zone 56)
Plant	MI2	Inclination	90°	Easting	343360.8 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
		0.00		16.00	FILL: Silty SAND: fine to medium grained, brown, with trace of rootlets	M		Well Stickup =0.0m (RL 16.0m)
	BH4M_0.50-0.95 SPT 0.50-0.95 5,6,8 N=14	0.40		15.60	Silty CLAY: medium plasticity, pale grey mottled orange.	M > PL		
	BH4M_1.50-1.65 SPT 1.50-1.65 10/150 mm HB N=R	1.65		14.35	Sandy CLAY: low plasticity, fine to medium grained, pale grey, with angular to sub-angular gravels.		Sand 0.00m - 3.00m	0.0m - 4.0m PVC casing (50mm Ø)
	BH4M_3.00-3.45 SPT 3.00-3.45 9,29,13 N=42	3.20		12.80	From 3.20m, orange/red.		Bentonite 3.00m - 3.50m	
	BH4M_4.50-4.95 SPT 4.50-4.95 8,9,18 N=27	4.50		11.60	From 4.50m, grey, mottled yellow, with iron indurated	M		
	BH4M_6.00-6.45 SPT 6.00-6.45 11,16,12 N=28	6.00		10.00	From 6.00m, brown/grey.			4.0m - 7.0m PVC screen (50mm Ø)
		6.45		9.50	SANDSTONE: fine to medium grained, banded red brown and pale grey with some bands of clay, laminite and low strength iron indurated sandstone			PVC end cap
		7.40		8.60	LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), grey		Sand 3.50m - 11.62m	
		9.05		6.95	SANDSTONE: fine to medium grained, banded orange and pale grey			
		9.70		6.30	LAMINITE: sandstone (50%), fine to medium grained, pale grey, siltstone (50%), dark grey			

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

Appendix F – Registered Bore Search



LEGEND **Note: All locations are approximate**

 Site Location

 Groundwater Bores (WaterNSW)



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

Drawn:	L.J.
Approved:	-
Date:	28/04/2026

The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust

Dewatering Management Plan

35-39 Darley Street East, Moná Vale NSW

Registered Groundwater Bores

Figure:

F1

Project:

E26992.E16_Rev0

Source: WaterNSW, accessed 22/04/2026

WaterNSW

Work Summary

GW018770

Licence: 10BL011401 Licence Status: CONVERTED

Authorised Purpose(s): WASTE DISPOSAL
Intended Purpose(s): WASTE DISPOSAL

Work Type: Bore open thru rock

Work Status:

Construct.Method: Cable Tool

Owner Type: Private

Commenced Date: Final Depth: 40.20 m
Completion Date: 01/08/1960 Drilled Depth: 40.20 m

Contractor Name: (None)

Driller:

Assistant Driller:

Property: N/A NSW Standing Water Level (m):
GWMA: 603 Salinity Description:
GW Zone: Yield (L/s):

Site Details

Site Chosen By:

County Parish Cadastre
Form A: CUMBERLAND NARRABEEN 17
Licensed: CUMBERLA NARRABEE Whole Lot 1//29305

Region: 10 - Sydney South Coast CMA Map: 9130-1S
River Basin: 212 - HAWKESBURY RIVER Grid Zone: Scale:
Area/District:

Elevation: 0.00 m (A.H.D.) Northing: 6272378.000 Latitude: 33°40'37.1"S
Elevation Source: (Unknown) Easting: 343269.000 Longitude: 151°18'33.4"E

GS Map: - MGA Zone: 56 Coordinate Source: GD,PR. MAP

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	1	Casing	Threaded Steel	0.00	12.10	152			

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)
22.20	40.10	17.90	(Unknown)	3.60		0.34			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.74	2.74	Clay Red	Clay	
2.74	9.75	7.01	Clay White	Clay	
9.75	21.94	12.19	Shale Black	Shale	
21.94	40.23	18.29	Shale Red Sandy Water Supply	Shale	

Remarks

19/02/1975: TWO BORES 21.3 M APART
24/11/1981: LOT 1 DARLEY ST MONA VALE

***** End of GW018770 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW018771

Licence: 10WA107452	Licence Status: SURRENDE
Authorised Purpose(s): WASTE DISPOSAL Intended Purpose(s): WASTE DISPOSAL	
Work Type: Bore open thru rock Work Status: Supply Obtained Construct.Method: Cable Tool Owner Type: Private	
Commenced Date: Completion Date: 01/11/1960	Final Depth: 100.50 m Drilled Depth: 100.60 m
Contractor Name: (None) Driller: Assistant Driller:	
Property: N/A NSW GWMA: 603 GW Zone:	Standing Water Level (m): Salinity Description: Yield (L/s):

Site Details

Site Chosen By:			
County Form A: CUMBERLAND Licensed: CUMBERLA		Parish NARRABEEN NARRABEE	Cadastre 17 Whole Lot 7//752046
Region: 10 - Sydney South Coast River Basin: 212 - HAWKESBURY RIVER Area/District:		CMA Map: 9130-1S Grid Zone:	Scale:
Elevation: 0.00 m (A.H.D.) Elevation Source: (Unknown)		Northing: 6272277.000 Easting: 343434.000	Latitude: 33°40'40.4"S Longitude: 151°18'39.8"E
GS Map: -		MGA Zone: 56	Coordinate Source: GD.,PR. MAP

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	1	Casing		0.00	15.80	152			

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)
64.00	68.50	4.50	Fractured						
92.00	93.80	1.80	Fractured						

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.52	1.52	Subsoil	Subsoil	
1.52	17.06	15.54	Clay	Clay	
17.06	36.57	19.51	Shale	Shale	
36.57	39.62	3.05	Shale Clay Seams	Shale	
39.62	64.00	24.38	Shale	Shale	
64.00	68.58	4.58	Shale Sandy Water Supply	Shale	

68.58	76.50	7.92	Shale Hard	Shale	
76.50	78.33	1.83	Slate	Slate	
78.33	92.04	13.71	Shale	Shale	
92.04	93.87	1.83	Shale Sandy Water Supply	Shale	
93.87	98.75	4.88	Shale	Shale	
98.75	99.97	1.22	Shale Gravel	Shale	
99.97	100.58	0.61	Shale	Shale	

Remarks

07/08/1974: RECHARGE TEST CAPACITY 0.303 L/S
24/11/1981: LOT 7 DARLEY ST MONA VALE

*** End of GW018771 ***

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WaterNSW

Work Summary

GW026026

Licence: 10BL019199

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC

Intended Purpose(s): GENERAL USE

Work Type: Bore open thru rock

Work Status:

Construct.Method: Cable Tool

Owner Type: Private

Commenced Date:

Completion Date: 01/11/1966

Final Depth: 51.80 m

Drilled Depth: 51.80 m

Contractor Name: (None)

Driller:

Assistant Driller:

Property: N/A NSW

GWMA: 603

GW Zone:

Standing Water Level (m):

Salinity Description: Fresh

Yield (L/s):

Site Details

Site Chosen By:

County

Form A: CUMBERLAND

Licensed: CUMBERLA

Parish

NARRABEEN

NARRABEE

Cadastre

17

Whole Lot

Region: 10 - Sydney South Coast

CMA Map: 9130-1S

River Basin: 212 - HAWKESBURY RIVER

Grid Zone:

Scale:

Area/District:

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

Northing: 6272400.000

Latitude: 33°40'36.2"S

Elevation Source: (Unknown)

Easting: 343004.000

Longitude: 151°18'23.2"E

GS Map: -

MGA Zone: 56

Coordinate Source: GD,PR. MAP

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	1	Opening	Slots	0.00	0.00	152		1	
1	1	Casing		0.00	18.80	152			

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)
15.50	15.50	0.00	Fractured	3.00					
34.10	35.00	0.90	Consolidated	2.40		0.57			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	6.09	6.09	Clay	Clay	
6.09	7.62	1.53	Sandstone Hard	Sandstone	
7.62	9.14	1.52	Sandstone Weathered	Sandstone	
9.14	17.67	8.53	Shale Water Supply	Shale	
17.67	33.52	15.85	Shale Black	Shale	

33.52	35.05	1.53	Sandstone Hard Water Supply	Sandstone	
35.05	37.18	2.13	Shale	Shale	
37.18	37.49	0.31	Sandstone	Sandstone	
37.49	51.81	14.32	Shale Black Red	Shale	

Remarks

24/11/1981: BARRENJOEY RD MONA VALE

*** End of GW026026 ***

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WaterNSW

Work Summary

GW026027

Licence: 10WA107459

Licence Status: CURRENT

Authorised Purpose(s): DOMESTIC

Intended Purpose(s): GENERAL USE

Work Type: Bore open thru rock

Work Status:

Construct.Method: Cable Tool

Owner Type: Private

Commenced Date:

Completion Date: 01/12/1966

Final Depth: 61.50 m

Drilled Depth: 61.70 m

Contractor Name: (None)

Driller:

Assistant Driller:

Property: 285 Leslie Drv Mona Vale 2103 NSW

Standing Water Level (m):

Salinity Description: Fresh

Yield (L/s):

GWMA: 603

GW Zone:

Site Details

Site Chosen By:

County

Form A: CUMBERLAND

Licensed: CUMBERLA

Parish

NARRABEEN

NARRABEE

Cadastre

17

Whole Lot 1//652476

Region: 10 - Sydney South Coast

CMA Map: 9130-1S

River Basin: 212 - HAWKESBURY RIVER

Grid Zone:

Scale:

Area/District:

Northing: 6272385.000

Easting: 342964.000

Latitude: 33°40'36.7"S

Longitude: 151°18'21.6"E

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

Elevation Source: (Unknown)

GS Map: -

MGA Zone: 56

Coordinate Source: GD,PR. MAP

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	1	Casing		0.00	44.80	152			

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)
12.10	12.10	0.00	Consolidated	4.50					
48.70	48.70	0.00	(Unknown)	4.50					
56.30	56.30	0.00	Fractured	4.50		0.44			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	9.14	9.14	Clay	Clay	
9.14	10.36	1.22	Sandstone	Sandstone	
10.36	48.76	38.40	Sandstone Grey Water Supply	Sandstone	
48.76	56.38	7.62	Shale Water Supply	Shale	
56.38	59.58	3.20	Rock Hard	Rock	

59.58	61.72	2.14	Shale Grey	Shale	
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Remarks

24/11/1981: BARRENJOEY RD MONA VALE

*** End of GW026027 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW026581

Licence: 10BL019607

Licence Status: CONVERTED

Authorised Purpose(s): WASTE DISPOSAL
Intended Purpose(s): WASTE DISPOSAL

Work Type: Bore open thru rock

Work Status:

Construct.Method: Cable Tool

Owner Type: Private

Commenced Date:
Completion Date: 01/01/1967

Final Depth: 92.90 m
Drilled Depth: 93.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property: N/A NSW
GWMA: 603
GW Zone:

Standing Water Level
(m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

County	Parish	Cadastre
Form A: CUMBERLAND	NARRABEEN	17
Licensed: CUMBERLA	NARRABEE	Whole Lot

Region: 10 - Sydney South Coast
River Basin: 212 - HAWKESBURY RIVER
Area/District:

CMA Map: 9130-1S
Grid Zone:

Scale:

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

Northing: 6272520.000
Easting: 342984.000

Latitude: 33°40'32.3"S
Longitude: 151°18'22.5"E

GS Map: -

MGA Zone: 56

Coordinate Source: GD,PR. MAP

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	1	Casing		0.00	31.60	203			Driven into Hole

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)
13.70	13.70	0.00	Fractured	2.40					
28.00	28.00	0.00	Fractured	2.40		0.38			
56.30	56.30	0.00	Consolidated	2.40		0.38			
71.30	71.30	0.00	Fractured	2.40		0.51			
86.80	86.80	0.00	Fractured	1.50		1.51			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	12.19	12.19	Clay Sandy	Clay	
12.19	27.12	14.93	Shale Red Water Supply	Shale	
27.12	28.04	0.92	Rock Grey Hard	Rock	

28.04	51.81	23.77	Shale Black Water Supply	Shale	
51.81	56.38	4.57	Rock Grey Hard	Rock	
56.38	60.96	4.58	Sandstone Water Supply	Sandstone	
60.96	71.32	10.36	Rock	Rock	
71.32	76.80	5.48	Shale Hard Water Supply	Shale	
76.80	92.96	16.16	Rock Black Hard Water Supply	Rock	

Remarks

24/11/1981: DARLEY ST MONA VALE

*** End of GW026581 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW035791

Licence:

Licence Status:

Authorised Purpose(s):
Intended Purpose(s): WASTE DISPOSAL

Work Type: Bore open thru rock

Work Status: Supply Obtained

Construct.Method: Cable Tool

Owner Type: Private

Commenced Date:
Completion Date: 01/12/1960

Final Depth: 59.40 m
Drilled Depth: 59.40 m

Contractor Name: (None)

Driller:

Assistant Driller:

Property:

Standing Water Level (m):
Salinity Description:
Yield (L/s):

GWMA:
GW Zone:

Site Details

Site Chosen By:

County
Form A: CUMBERLAND
Licensed:

Parish
NARRABEEN

Cadastre
17

Region: 10 - Sydney South Coast

CMA Map: 9130-1S

River Basin: 212 - HAWKESBURY RIVER
Area/District:

Grid Zone:

Scale:

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

Northing: 6272277.000
Easting: 343434.000

Latitude: 33°40'40.4"S
Longitude: 151°18'39.8"E

GS Map: -

MGA Zone: 56

Coordinate Source: GD.,PR. MAP

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)
45.70	50.20	4.50	Fractured						

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.52	1.52	Soil	Soil	
1.52	25.90	24.38	Clay	Clay	
25.90	30.48	4.58	Shale	Shale	
30.48	45.72	15.24	Shale	Shale	
45.72	50.29	4.57	Shale Sandy Water Supply	Shale	
50.29	59.43	9.14	Shale	Shale	

Remarks

24/11/1981: LOT 7 DARLEY ST MONA VALE

***** End of GW035791 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW105936

Licence: 10WA107516		Licence Status: CURRENT	
		Authorised Purpose(s): DOMESTIC	
		Intended Purpose(s):	
Work Type: Bore			
Work Status:			
Construct.Method:			
Owner Type:			
Commenced Date:		Final Depth:	
Completion Date: 19/05/2005		Drilled Depth:	
Contractor Name: (None)			
Driller:			
Assistant Driller:			
Property: COPELAND 26 Seabeach Ave		Standing Water Level	
MONA VALE 2103 NSW		(m):	
GWMA:		Salinity Description:	
GW Zone:		Yield (L/s):	

Site Details

Site Chosen By:			
		County	Parish
		Form A: CUMBERLAND	NARRABEEN
		Licensed: CUMBERLA	NARRABEE
			Cadastre
			A 339661
			Whole Lot A//339661
Region: 10 - Sydney South Coast		CMA Map: 9130-1S	
River Basin: 212 - HAWKESBURY RIVER		Grid Zone:	
Area/District:		Scale:	
Elevation: 0.00 m (A.H.D.)		Northing: 6272453.000	
Elevation Source: (Unknown)		Easting: 343556.000	
		Latitude: 33°40'34.8"S	
		Longitude: 151°18'44.6"E	
GS Map: -		MGA Zone: 56	
		Coordinate Source: Unknown	

*** End of GW105936 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW108158**Licence:** 10BL164851**Licence Status:** CONVERTED**Authorised Purpose(s):** DOMESTIC
Intended Purpose(s): DOMESTIC**Work Type:** Spear**Work Status:** Supply Obtained**Construct.Method:****Owner Type:** Private**Commenced Date:**
Completion Date: 07/05/2006**Final Depth:** 6.30 m
Drilled Depth: 6.30 m**Contractor Name:****Driller:** Michael Peter Sprouster**Assistant Driller:****Property:** FRANCIS 28 Seabeach Ave MONA
VALE 2103 NSW**GWMA:**
GW Zone:**Standing Water Level** 2.600
(m):**Salinity Description:**
Yield (L/s): 1.000

Site Details

Site Chosen By:**County**
Form A: CUMBERLAND
Licensed: CUMBERLA**Parish**
NARRABEEN
NARRABEE**Cadastre**
B 339661
Whole Lot B//339661**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:** 6272442.000
Easting: 343576.000**Latitude:** 33°40'35.2"S
Longitude: 151°18'45.4"E**GS Map:** -**MGA Zone:** 56**Coordinate Source:** GIS - Geogra

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	6.30	100			Unknown
1	1	Casing	Pvc Class 9	0.00	6.00	100			Glued

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	6.30	3.70	Unknown	2.60		1.00			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	6.30	6.30	sand	Sand	

Remarks

30/04/2010: spear point - stainless steel over PVC 50mm, 600 length .006 aperture, screwed

***** End of GW108158 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW108500

Licence: 10WA107522 Licence Status: CURRENT

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Spear
Work Status: Supply Obtained
Construct.Method: Jetted
Owner Type: Private

Commenced Date: Final Depth: 4.00 m
Completion Date: 10/11/2006 Drilled Depth: 4.00 m

Contractor Name:
Driller: Michael Peter Sprouster
Assistant Driller:

Property: STRATA PLAN 16473 25 Seabeach
Ave MONA VALE 2103 NSW Standing Water Level 2.000 (m):
GWMA: Salinity Description:
GW Zone: Yield (L/s): 1.000

Site Details

Site Chosen By:

Form A:	County	Parish	Cadaastre
Licensed:	CUMBERLAND	NARRABEEN	SP 16473
	CUMBERLA	NARRABEE	Whole Lot/16473

Region: 10 - Sydney South Coast CMA Map: 9130-1S
River Basin: 213 - SYDNEY COAST - GEORGES RIVER Grid Zone: Scale:
Area/District:

Elevation: 0.00 m (A.H.D.) Northing: 6272338.000 Latitude: 33°40'38.5"S
Elevation Source: Unknown Easting: 343526.000 Longitude: 151°18'43.4"E

GS Map: - MGA Zone: 56 Coordinate Source: GIS - Geogra

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	4.00	110			Jetted
1	1	Casing	P.V.C.	0.00	4.00	100			Glued
1	1	Opening	Screen	3.40	4.00	50		0	Stainless Steel, Screwed, A: 0.01mm

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)
2.00	4.00	2.00	Unknown	2.00		2.10			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	Topsoil	Topsoil	
0.10	4.00	3.90	Sand, yellow	Sand	

Remarks

10/11/2006: Form A Remarks:

spear point - stainless steel over PVC 50mm, 600 length .006 aperture, screwed

26/02/2010: updated from original form A

***** End of GW108500 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW108558

Licence: 10BL601256

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC

Intended Purpose(s): DOMESTIC

Work Type: Spear

Work Status: Supply Obtained

Construct.Method:

Owner Type: Private

Commenced Date:

Completion Date: 05/02/2007

Final Depth: 4.30 m

Drilled Depth: 4.30 m

Contractor Name: INTERTEC DRILLING SERVICES

Driller: Michael Peter Sprouster

Assistant Driller:

Property: HARRIS 13 Bassett St EAST MONA VALE 2103 NSW,HARRIS 13 Bassett Street East MONA VALE 2103 NSW

Standing Water Level 2.800 (m):

GWMA:

GW Zone:

Salinity Description:

Yield (L/s): 1.000

Site Details

Site Chosen By:

County

Form A: CUMBERLAND

Licensed: CUMBERLA

Parish

NARRABEEN

NARRABEE

Cadastre

33/F/7236

Whole Lot 33/F/7236

Region: 10 - Sydney South Coast

CMA Map: 9130-1S

River Basin: 212 - HAWKESBURY RIVER

Grid Zone:

Scale:

Area/District:

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

Northing: 6272612.000

Latitude: 33°40'29.7"S

Elevation Source: Unknown

Easting: 343632.000

Longitude: 151°18'47.7"E

GS Map: -

MGA Zone: 56

Coordinate Source: GIS - Geogra

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	4.30	110			Unknown
1	1	Casing	Pvc Class 9	0.00	4.30	110	110		Driven into Hole, Glued
1	1	Opening	Screen - Gauze/Mesh	3.70	4.30	50		0	Stainless Steel, Screwed, SL: 60.0mm

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)
2.30	4.30	2.00	Unknown	2.80		1.00		04:00:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.30	2.30	Sandstone, compacted	Sandstone	
2.30	4.30	2.00	Sand, fine	Sand	

4.30	4.30	0.00	Mud, grey	Mud	
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Remarks

02/03/2010: updated from original form A
23/09/2011: Slot Length and Width adjusted due to data entry errors with advice from Madhwan Keshwan. GDS Data Cleanup project 2011.

*** End of GW108558 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW108579

Licence: 10BL601472 Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Spear
Work Status: Supply Obtained
Construct.Method: Auger
Owner Type: Private

Commenced Date: Final Depth: 6.60 m
Completion Date: 09/03/2007 Drilled Depth: 6.60 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Michael Peter Sprouster
Assistant Driller:

Property: MC HUGH 66 Surfview Rd MONA
VALE 2103 NSW Standing Water Level 4.000 (m):
GWMA: Salinity Description: Fair
GW Zone: Yield (L/s): 0.500

Site Details

Site Chosen By:

Form A:	County	Parish	Cadastre
Licensed:	CUMBERLAND	NARRABEEN	13/A/6195
	CUMBERLA	NARRABEE	Whole Lot 13/A/6195

Region: 10 - Sydney South Coast CMA Map: 9130-1S
River Basin: 213 - SYDNEY COAST - GEORGES RIVER Grid Zone: Scale:
Area/District:

Elevation: 0.00 m (A.H.D.) Northing: 6272426.000 Latitude: 33°40'35.8"S
Elevation Source: Unknown Easting: 343749.000 Longitude: 151°18'52.1"E

GS Map: - MGA Zone: 56 Coordinate Source: GIS - Geogra

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	6.60	110			Auger
1	1	Casing	Pvc Class 9	0.00	6.60	110			Driven into Hole, Glued
1	1	Opening	Screen	6.00	6.60	50		0	Stainless Steel, Screwed, SL: 60.0mm

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)
4.00	6.60	2.60	Unknown	4.00		0.50		00:05:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	Tospoil	Topsoil	
0.10	3.50	3.40	Sand, yellow	Sand	
3.50	4.00	0.50	Soil & Sand	Soil	
4.00	6.60	2.60	Soil, dark & grey Sand	Soil	

Remarks

03/03/2010: updated from original form A

23/09/2011: Slot Length and Width adjusted due to data entry errors with advice from Madhwan Keshwan. GDS Data Cleanup project 2011.

***** End of GW108579 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW108888

Licence: 10CA107769

Licence Status: CURRENT

Authorised Purpose(s): IRRIGATION,RECREATION (GROUNDWATER)
Intended Purpose(s): RECREATION (GROU, IRRIGATION)

Work Type: Bore

Work Status: Supply Obtained

Construct.Method: Down Hole Hamm

Owner Type: Private

Commenced Date:
Completion Date: 02/06/2008

Final Depth: 73.00 m
Drilled Depth: 73.00 m

Contractor Name: HIGHLAND DRILLING PTY LTD
Driller: Brett Delamont
Assistant Driller:

Property: MONA VALE GOLF COURSE 1
Golf Ave MONA VALE 2103 NSW
GWMA:
GW Zone:

Standing Water Level 7.000 (m):
Salinity Description:
Yield (L/s): 14.060

Site Details

Site Chosen By:

County	Parish	Cadastre
Form A: CUMBERLAND	NARRABEEN	7092 1051073
Licensed: CUMBERLA	NARRABEE	Whole Lot 2//1275526

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

CMA Map:
Grid Zone: Scale:

Elevation: 0.00 m (A.H.D.)	Northing: 6272010.000	Latitude: 33°40'48.9"S
Elevation Source: Unknown	Easting: 343062.000	Longitude: 151°18'25.2"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	12.00	300			Down Hole Hammer
1		Hole	Hole	12.00	48.00	254			Down Hole Hammer
1		Hole	Hole	48.00	73.00	203			Down Hole Hammer
1	1	Casing	Steel	0.00	48.00	219			Driven into Hole, Welded
1	1	Casing	Steel	0.00	12.00	273			Driven into Hole, Welded

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)
17.00	18.00	1.00	Unknown	7.00		1.25		00:01:00	
29.00	30.00	1.00	Unknown			0.41		00:01:00	
57.00	58.00	1.00	Unknown			12.40		00:01:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	TOPSOIL	Topsoil	

1.00	10.50	9.50	CLAY	Clay	
10.50	60.00	49.50	SANDSTONE	Sandstone	
60.00	73.00	13.00	SANDSTONE	Sandstone	

Remarks

25/06/2008: Previous Lic No; 10BL600101

*** End of GW108888 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW111104**Licence:** 10BL603983**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:** 15/06/2010**Final Depth:** 4.00 m**Drilled Depth:** 4.20 m**Contractor Name:** Numac Drilling Services Pty Ltd**Driller:** Stewart Michael**Assistant Driller:** Dean Ryan**Property:** 7-ELEVEN 24 Barrenjoey Rd MONA
VALE 2130 NSW**Standing Water Level** 2.000
(m):**GWMA:****GW Zone:****Salinity Description:****Yield (L/s):**

Site Details

Site Chosen By:**County**
Form A: CUMBERLAND
Licensed: CUMBERLA**Parish**
NARRABEEN
NARRABEE**Cadastre**
11//619503
Whole Lot 11//619503**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:** 6272387.000
Easting: 343146.000**Latitude:** 33°40'36.7"S
Longitude: 151°18'28.7"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	4.20	150			Auger - Solid Flight
1		Annulus	Waterworn/Rounded	0.70	4.00				Graded
1	1	Casing	Pvc Class 18	0.00	1.00	60	50		Seated on Bottom, Other
1	1	Opening	Slots - Horizontal	1.00	4.00	60		0	Casing - Machine Slotted, PVC Class 18, Other, SL: 40.0mm, A: 3.80mm

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)
2.00	4.00	2.00	Unknown	2.00					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.20	1.20	FILL	Fill	
1.20	2.00	0.80	CLAY YELLOW FIRM	Clay	
2.00	4.00	2.00	SAND L/BROWN CLAYEY	Sand	

***** End of GW111104 *****

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WaterNSW

Work Summary

GW111105**Licence:** 10BL603983**Licence Status:** ACTIVE**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: 15/06/2010**Final Depth:** 5.00 m
Drilled Depth: 5.00 m**Contractor Name:** Numac Drilling Services Pty Ltd**Driller:** Simon Benjamin Tant**Assistant Driller:** Dean Ryan**Property:** 7-ELEVEN 24 Barrenjoey Rd MONA
VALE 2130 NSW**Standing Water Level** 2.000
(m):**GWMA:**
GW Zone:**Salinity Description:**
Yield (L/s):

Site Details

Site Chosen By:**County**
Form A: CUMBERLAND
Licensed: CUMBERLA**Parish**
NARRABEEN
NARRABEE**Cadastre**
11//619503
Whole Lot 11//619503**Region:** 10 - Sydney South Coast**CMA Map:****River Basin:** - Unknown**Grid Zone:****Scale:****Area/District:****Elevation:** 0.00 m (A.H.D.)
Elevation Source: Unknown**Northing:** 6272381.000
Easting: 343164.000**Latitude:** 33°40'36.9"S
Longitude: 151°18'29.4"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	5.00	150			Auger - Solid Flight
1		Annulus	Waterworn/Rounded	0.70	5.00				Graded
1	1	Casing	Pvc Class 18	1.00	2.00	60	50		Seated, Other
1	1	Opening	Slots - Horizontal	2.00	5.00	60		0	Casing - Machine Slotted, PVC Class 18, Other, SL: 40.0mm, A: 3.80mm

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)
2.00	5.00	3.00	Unknown	2.00					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.20	1.20	FILL	Fill	
1.20	2.00	0.80	CLAY FIRM/YELLOW	Clay	
2.00	5.00	3.00	SAND LIGHT BROWN CLAYEY	Sand	

***** End of GW111105 *****

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WaterNSW

Work Summary

GW111444

Licence: 10WA117290

Licence Status: CURRENT

Authorised Purpose(s): RECREATION (GROUNDWATER)
Intended Purpose(s): RECREATION (GROU

Work Type: Bore

Work Status: Supply Obtained

Construct.Method: Down Hole Hamm

Owner Type: Local Govt

Commenced Date:
Completion Date: 25/02/2008

Final Depth: 103.00 m
Drilled Depth: 103.00 m

Contractor Name: HIGHLAND DRILLING PTY LTD
Driller: Brett Delamont
Assistant Driller:

Property: KITCHENER PARK 1610 Pittwater
Rd MONA VALE 2103 NSW
GWMA:
GW Zone:

Standing Water Level 3.000
(m):
Salinity Description:
Yield (L/s): 0.870

Site Details

Site Chosen By:

County	Parish	Cadastr
Form A: CUMBERLAND	NARRABEEN	7090 1073460
Licensed: CUMBERLA	NARRABEE	Whole Lot
		7090//1073460

Region: 10 - Sydney South Coast	CMA Map:	
River Basin: - Unknown	Grid Zone:	Scale:
Area/District:		
Elevation: 0.00 m (A.H.D.)	Northing: 6272193.000	Latitude: 33°40'42.9"S
Elevation Source: Unknown	Easting: 342900.000	Longitude: 151°18'19.0"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; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.00	254			Down Hole Hammer
1		Hole	Hole	7.00	103.00	200			Down Hole Hammer
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded
1		Annulus	Concrete	7.00	8.00	200			
1	1	Casing	Pvc Class 9	0.00	103.00	160			Seated on Bottom, Screwed and Glued
1	1	Casing	Steel	0.00	7.00	219			Driven into Hole, Welded
1	1	Opening	Slots - Diagonal	30.00	36.00	160		0	Casing - Oxy-cut Slot, PVC Class 9, SL: 6.0mm, A: 2.00mm
1	1	Opening	Slots - Diagonal	48.00	54.00			0	Casing - Oxy-cut Slot, SL: 6.0mm, A: 2.00mm
1	1	Opening	Slots - Diagonal	66.00	78.00			0	SL: 12.0mm, A: 2.00mm
1	1	Opening	Slots	90.00	96.00			0	SL: 6.0mm

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)
18.00	19.00	1.00	Unknown			0.30		00:30:00	3.20

24.00	25.00	1.00	Unknown			0.36		00:30:00	3.10
72.00	73.00	1.00	Unknown	3.00		0.87		00:30:00	3.20

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	SOIL SANDY	Soil	
1.00	5.00	4.00	CLAY GREY	Clay	
5.00	8.00	3.00	CLAY RED	Clay	
8.00	24.00	16.00	SHALE GREY	Shale	
24.00	48.00	24.00	BAULDHILL CLAYSTONE	Claystone	
48.00	54.00	6.00	SHALE GREY	Shale	
54.00	60.00	6.00	BAULDHILL CLAYSTONE	Claystone	
60.00	103.00	43.00	SLATE	Slate	

Remarks

25/02/2008: Form A Remarks:
Pump test recommended.

*** End of GW111444 ***

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WaterNSW

Work Summary

GW113211**Licence:** 10BL605163**Licence Status:** ACTIVE**Authorised Purpose(s):** MONITORING BORE**Intended Purpose(s):** MONITORING BORE**Work Type:** Bore**Work Status:** Equipped**Construct.Method:****Owner Type:** Local Govt**Commenced Date:****Completion Date:** 22/05/2012**Final Depth:** 3.00 m**Drilled Depth:** 3.00 m**Contractor Name:** Numac**Driller:** Matthew Stephen Moroney**Assistant Driller:****Property:** CALTEX - MONA VALE Road Verge
Barrejoey Rd MONA VALE 2103
NSW**Standing Water Level**
(m):**GWMA:****GW Zone:****Salinity Description:**
Yield (L/s):

Site Details

Site Chosen By:**County**
Form A: CUMBERLAND
Licensed: CUMBERLA**Parish**
NARRABEEN
NARRABEE**Cadastre**
1//1075014
ROAD FRONTING
1//1075014**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:** 6272684.000**Easting:** 343415.000**Latitude:** 33°40'27.2"S**Longitude:** 151°18'39.3"E**GS Map:** -**MGA Zone:** 56**Coordinate Source:** Unknown

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method & depth, updated owner type.

*** End of GW113211 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW113212**Licence:** 10BL605163**Licence Status:** ACTIVE**Authorised Purpose(s):** MONITORING BORE
Intended Purpose(s): MONITORING BORE**Work Type:** Bore**Work Status:** Equipped**Construct.Method:****Owner Type:** Local Govt**Commenced Date:****Completion Date:** 22/05/2012**Final Depth:** 2.50 m**Drilled Depth:** 2.50 m**Contractor Name:** Numac**Driller:** Matthew Stephen Moroney**Assistant Driller:****Property:** CALTEX - MONA VALE Road Verge
Barrejoey Rd MONA VALE 2103
NSW**Standing Water Level**
(m):**GWMA:****GW Zone:****Salinity Description:**
Yield (L/s):

Site Details

Site Chosen By:**County**
Form A: CUMBERLAND
Licensed: CUMBERLA**Parish**
NARRABEEN
NARRABEE**Cadastre**
4//7236
ROAD FRONTING
1//1075014**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:** 6272673.000
Easting: 343404.000**Latitude:** 33°40'27.6"S
Longitude: 151°18'38.8"E**GS Map:** -**MGA Zone:** 56**Coordinate Source:** Unknown

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method & depth, updated owner type.

*** End of GW113212 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW113213**Licence:** 10BL605163**Licence Status:** ACTIVE**Authorised Purpose(s):** MONITORING BORE**Intended Purpose(s):** MONITORING BORE**Work Type:** Bore**Work Status:** Equipped**Construct.Method:****Owner Type:** Local Govt**Commenced Date:****Completion Date:** 22/05/2012**Final Depth:** 2.50 m**Drilled Depth:** 2.50 m**Contractor Name:** Numac**Driller:** Matthew Stephen Moroney**Assistant Driller:****Property:** CALTEX - MONA VALE Road Verge
Barrejoey Rd MONA VALE 2103
NSW**Standing Water Level**
(m):**GWMA:****GW Zone:****Salinity Description:**
Yield (L/s):

Site Details

Site Chosen By:**County**
Form A: CUMBERLAND
Licensed: CUMBERLA**Parish**
NARRABEEN
NARRABEE**Cadastre**
6/F/7236
ROAD FRONTING
1//1075014**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:** 6272645.000**Easting:** 343387.000**Latitude:** 33°40'28.5"S**Longitude:** 151°18'38.2"E**GS Map:** -**MGA Zone:** 56**Coordinate Source:** Unknown

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method & depth, updated owner type.

*** End of GW113213 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix G – Laboratory Certificates and Analytical Reports

Sheet _1 of _1					Sample Matrix				Analysis																Comments				
Site: 35-39 Darley Street, Mona Vale NSW				Project No: E26992				Dewatering Suite pH & EC TDS / TDU Hardness Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) TRH (F1, F2, F3, F4) BTEX PAHs VOCs HOLD																					
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		SOIL	WATER	0.45 µm field filtered	OTHER	HM ^A /TRH (including F1, F2, F3, F4) /BTEX/PAHs	HM ^A /TRH (including F1, F2, F3, F4)/BTEX	BTEX	VOCs	PFAS	pH / Turbidity/ TDS/ EC/ Hardness	OP Pesticides	OC Pesticides	PCBs	Phenols	DPE AN2 Full Suite - Mandatory and Other Parameters	Cyanide	Dewatering Suite	Total Suspended Solids (TSS)	Dissolved Oxygen	Ammonia	Total Nitrogen	Total Phosphorus			
			Date	Time																									
BH1M	1	S, P, VC	7/04/2026	AM		X															X								
BH2M	2	S, P, VC, PFAS	7/04/2026	AM		X													X										
GW-QD1	3	S, P, VC	7/04/2026	AM		X				X																			
GW-QR1	4	S, P, VC	7/04/2026	AM		X				X																			
GW-QRB1		S, P, VC	7/04/2026	AM		X																						X	
GW-TB1	5	VC	7/04/2026	AM		X					X																		
GW-TS1	6	VC	7/04/2026	AM		X					X																		

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.

Sampler's Name (EI): Print Louis Jacobs	Received by (SGS): Print Joel K
Signature <i>[Signature]</i>	Signature <i>[Signature]</i>
Date 7/04/2026	Date 7/4/26 @ 2:40

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:
CC: Sharon Li

Please forward GW-QT1 to Envirolab

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

SGS EHS Sydney COC
SE299989



SAMPLE RECEIPT ADVICE

SE299989

CLIENT DETAILS

Contact Louis Jacobs
Client EIAUSTRALIA
Address SUITE 6.01
55 MILLER STREET
PYRMONT NSW 2009

Telephone 61 2 95160722
Facsimile (Not specified)
Email Louis.Jacobs@eiaustralia.com.au

Project **E26992 35-39 Darley St., Mona Vale NSW**
Order Number **E26992**
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 7/4/2026
Report Due Tue 14/4/2026
SGS Reference **SE299989**

SUBMISSION DETAILS

This is to confirm that 6 samples were received on Tuesday 7/4/2026. Results are expected to be ready by COB Tuesday 14/4/2026. Please quote SGS reference SE299989 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Type of documentation received	COC	Date documentation received	7/4/2026
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.1°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

1 sample has been placed on hold as no tests have been assigned for it. This sample will not be processed.
QT1 forwarded to Envirolab.

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

SE299989

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E26992 35-39 Darley St., Mona Vale NSW**

SUMMARY OF ANALYSIS

No.	Sample ID	Full 8270 SVOC in Water	OC Pesticides in Water	OP Pesticides in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	PCBs in Water	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH1M	-	-	-	23	-	9	11	7
002	BH2M	167	29	15	23	9	9	84	6
003	GW-QD1	-	-	-	-	-	9	11	7
004	GW-QR1	-	-	-	-	-	9	11	7
005	GW-TB1	-	-	-	-	-	-	11	-
006	GW-TS1	-	-	-	-	-	-	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

SE299989

CLIENT DETAILS

Client EI AUSTRALIA

Project E26992 35-39 Darley St., Mona Vale NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Alkalinity	Ammonia Nitrogen by Discrete Analyser	Anions by Ion Chromatography in Water	Conductivity and TDS by Calculation - Water	Dissolved Oxygen by Membrane Electrode	Nitrite in Water	pH in water	Total Dissolved Solids (TDS) in water	Total Phosphorus by Kjeldahl Digestion DA in	Turbidity
001	BH1M	-	-	-	1	-	-	2	1	-	1
002	BH2M	10	1	5	1	3	2	2	1	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

SE299989

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E26992 35-39 Darley St., Mona Vale NSW**

SUMMARY OF ANALYSIS

No.	Sample ID	Calculation of Anion-Cation Balance	E. coli and Thermotolerant coliforms in Water (CFU)	Enterococci in Water	Filterable Reactive Phosphorus (FRP)	Forms of Carbon	Redox Potential (Eh) in water	TKN Kjeldahl Digestion by Discrete Analyser	Total and Volatile Suspended Solids (TSS /	Total Cyanide in water by Discrete Analyser	Total Phenolics in Water
001	BH1M	-	-	-	-	-	-	-	-	1	1
002	BH2M	4	3	3	1	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

SE299989

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E26992 35-39 Darley St., Mona Vale NSW**

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICP-OES	Per- and Polyfluoroalkyl Substances (PFAS) in	Trace Metals (Dissolved) in Water by ICP-MS
001	BH1M	1	3	-	8
002	BH2M	1	9	60	21
003	GW-QD1	1	-	-	7
004	GW-QR1	1	-	-	7

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 .

CLIENT DETAILS

Contact Louis Jacobs
 Client EI AUSTRALIA
 Address SUITE 6.01
 55 MILLER STREET
 PYRMONT NSW 2009

Telephone 61 2 95160722
 Facsimile (Not specified)
 Email Louis.Jacobs@eiaustralia.com.au

Project **E26992 35-39 Darley St., Mona Vale NSW**
 Order Number **E26992**
 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 **SE299989 R0**
 Date Received 7/4/2026
 Date Reported 13/4/2026

COMMENTS

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

SE299989.001 E. coli and Thermotolerant Coliforms. The Limit of Reporting (LOR) has been raised due to sample matrix.

SIGNATORIES



Akheeqar BENIAMEEN
 Chemist



Dong LIANG
 Metals/Inorganics Team Leader



Kamrul AHSAN
 Senior Chemist



Ly Kim HA
 Organic Section Head



Shane MCDERMOTT
 Laboratory Manager



Teresa NGUYEN
 Organic Chemist



Ying Ying ZHANG
 Laboratory Technician

VOCs in Water [AN433] Tested: 9/4/2026

PARAMETER	UOM	LOR	BH1M	BH2M	GW-QD1	GW-QR1	GW-TB1
			WATER - 7/4/2026 SE299989.001	WATER - 7/4/2026 SE299989.002	WATER - 7/4/2026 SE299989.003	WATER - 7/4/2026 SE299989.004	WATER - 7/4/2026 SE299989.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3	<3
Naphthalene (VOC)*	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
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	-	<2.0	-	-	-
trans-1,2-dichloroethene	µg/L	0.5	-	<0.5	-	-	-
MIBE (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	-	<0.5	-	-	-
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: 9/4/2026 (continued)

PARAMETER	UOM	LOR	BH1M	BH2M	GW-QD1	GW-QR1	GW-TB1
			WATER	WATER	WATER	WATER	WATER
			7/4/2026 SE299989.001	7/4/2026 SE299989.002	7/4/2026 SE299989.003	7/4/2026 SE299989.004	7/4/2026 SE299989.005
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	-	<0.5	-	-	-
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	-	<0.5	-	-	-
Total THM	µg/L	2	-	<2	-	-	-
Total MAH VIC EPA (BTEX+Styrene)	µg/L	0.5	-	<0.5	-	-	-

VOCs in Water [AN433] Tested: 9/4/2026 (continued)

			GW-TS1
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.006
Benzene	µg/L	0.5	[105%]
Toluene	µg/L	0.5	[105%]
Ethylbenzene	µg/L	0.5	[104%]
m/p-xylene	µg/L	1	[105%]
o-xylene	µg/L	0.5	[104%]
Total Xylenes	µg/L	1.5	-
Total BTEX	µg/L	3	-
Naphthalene (VOC)*	µg/L	0.5	[91%]
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	-
MIBE (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: 9/4/2026 (continued)

			GW-TS1
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.006
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: 9/4/2026

PARAMETER	UOM	LOR	BH1M	BH2M	GW-QD1	GW-QR1
			WATER - 7/4/2026 SE299989.001	WATER - 7/4/2026 SE299989.002	WATER - 7/4/2026 SE299989.003	WATER - 7/4/2026 SE299989.004
TRH C6-C9	µg/L	40	<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	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 8/4/2026

PARAMETER	UOM	LOR	BH1M	BH2M	GW-QD1	GW-QR1
			WATER - 7/4/2026 SE299989.001	WATER - 7/4/2026 SE299989.002	WATER - 7/4/2026 SE299989.003	WATER - 7/4/2026 SE299989.004
TRH C10-C14	µg/L	50	<50	<50	<50	<50
TRH C15-C28	µg/L	100	<100	<100	<100	<100
TRH C29-C36	µg/L	100	<100	<100	<100	<100
Total TRH (C10-C36)	µg/L	50	<50	<50	<50	<50
TRH >C10-C16	µg/L	50	<50	<50	<50	<50
TRH >C10-C16 - Naphthalene (F2)	µg/L	50	<50	<50	<50	<50
TRH >C16-C34 (F3)	µg/L	100	<100	<100	<100	<100
TRH >C34-C40 (F4)	µg/L	100	<100	<100	<100	<100
Total TRH (>C10-C40)	µg/L	50	<50	<50	<50	<50

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 8/4/2026

PARAMETER	UOM	LOR	BH1M	BH2M
			WATER - 7/4/2026 SE299989.001	WATER - 7/4/2026 SE299989.002
Naphthalene	µg/L	0.5	<0.5	<0.5
2-methylnaphthalene	µg/L	0.5	<0.5	<0.5
1-methylnaphthalene	µg/L	0.5	<0.5	<0.5
Acenaphthylene	µg/L	0.5	<0.5	<0.5
Acenaphthene	µg/L	0.5	<0.5	<0.5
Fluorene	µg/L	0.5	<0.5	<0.5
Phenanthrene	µg/L	0.5	<0.5	<0.5
Anthracene	µg/L	0.5	<0.5	<0.5
Fluoranthene	µg/L	0.5	<0.5	<0.5
Pyrene	µg/L	0.5	<0.5	<0.5
Benzo(a)anthracene	µg/L	0.5	<0.5	<0.5
Chrysene	µg/L	0.5	<0.5	<0.5
Benzo(b&j)fluoranthene	µg/L	0.5	<0.5	<0.5
Benzo(k)fluoranthene	µg/L	0.5	<0.5	<0.5
Benzo(b&j&k)fluoranthene	µg/L	0.5	<0.5	<0.5
Benzo(a)pyrene	µg/L	0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L	0.5	<0.5	<0.5
Dibenzo(ah)anthracene	µg/L	0.5	<0.5	<0.5
Benzo(ghi)perylene	µg/L	0.5	<0.5	<0.5
Total PAH	µg/L	0.5	<0.5	<0.5

OC Pesticides in Water [AN420] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Alpha BHC	µg/L	0.2	<0.2
Hexachlorobenzene (HCB)	µg/L	0.2	<0.2
Beta BHC	µg/L	0.2	<0.2
Lindane (gamma BHC)	µg/L	0.2	<0.2
Delta BHC	µg/L	0.2	<0.2
Heptachlor	µg/L	0.2	<0.2
Aldrin	µg/L	0.2	<0.2
Heptachlor epoxide	µg/L	0.2	<0.2
Gamma Chlordane	µg/L	0.2	<0.2
Alpha Chlordane	µg/L	0.2	<0.2
Chlordane (alpha + gamma chlordane)	µg/L	0.2	<0.2
Alpha Endosulfan	µg/L	0.2	<0.2
p,p'-DDE	µg/L	0.2	<0.2
Dieldrin	µg/L	0.2	<0.2
Endrin	µg/L	0.2	<0.2
Beta Endosulfan	µg/L	0.2	<0.2
p,p'-DDD	µg/L	0.2	<0.2
Endrin aldehyde	µg/L	0.2	<0.2
Endosulfan sulphate	µg/L	0.2	<0.2
p,p'-DDT	µg/L	0.2	0.3
Endrin ketone	µg/L	0.2	<0.2
Methoxychlor	µg/L	0.2	<0.2
Mirex	µg/L	0.2	<0.2
Total Aldrin and Dieldrin	µg/L	0.2	<0.2
Total p,p' DDE/DDT/DDD	µg/L	0.2	0.3
Total OC Pesticides	µg/L	0.2	0.3
Total OCP VIC EPA IWRG621	µg/L	0.2	0.3
Total Other OCP VIC EPA IWRG621	µg/L	0.2	<0.2

OP Pesticides in Water [AN420] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Azinphos-methyl	µg/L	0.5	<0.5
Bromophos Ethyl	µg/L	0.5	<0.5
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.5	<0.5
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	0.5	<0.5
Fenitrothion	µg/L	0.5	<0.5
Malathion	µg/L	0.5	<0.5
Methidathion	µg/L	0.5	<0.5
Parathion-ethyl (Parathion)	µg/L	0.5	<0.5
Total OP Pesticides	µg/L	0.5	<0.5



ANALYTICAL RESULTS

SE299989 R0

PCBs in Water [AN420] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
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 PCBs	µg/L	5	<5

Full 8270 SVOC in Water [AN420] Tested: 8/4/2026

PARAMETER	UOM	LOR	BH2M
			WATER - 7/4/2026 SE299989.002
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: 8/4/2026 (continued)

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
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 (Ronnell)	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
Hexachloropropene	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: 8/4/2026 (continued)

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
N-nitroso-pyrrolidine (NPYR)	µg/L	1	<1
4-amino biphenyl	µg/L	1	<1
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
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



ANALYTICAL RESULTS

SE299989 R0

pH in water [AN101] Tested: 8/4/2026

			BH1M	BH2M
			WATER	WATER
			-	-
			7/4/2026	7/4/2026
			SE299989.001	SE299989.002
PARAMETER	UOM	LOR		
pH**	pH Units	0.1	5.2	4.9
Temperature of test*	°C	-	-	-



ANALYTICAL RESULTS

SE299989 R0

Conductivity and TDS by Calculation - Water [AN106] Tested: 8/4/2026

			BH1M	BH2M
			WATER	WATER
			-	-
			7/4/2026	7/4/2026
			SE299989.001	SE299989.002
PARAMETER	UOM	LOR		
Conductivity @ 25 C	µS/cm	2	610	330



ANALYTICAL RESULTS

SE299989 R0

Total Dissolved Solids (TDS) in water [AN113] Tested: 8/4/2026

			BH1M	BH2M
			WATER	WATER
			-	-
			7/4/2026	7/4/2026
			SE299989.001	SE299989.002
PARAMETER	UOM	LOR		
Total Dissolved Solids Dried at 175-185°C	mg/L	10	470	250



ANALYTICAL RESULTS

SE299989 R0

Turbidity [AN119] Tested: 8/4/2026

			BH1M	BH2M
			WATER	WATER
			-	-
			7/4/2026	7/4/2026
PARAMETER	UOM	LOR	SE299989.001	SE299989.002
Turbidity	NTU	0.5	78	230



ANALYTICAL RESULTS

SE299989 R0

Anions by Ion Chromatography in Water [AN245] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Chloride	mg/L	0.05	73
Fluoride	mg/L	0.1	<0.10
Sulfate, SO4	mg/L	1	58
Nitrate Nitrogen, NO3-N	mg/L	0.005	2.3
Bromide	mg/L	0.05	0.55



ANALYTICAL RESULTS

SE299989 R0

Nitrite in Water [AN277] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Nitrite Nitrogen, NO2 as N	mg/L	0.005	0.013
Total Oxidised Nitrogen, NOx-N	mg/L	0.005	2.3



ANALYTICAL RESULTS

SE299989 R0

Ammonia Nitrogen by Discrete Analyser [AN291] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	<0.01

Alkalinity [AN135] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	<5
Bicarbonate Alkalinity as HCO ₃	mg/L	5	<5
Carbonate Alkalinity as CaCO ₃	mg/L	5	<5
Carbonate Alkalinity as CO ₃	mg/L	5	<5
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5
Hydroxide Alkalinity as OH	mg/L	5	<5
Total Alkalinity as CaCO ₃	mg/L	5	<5
Carbonate Hardness as CaCO ₃ *	mg CaCO ₃ /L	2	<2
Non-Carbonate Hardness as CaCO ₃ *	mg CaCO ₃ /L	2	-
Negative Hardness as CaCO ₃ *	mg CaCO ₃ /L	-100	-



ANALYTICAL RESULTS

SE299989 R0

Total Phosphorus by Kjeldahl Digestion DA in Water [AN279/AN293] Tested: 9/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	0.15

Dissolved Oxygen by Membrane Electrode [AN176] Tested: 7/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Temperature*	°C	-	22.9
Dissolved Oxygen**	mg/L	0.5	1.5
Dissolved Oxygen (percent saturation)**	%	1	17.5



ANALYTICAL RESULTS

SE299989 R0

Total and Volatile Suspended Solids (TSS / VSS) [AN114] Tested: 9/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Total Suspended Solids Dried at 103-105°C	mg/L	5	230



ANALYTICAL RESULTS

SE299989 R0

Forms of Carbon [AN190] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Total Organic Carbon as NPOC	mg/L	0.2	0.9

Calculation of Anion-Cation Balance (SAR Calc) [AN121] Tested: 13/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Sum of Ions*	mg/L	10	211
Anion-Cation Balance	%	-100	-0.76
TFSS*	mg/L	10	211
Sodium Adsorption Ratio*	No unit	0.1	5.7



ANALYTICAL RESULTS

SE299989 R0

TKN Kjeldahl Digestion by Discrete Analyser [AN281/292] Tested: 9/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Total Kjeldahl Nitrogen	mg/L	0.05	0.20
Total Nitrogen (calc)	mg/L	0.05	2.5



ANALYTICAL RESULTS

SE299989 R0

Filterable Reactive Phosphorus (FRP) [AN278] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Filterable Reactive Phosphorus as P	mg/L	0.005	0.011



ANALYTICAL RESULTS

SE299989 R0

Redox Potential (Eh) in water [AN240] Tested: 8/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Eh of Sample Relative to Standard H+ Electrode***	mV	-500	371
Temperature of Sample*	°C	0.1	20.2



ANALYTICAL RESULTS

SE299989 R0

Enterococci in Water [AN705] Tested: As stated below

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Date & Time Processed*	No unit	-	2026-04-07 15:17
Intestinal Enterococci*	CFU/100mL	1	6
Notes*	No unit	-	-



ANALYTICAL RESULTS

SE299989 R0

E. coli and Thermotolerant coliforms in Water (CFU) [AN703] Tested: As stated below

			BH2M
			WATER
			-
			7/4/2026
			SE299989.002
PARAMETER	UOM	LOR	
Date & Time Processed*	No unit	-	2026-04-07 15:17
E. coli	CFU/100mL	1	<5 †
Thermotolerant Coliforms	CFU/100mL	1	<5 †



ANALYTICAL RESULTS

SE299989 R0

Total Phenolics in Water [AN295] Tested: 10/4/2026

			BH1M	BH2M
			WATER	WATER
			-	-
			7/4/2026	7/4/2026
PARAMETER	UOM	LOR	SE299989.001	SE299989.002
Total Phenols	mg/L	0.05	<0.05	<0.05



ANALYTICAL RESULTS

SE299989 R0

Total Cyanide in water by Discrete Analyser [AN077/AN287] Tested: 10/4/2026

			BH1M
			WATER
			-
			7/4/2026
			SE299989.001
PARAMETER	UOM	LOR	
Total Cyanide	mg/L	0.004	<0.004

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 9/4/2026

PARAMETER	UOM	LOR	BH1M	BH2M	GW-QD1	GW-QR1
			WATER	WATER	WATER	WATER
			- 7/4/2026 SE299989.001	- 7/4/2026 SE299989.002	- 7/4/2026 SE299989.003	- 7/4/2026 SE299989.004
Arsenic	µg/L	1	<1	<1	<1	<1
Cadmium	µg/L	0.1	0.2	<0.1	<0.1	<0.1
Chromium	µg/L	1	<1	<1	<1	<1
Copper	µg/L	1	150	6	6	<1
Lead	µg/L	1	<1	<1	<1	<1
Nickel	µg/L	1	9	5	4	<1
Zinc	µg/L	5	22	6	7	<5
Aluminium	µg/L	5	140	89	-	-
Antimony	µg/L	1	-	<1	-	-
Barium	µg/L	1	-	9	-	-
Beryllium	µg/L	1	-	<1	-	-
Boron	µg/L	5	-	47	-	-
Cobalt	µg/L	1	-	1	-	-
Iron	µg/L	5	-	230	-	-
Manganese	µg/L	1	-	30	-	-
Molybdenum	µg/L	1	-	<1	-	-
Selenium	µg/L	1	-	<1	-	-
Silver	µg/L	1	-	<1	-	-
Strontium	µg/L	1	-	23	-	-
Uranium	µg/L	1	-	<1	-	-
Vanadium	µg/L	1	-	<1	-	-

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 9/4/2026

PARAMETER	UOM	LOR	BH1M	BH2M
			WATER - 7/4/2026 SE299989.001	WATER - 7/4/2026 SE299989.002
Calcium, Ca	mg/L	0.2	4.7	1.0
Magnesium, Mg	mg/L	0.1	6.8	5.4
Total Hardness by Calculation	mg CaCO3/L	1	40	25
Sodium Adsorption Ratio	No unit	0.2	-	5.7
Sodium, Na	mg/L	0.5	-	65
Potassium, K	mg/L	0.1	-	0.6
Lithium, Li	mg/L	0.005	-	<0.005
Silicon, Si*	mg/L	0.05	-	6.4
Soluble Silicon as Silica, SiO2*	mg/L	0.1	-	14



ANALYTICAL RESULTS

SE299989 R0

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 8/4/2026

			BH1M	BH2M	GW-QD1	GW-QR1
			WATER	WATER	WATER	WATER
			-	-	-	-
			7/4/2026	7/4/2026	7/4/2026	7/4/2026
PARAMETER	UOM	LOR	SE299989.001	SE299989.002	SE299989.003	SE299989.004
Mercury, Hg	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples [AN404] Tested: 9/4/2026

			BH2M
			WATER
			-
			7/4/2026
PARAMETER	UOM	LOR	SE299989.002
Perfluorobutanoic acid (PFBA)	µg/L	0.05	0.10
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	0.36
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	0.25
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	0.03
Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.06
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 (PFTTrDA)	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	0.02
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-Methylperfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.01	<0.01
N-Ethylperfluorooctane 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	0.03
Sum of enHealth PFAS (PFHxS+PFOS+PFOA)	µg/L	0.01	0.09
Sum of US EPA PFAS (PFOS+PFOA)	µg/L	0.01	0.08
Sum of PFAS A	µg/L	0.01	0.36
Sum of PFAS B	µg/L	0.01	0.10
Sum of PFAS C	µg/L	0.01	0.38
Sum of Positive PFAS	µg/L	0.01	0.83

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.
- AN101** pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
- AN106** Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos/cm or µS/cm @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
- AN106** Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present, measured by the conductivity, are present as NaCl.
- AN113** Total Dissolved Solids: A well-mixed filtered sample of known volume is evaporated to dryness at 180°C and the residue weighed. Approximate methods for correlating chemical analysis with dissolved solids are available. Reference APHA 2540 C.
- AN113** The Total Dissolved Solids residue may also be ignited at 550 C and volatile TDS (Organic TDS) and non-volatile TDS (Inorganic) can be determined.
- AN114** Total Suspended and Volatile Suspended Solids: The sample is homogenised by shaking and a known volume is filtered through a pre-weighed GF/C filter paper and washed well with deionised water. The filter paper is dried and reweighed. The TSS is the residue retained by the filter per unit volume of sample. Reference APHA 2540 D. Internal Reference AN114
- AN119** Turbidity by Nephelometry: Small particles in a light beam scatter light at a range of angles. A turbidimeter measures this scatter and reports results compared to turbidity standards, in NTU. This procedure is not suitable for very dark coloured liquids or samples with high solids because light absorption causes artificially low light scatter and low turbidity. Reference APHA 2130B.
- AN121** This method is used to calculate the balance of major Anions and Cations in water samples and converts major ion concentration to milliequivalents and then summed. Anions sum and Cation sum is calculated as a difference and expressed as a percentage.
- AN135** Alkalinity (and forms of) by Titration: The sample is titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
- 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, NO ₂ , NO ₃ and SO ₄ are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN277	Nitrite ions, when reacted with a reagent containing sulphanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride produce a highly coloured azo dye that is measured photometrically at 540nm.
AN278	Filterable Reactive Phosphorus by DA (determined on filtered sample): Orthophosphate reacts with ammonium molybdate (Mo VI) and potassium antimonyl tartrate (Sb III) in acid medium to form an antimony-phosphomolybdate complex. This complex is subsequently reduced with ascorbic acid to form a blue colour and the absorbance is read at 880 nm. The sensitivity of the automated method is 10-20 times that of the macro method. Reference APHA 4500-P F
AN279/AN293(Sydney)	The sample is digested with Sulphuric acid, K ₂ SO ₄ and CuSO ₄ . All forms of phosphorus are converted into orthophosphate. The digest is cooled and placed on the discrete analyser for colorimetric analysis.
AN281	An unfiltered water or soil sample is first digested in a block digester with sulfuric acid, K ₂ SO ₄ and CuSO ₄ . The ammonia produced following digestion is then measured colourimetrically using the Discrete Analyser. A portion of the digested sample is buffered to an alkaline pH, and interfering cations are complexed. The ammonia then reacts with salicylate and hypochlorite to give a blue colour whose absorbance is measured at 660nm and compared with calibration standards. This is proportional to the concentration of Total Kjeldahl Nitrogen in the original sample.
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 Dichloroisocyanate, 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-pyrazolin-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 Recoverable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken . This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.

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.

AN703

A known volume of water is passed through a membrane of known pore size. The membrane is placed on a selective agar plate and incubated. The volume of sample filtered depends upon the expected count. Referenced to AS4276.5.

AN705

A known volume of water is passed through a membrane of known pore size. The membrane is placed on a selective agar plate and incubated. The volume of sample filtered depends upon the expected count. Referenced to AS/NZS4276.9 (ISO 7899-2:2000 MOD).

Calculation

Free and Total Carbon Dioxide may be calculated using alkalinity forms only when the samples TDS is <500mg/L. If TDS is >500mg/L free or total carbon dioxide cannot be reported . APHA4500CO2 D.

FOOTNOTES

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

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

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

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

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

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

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

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

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

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STATEMENT OF QA/QC PERFORMANCE

SE299989 R0

CLIENT DETAILS

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Project **E26992 35-39 Darley St., Mona Vale NSW**
Order Number **E26992**
Samples 6

LABORATORY DETAILS

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SGS Reference **SE299989 R0**
Date Received 07 Apr 2026
Date Reported 13 Apr 2026

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:

Matrix Spike	Ammonia Nitrogen by Discrete Analyser	1 item
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SAMPLE SUMMARY

Type of documentation received	COC	Date documentation received	7/4/2026
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.1°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)-ENVJAN135

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383857	07 Apr 2026	07 Apr 2026	21 Apr 2026	08 Apr 2026	21 Apr 2026	09 Apr 2026

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-ENVJAN291

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383849	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	08 Apr 2026

Anions by Ion Chromatography in Water

Method: ME-(AU)-ENVJAN245

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383769	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	10 Apr 2026

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-ENVJAN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383803	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	08 Apr 2026
BH2M	SE299989.002	LB383803	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	08 Apr 2026

Dissolved Oxygen by Membrane Electrode

Method: ME-(AU)-ENVJAN176

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383687	07 Apr 2026	07 Apr 2026	08 Apr 2026	07 Apr 2026	08 Apr 2026	07 Apr 2026

E. coli and Thermotolerant coliforms in Water (CFU)

Method: ME-(AU)-ENVJAN703

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383703	07 Apr 2026	07 Apr 2026	08 Apr 2026	07 Apr 2026	10 Apr 2026	07 Apr 2026

Enterococci in Water

Method: ME-(AU)-ENVJAN705

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383703	07 Apr 2026	07 Apr 2026	08 Apr 2026	07 Apr 2026	10 Apr 2026	07 Apr 2026

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-ENVJAN278

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383849	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	08 Apr 2026

Forms of Carbon

Method: ME-(AU)-ENVJAN190

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383770	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	14 Apr 2026	09 Apr 2026

Full 8270 SVOC in Water

Method: ME-(AU)-ENVJAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
BH2M	SE299989.002	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QD1	SE299989.003	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QR1	SE299989.004	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026

Mercury (dissolved) in Water

Method: ME-(AU)-ENVJAN311(Perth)/JAN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383762	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	09 Apr 2026
BH2M	SE299989.002	LB383762	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	09 Apr 2026
GW-QD1	SE299989.003	LB383762	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	09 Apr 2026
GW-QR1	SE299989.004	LB383762	07 Apr 2026	07 Apr 2026	05 May 2026	08 Apr 2026	05 May 2026	09 Apr 2026

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-ENVJAN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383927	07 Apr 2026	07 Apr 2026	04 Oct 2026	09 Apr 2026	04 Oct 2026	10 Apr 2026
BH2M	SE299989.002	LB383927	07 Apr 2026	07 Apr 2026	04 Oct 2026	09 Apr 2026	04 Oct 2026	10 Apr 2026

Nitrite in Water

Method: ME-(AU)-ENVJAN277

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383849	07 Apr 2026	07 Apr 2026	11 Apr 2026	08 Apr 2026	11 Apr 2026	08 Apr 2026

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

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
BH2M	SE299989.002	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QD1	SE299989.003	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QR1	SE299989.004	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
BH2M	SE299989.002	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QD1	SE299989.003	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QR1	SE299989.004	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026

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	SE299989.001	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
BH2M	SE299989.002	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QD1	SE299989.003	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QR1	SE299989.004	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
BH2M	SE299989.002	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QD1	SE299989.003	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QR1	SE299989.004	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026

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
BH2M	SE299989.002	LB383937	07 Apr 2026	07 Apr 2026	05 May 2026	09 Apr 2026	07 May 2026	10 Apr 2026

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383803	07 Apr 2026	07 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026
BH2M	SE299989.002	LB383803	07 Apr 2026	07 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026

Redox Potential (Eh) in water

Method: ME-(AU)-[ENV]AN240

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383891	07 Apr 2026	07 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026

TKN Kjeldahl Digestion by Discrete Analyser

Method: ME-(AU)-[ENV]AN281/292

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383972	07 Apr 2026	07 Apr 2026	05 May 2026	09 Apr 2026	05 May 2026	10 Apr 2026

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
BH2M	SE299989.002	LB383980	07 Apr 2026	07 Apr 2026	14 Apr 2026	09 Apr 2026	16 Apr 2026	09 Apr 2026

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	SE299989.001	LB384116	07 Apr 2026	07 Apr 2026	21 Apr 2026	10 Apr 2026	21 Apr 2026	13 Apr 2026

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	SE299989.001	LB383798	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	14 Apr 2026	09 Apr 2026
BH2M	SE299989.002	LB383798	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	14 Apr 2026	09 Apr 2026

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB384194	07 Apr 2026	07 Apr 2026	21 Apr 2026	10 Apr 2026	21 Apr 2026	10 Apr 2026
BH2M	SE299989.002	LB384194	07 Apr 2026	07 Apr 2026	21 Apr 2026	10 Apr 2026	21 Apr 2026	10 Apr 2026

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

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2M	SE299989.002	LB383972	07 Apr 2026	07 Apr 2026	05 May 2026	09 Apr 2026	05 May 2026	10 Apr 2026

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	SE299989.001	LB383923	07 Apr 2026	07 Apr 2026	04 Oct 2026	09 Apr 2026	04 Oct 2026	10 Apr 2026
BH2M	SE299989.002	LB383923	07 Apr 2026	07 Apr 2026	04 Oct 2026	09 Apr 2026	04 Oct 2026	10 Apr 2026
GW-QD1	SE299989.003	LB383923	07 Apr 2026	07 Apr 2026	04 Oct 2026	09 Apr 2026	04 Oct 2026	10 Apr 2026
GW-QR1	SE299989.004	LB383923	07 Apr 2026	07 Apr 2026	04 Oct 2026	09 Apr 2026	04 Oct 2026	10 Apr 2026

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	SE299989.001	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
BH2M	SE299989.002	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QD1	SE299989.003	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026
GW-QR1	SE299989.004	LB383757	07 Apr 2026	07 Apr 2026	14 Apr 2026	08 Apr 2026	18 May 2026	13 Apr 2026

Turbidity

Method: ME-(AU)-[ENV]AN119

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB383855	07 Apr 2026	07 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026
BH2M	SE299989.002	LB383855	07 Apr 2026	07 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026	08 Apr 2026

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE299989.001	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
BH2M	SE299989.002	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	13 Apr 2026
GW-QD1	SE299989.003	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
GW-QR1	SE299989.004	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
GW-TB1	SE299989.005	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
GW-TS1	SE299989.006	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026

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	SE299989.001	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
BH2M	SE299989.002	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
GW-QD1	SE299989.003	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
GW-QR1	SE299989.004	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	10 Apr 2026
GW-TB1	SE299989.005	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	13 Apr 2026
GW-TS1	SE299989.006	LB384024	07 Apr 2026	07 Apr 2026	21 Apr 2026	09 Apr 2026	21 Apr 2026	13 Apr 2026

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 identifier 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)	BH2M	SE299989.002	%	40 - 130%	104
2-fluorobiphenyl (Surrogate)	BH2M	SE299989.002	%	40 - 130%	92
d14-p-terphenyl (Surrogate)	BH2M	SE299989.002	%	40 - 130%	106
d5-nitrobenzene (Surrogate)	BH2M	SE299989.002	%	40 - 130%	86
d5-phenol (Surrogate)	BH2M	SE299989.002	%	20 - 130%	67

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH2M	SE299989.002	%	40 - 130%	60

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH2M	SE299989.002	%	40 - 130%	62
d14-p-terphenyl (Surrogate)	BH2M	SE299989.002	%	40 - 130%	63
d5-nitrobenzene (Surrogate)	BH2M	SE299989.002	%	40 - 130%	60

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M	SE299989.001	%	40 - 130%	69
	BH2M	SE299989.002	%	40 - 130%	62
d14-p-terphenyl (Surrogate)	BH1M	SE299989.001	%	40 - 130%	70
	BH2M	SE299989.002	%	40 - 130%	63
d5-nitrobenzene (Surrogate)	BH1M	SE299989.001	%	40 - 130%	66
	BH2M	SE299989.002	%	40 - 130%	60

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	BH2M	SE299989.002	%	40 - 130%	60

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	BH2M	SE299989.002	%	10 - 150%	57
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 300%	80
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 300%	92
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 300%	99
(13C2-PFDoA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	10 - 150%	64
(13C3-PFBS) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	94
(13C3-PFHxS) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	99
(13C4_PFOA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	97
(13C4-PFBA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	5 - 150%	76
(13C4-PFHpA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	105
(13C5-PFHxA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	91
(13C5-PFPeA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	35 - 150%	86
(13C6-PFDA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	84
(13C7-PFUdA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	30 - 150%	81
(13C8-PFOS) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	85
(13C8-PFOSA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	20 - 150%	72
(13C9-PFNA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	40 - 150%	104
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	10 - 150%	46
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	30 - 170%	49
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	10 - 150%	48
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	20 - 150%	48
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	10 - 150%	53
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery Standard	BH2M	SE299989.002	%	10 - 150%	49

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M	SE299989.001	%	40 - 130%	100
	BH2M	SE299989.002	%	40 - 130%	100
	GW-QD1	SE299989.003	%	40 - 130%	100
	GW-QR1	SE299989.004	%	40 - 130%	99

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 identifier 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	SE299989.005	%	40 - 130%	99
	GW-TS1	SE299989.006	%	40 - 130%	101
d4-1,2-dichloroethane (Surrogate)	BH1M	SE299989.001	%	40 - 130%	99
	BH2M	SE299989.002	%	40 - 130%	98
	GW-QD1	SE299989.003	%	40 - 130%	99
	GW-QR1	SE299989.004	%	40 - 130%	98
	GW-TB1	SE299989.005	%	40 - 130%	97
	GW-TS1	SE299989.006	%	40 - 130%	105
d8-toluene (Surrogate)	BH1M	SE299989.001	%	40 - 130%	94
	BH2M	SE299989.002	%	40 - 130%	95
	GW-QD1	SE299989.003	%	40 - 130%	94
	GW-QR1	SE299989.004	%	40 - 130%	94
	GW-TB1	SE299989.005	%	40 - 130%	93
	GW-TS1	SE299989.006	%	40 - 130%	108

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M	SE299989.001	%	40 - 130%	100
	BH2M	SE299989.002	%	40 - 130%	100
	GW-QD1	SE299989.003	%	40 - 130%	100
	GW-QR1	SE299989.004	%	40 - 130%	99
d4-1,2-dichloroethane (Surrogate)	BH1M	SE299989.001	%	60 - 130%	99
	BH2M	SE299989.002	%	60 - 130%	98
	GW-QD1	SE299989.003	%	60 - 130%	99
	GW-QR1	SE299989.004	%	60 - 130%	98
d8-toluene (Surrogate)	BH1M	SE299989.001	%	40 - 130%	94
	BH2M	SE299989.002	%	40 - 130%	95
	GW-QD1	SE299989.003	%	40 - 130%	94
	GW-QR1	SE299989.004	%	40 - 130%	94

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
LB383857.001	Bicarbonate Alkalinity as CaCO ₃	mg/L	5	<5
	Carbonate Alkalinity as CaCO ₃	mg/L	5	<5
	Total Alkalinity as CaCO ₃	mg/L	5	<5

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]AN291

Sample Number	Parameter	Units	LOR	Result
LB383849.001	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
LB383769.001	Fluoride	mg/L	0.1	<0.10
	Chloride	mg/L	0.05	<0.05
	Bromide	mg/L	0.05	<0.05
	Nitrate Nitrogen, NO ₃ -N	mg/L	0.005	<0.005
	Sulfate, SO ₄	mg/L	1	<1.0

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB383803.001	Conductivity @ 25 C	µS/cm	2	<2

Dissolved Oxygen by Membrane Electrode

Method: ME-(AU)-[ENV]AN176

Sample Number	Parameter	Units	LOR	Result
LB383687.001	Dissolved Oxygen**	mg/L	0.5	<0.5

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]AN278

Sample Number	Parameter	Units	LOR	Result
LB383849.001	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
LB383770.001	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
LB383757.001	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

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Full 8270 SVOC in Water (continued)

Method: ME-(AU)-ENVJAN420

Sample Number		Parameter	Units	LOR	Result	
LB383757.001	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 (Ronnell)		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		
	04-PCB UPAC(7) Congeners	Sulfotepp	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		
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	

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Full 8270 SVOC in Water (continued)

Method: ME-(AU)-ENVJAN420

Sample Number		Parameter	Units	LOR	Result
LB383757.001	05-SVCH (CI 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
		Hexachloropropene	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
	06-Phthalates	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
	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
	12-Haloethers	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
	13-Other SVOCs	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

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Full 8270 SVOC in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB383757.001	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
	Surrogates	4-nitrophenol	µg/L	1	<1
		d5-phenol (Surrogate)	%	-	88
		d5-nitrobenzene (Surrogate)	%	-	116
		2-fluorobiphenyl (Surrogate)	%	-	118
		2,4,6-Tribromophenol (Surrogate)	%	-	125
		d14-p-terphenyl (Surrogate)	%	-	128

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB383762.001	Mercury, Hg	mg/L	0.0001	0.0001

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result
LB383927.001	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
LB383849.001	Nitrite Nitrogen, NO ₂ as N	mg/L	0.005	<0.005

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB383757.001	Alpha BHC	µg/L	0.2	<0.2
	Hexachlorobenzene (HCB)	µg/L	0.2	<0.2
	Beta BHC	µg/L	0.2	<0.2
	Lindane (gamma BHC)	µg/L	0.2	<0.2
	Delta BHC	µg/L	0.2	<0.2
	Heptachlor	µg/L	0.2	<0.2
	Aldrin	µg/L	0.2	<0.2
	Heptachlor epoxide	µg/L	0.2	<0.2
	Gamma Chlordane	µg/L	0.2	<0.2
	Alpha Chlordane	µg/L	0.2	<0.2
	Chlordane (alpha + gamma chlordane)	µg/L	0.2	<0.2
	Alpha Endosulfan	µg/L	0.2	<0.2
	p,p'-DDE	µg/L	0.2	<0.2
	Dieldrin	µg/L	0.2	<0.2
	Endrin	µg/L	0.2	<0.2
	Beta Endosulfan	µg/L	0.2	<0.2
	p,p'-DDD	µg/L	0.2	<0.2
	Endrin aldehyde	µg/L	0.2	<0.2
	Endosulfan sulphate	µg/L	0.2	<0.2
	p,p'-DDT	µg/L	0.2	<0.2
	Endrin ketone	µg/L	0.2	<0.2
	Methoxychlor	µg/L	0.2	<0.2

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OC Pesticides in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB383757.001	Mirex	µg/L	0.2	<0.2

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB383757.001	Azinphos-methyl	µg/L	0.5	<0.5
	Bromophos Ethyl	µg/L	0.5	<0.5
	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.5	<0.5
	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	0.5	<0.5
	Fenitrothion	µg/L	0.5	<0.5
	Malathion	µg/L	0.5	<0.5
	Methidathion	µg/L	0.5	<0.5
	Parathion-ethyl (Parathion)	µg/L	0.5	<0.5

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB383757.001	Naphthalene	µg/L	0.5	<0.5
	2-methylnaphthalene	µg/L	0.5	<0.5
	1-methylnaphthalene	µg/L	0.5	<0.5
	Acenaphthylene	µg/L	0.5	<0.5
	Acenaphthene	µg/L	0.5	<0.5
	Fluorene	µg/L	0.5	<0.5
	Phenanthrene	µg/L	0.5	<0.5
	Anthracene	µg/L	0.5	<0.5
	Fluoranthene	µg/L	0.5	<0.5
	Pyrene	µg/L	0.5	<0.5
	Benzo(a)anthracene	µg/L	0.5	<0.5
	Chrysene	µg/L	0.5	<0.5
	Benzo(b&j)fluoranthene	µg/L	0.5	<0.5
	Benzo(k)fluoranthene	µg/L	0.5	<0.5
	Benzo(b&j&k)fluoranthene	µg/L	0.5	<0.5
	Benzo(a)pyrene	µg/L	0.5	<0.5
	Indeno(1,2,3-cd)pyrene	µg/L	0.5	<0.5
	Dibenzo(ah)anthracene	µg/L	0.5	<0.5
	Benzo(ghi)perylene	µg/L	0.5	<0.5

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB383757.001	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
LB383937.001	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
	Perfluorotridecanoic acid (PFTTrDA)	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

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Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples (continued)

Method: ME-(AU)-[ENV]AN404

Sample Number	Parameter	Units	LOR	Result
LB383937.001	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-Methylperfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.01	<0.01
	N-Ethylperfluorooctane 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
LB383980.001	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
LB384116.001	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
LB383798.001	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
LB384194.001	Total Phenols	mg/L	0.05	<0.05

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293

Sample Number	Parameter	Units	LOR	Result
LB383972.001	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
LB383923.001	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
	Lead	µg/L	1	<1
	Manganese	µg/L	1	<1
	Molybdenum	µg/L	1	<1

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Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB383923.001	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
LB383923.025	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
	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
LB383757.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	100	<100
	TRH C29-C36	µg/L	100	<100
	TRH F Bands			
	TRH >C10-C16	µg/L	50	<50
	TRH >C16-C34 (F3)	µg/L	100	<100
	TRH >C34-C40 (F4)	µg/L	100	<100

Turbidity

Method: ME-(AU)-[ENV]AN119

Sample Number	Parameter	Units	LOR	Result
LB383855.001	Turbidity	NTU	0.5	<0.5

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB384024.001	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

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)-ENVJAN433

Sample Number		Parameter	Units	LOR	Result
LB384024.001	Halogenated Aliphatics	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
	Halogenated Aromatics	Hexachlorobutadiene	µg/L	0.5	<0.5
		Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		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
	Monocyclic Aromatic Hydrocarbons	1,2,3-trichlorobenzene	µg/L	0.5	<0.5
		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)	%	-	98
		d8-toluene (Surrogate)	%	-	93
		Bromofluorobenzene (Surrogate)	%	-	98
	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)-ENVJAN433

Sample Number	Parameter	Units	LOR
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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.

Volatile Petroleum Hydrocarbons in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result
LB384024.001	TRH C6-C9	µg/L	40	<40
	Surrogates			
	d4-1,2-dichloroethane (Surrogate)	%	-	98
	d8-toluene (Surrogate)	%	-	93
	Bromofluorobenzene (Surrogate)	%	-	98

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier 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]JAN135

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299892.010	LB383857.013	Bicarbonate Alkalinity as CaCO ₃	mg/L	5	8	8	78	1
		Carbonate Alkalinity as CaCO ₃	mg/L	5	<5	<5	200	0
		Total Alkalinity as CaCO ₃	mg/L	5	8	8	78	1
SE299989.002	LB383857.021	Bicarbonate Alkalinity as CaCO ₃	mg/L	5	<5	<5	200	0
		Carbonate Alkalinity as CaCO ₃	mg/L	5	<5	<5	200	0
		Total Alkalinity as CaCO ₃	mg/L	5	<5	<5	200	0

Ammonia Nitrogen by Discrete Analyser

Method: ME-(AU)-[ENV]JAN291

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300007.001	LB383849.014	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	3.6	3.6	15	1
SE300016.004	LB383849.018	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	7.0	6.9	15	1

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]JAN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299933.001	LB383769.013	Sulfate, SO ₄	mg/L	1	610	610	15	1

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]JAN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.001	LB383803.014	Conductivity @ 25 C	µS/cm	2	610	590	15	3

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]JAN278

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300016.004	LB383849.018	Filterable Reactive Phosphorus as P	mg/L	0.005	14	13	15	2

Forms of Carbon

Method: ME-(AU)-[ENV]JAN190

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.002	LB383770.009	Total Organic Carbon as NPOC	mg/L	0.2	0.9	0.8	39	5

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]JAN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.003	LB383762.014	Mercury, Hg	µg/L	0.0001	<0.0001	0.0000	200	200
SE299994.027	LB383762.018	Mercury, Hg	µg/L	0.0001	<0.00005	<0.00005	200	44

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]JAN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.002	LB383927.023	Calcium, Ca	mg/L	0.2	1.0	1.0	35	0
		Lithium, Li	mg/L	0.005	<0.005	<0.005	200	0
		Magnesium, Mg	mg/L	0.1	5.4	5.4	17	1
		Potassium, K	mg/L	0.1	0.6	0.6	31	1
		Silicon, Si*	mg/L	0.05	6.4	6.3	16	0
		Sodium, Na	mg/L	0.5	65	65	16	0

Nitrite in Water

Method: ME-(AU)-[ENV]JAN277

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300007.001	LB383849.014	Nitrite Nitrogen, NO ₂ as N	mg/L	0.005	0.66	0.66	16	1
SE300016.004	LB383849.018	Nitrite Nitrogen, NO ₂ as N	mg/L	0.005	1.9	2.0	15	1

pH in water

Method: ME-(AU)-[ENV]JAN101

Original	Duplicate	Parameter	Units	LOR
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Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier 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 (continued)

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.001	LB383803.014	pH**	pH Units	0.1	5.2	5.1	17	1
SE300001.001	LB383803.017	pH**	pH Units	0.1	7.5	7.5	16	0

Redox Potential (Eh) in water

Method: ME-(AU)-[ENV]AN240

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300061.001	LB383891.004	Eh of Sample Relative to Standard H+ Electrode***	mV	-500	189	190	15	0

TKN Kjeldahl Digestion by Discrete Analyser

Method: ME-(AU)-[ENV]AN281/292

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300013.001	LB383972.014	Total Kjeldahl Nitrogen	mg/L	0.05	46	46	15	1
SE300014.001	LB383972.027	Total Kjeldahl Nitrogen	mg/L	0.05	160	160	15	3

Total and Volatile Suspended Solids (TSS / VSS)

Method: ME-(AU)-[ENV]AN114

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300029.001	LB383980.013	Total Suspended Solids Dried at 103-105°C	mg/L	5	21	19	40	10
SE300085.002	LB383980.025	Total Suspended Solids Dried at 103-105°C	mg/L	5	23	24	37	4

Total Dissolved Solids (TDS) in water

Method: ME-(AU)-[ENV]AN113

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.002	LB383798.011	Total Dissolved Solids Dried at 175-185°C	mg/L	10	250	250	19	1

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300154.001	LB384194.016	Total Phenols	mg/L	0.05	<0.05	<0.05	200	0
SE300157.001	LB384194.014	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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE300013.001	LB383972.014	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	23	23	15	1
SE300014.001	LB383972.027	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	0.79	0.94	17	17

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299952.001	LB383923.014	Aluminium	µg/L	5	130	120	19	5
		Antimony	µg/L	1	<1	<1	118	0
		Arsenic	µg/L	1	<1	<1	200	0
		Barium	µg/L	1	35	35	18	1
		Beryllium	µg/L	1	<1	<1	200	0
		Boron	µg/L	5	99	99	20	0
		Cadmium	µg/L	0.1	0.50	0.59	33	15
		Chromium	µg/L	1	<1	<1	143	0
		Cobalt	µg/L	1	3	3	53	1
		Copper	µg/L	1	12	11	24	3
		Iron	µg/L	5	93	91	20	2
		Lead	µg/L	1	2	2	66	0
		Manganese	µg/L	1	84	82	16	2
		Molybdenum	µg/L	1	<1	<1	200	0
		Nickel	µg/L	1	7	7	30	3
		Selenium	µg/L	1	<1	<1	175	0
		Silver	µg/L	1	<1	<1	200	0
		Strontium	µg/L	1	60	63	17	5
		Uranium	µg/L	1	<1	<1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier 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]JAN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299952.001	LB383923.014	Vanadium	µg/L	1	<1	<1	200	0
		Zinc	µg/L	5	330	320	17	2
SE299989.002	LB383923.028	Aluminium	µg/L	5	89	92	21	3
		Antimony	µg/L	1	<1	<1	200	0
		Arsenic	µg/L	1	<1	<1	200	0
		Barium	µg/L	1	9	9	26	2
		Beryllium	µg/L	1	<1	<1	200	0
		Boron	µg/L	5	47	47	26	2
		Cadmium	µg/L	0.1	<0.1	<0.1	200	0
		Chromium	µg/L	1	<1	<1	200	0
		Cobalt	µg/L	1	1	1	110	5
		Copper	µg/L	1	6	6	31	6
		Iron	µg/L	5	230	240	17	5
		Lead	µg/L	1	<1	<1	200	0
		Manganese	µg/L	1	30	31	18	3
		Molybdenum	µg/L	1	<1	<1	200	0
		Nickel	µg/L	1	5	5	37	5
		Selenium	µg/L	1	<1	<1	200	0
		Silver	µg/L	1	<1	<1	200	0
		Strontium	µg/L	1	23	24	19	2
		Uranium	µg/L	1	<1	<1	200	0
		Vanadium	µg/L	1	<1	<1	200	0
		Zinc	µg/L	5	6	6	100	3
SE299992.023	LB383923.032	Arsenic	µg/L	1	<1	<1	200	0
		Cadmium	µg/L	0.1	<0.06	<0.06	200	0
		Chromium	µg/L	1	<1	<1	187	0
		Copper	µg/L	1	<1	<1	200	0
		Lead	µg/L	1	<1	<1	200	0
		Nickel	µg/L	1	<1	<1	200	0
		Zinc	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]JAN403

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.003	LB383757.014	TRH C10-C14	µg/L	50	<50	<50	200	0
		TRH C15-C28	µg/L	100	<100	<100	200	0
		TRH C29-C36	µg/L	100	<100	<100	200	0
		Total TRH (C10-C36)	µg/L	50	<50	<50	200	0
		TRH >C10-C16	µg/L	50	<50	<50	200	0
		TRH >C10-C16 - Naphthalene (F2)	µg/L	50	<50	<50	200	0
		TRH >C16-C34 (F3)	µg/L	100	<100	<100	200	0
		TRH >C34-C40 (F4)	µg/L	100	<100	<100	200	0
		Total TRH (>C10-C40)	µg/L	50	<50	<50	200	0

Turbidity

Method: ME-(AU)-[ENV]JAN119

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299989.002	LB383855.008	Turbidity	NTU	0.5	230	230	15	1

VOCs in Water

Method: ME-(AU)-[ENV]JAN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE299989.003	LB384024.022	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	200	0	
			Aromatic	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	-	9.9	12.3	30	21	
			d8-toluene (Surrogate)	µg/L	-	9.4	12.3	30	26	
			Bromofluorobenzene (Surrogate)	µg/L	-	10.0	11.5	30	15	
		Totals	Total BTEX	µg/L	3	<3	200	0		
SE299990.009	LB384024.023	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	200	0	

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier 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

VOCs in Water (continued)

Method: ME-(AU)-ENVJAN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE299990.009	LB384024.023	Monocyclic	Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Aromatic	Ethylbenzene	µg/L	0.5	<0.5	<0.5	200
			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	-	9.8	12.5	30	24
			d8-toluene (Surrogate)	µg/L	-	9.4	12.5	30	28
				Bromofluorobenzene (Surrogate)	µg/L	-	9.9	11.8	30
		Totals	Total BTEX	µg/L	3	<3	<3	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-ENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE299989.003	LB384024.022	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	-	9.9	12	30	21
		d8-toluene (Surrogate)	µg/L	-	9.4	12	30	26	
		Bromofluorobenzene (Surrogate)	µg/L	-	10.0	12	30	15	
		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	
SE299990.009	LB384024.023	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	-	9.8	12	30	24
		d8-toluene (Surrogate)	µg/L	-	9.4	12	30	28	
		Bromofluorobenzene (Surrogate)	µg/L	-	9.9	12	30	18	
		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]JAN291

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383849.002	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	2.5	2.5	80 - 120	99

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]JAN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383769.002	Fluoride	mg/L	0.1	1.9	2	80 - 120	94
	Chloride	mg/L	0.05	19	20	80 - 120	94
	Bromide	mg/L	0.05	1.9	2	80 - 120	97
	Nitrate Nitrogen, NO ₃ -N	mg/L	0.005	2.0	2	80 - 120	102
	Sulfate, SO ₄	mg/L	1	19	20	80 - 120	95

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]JAN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383803.002	Conductivity @ 25 C	µS/cm	2	970	1015	85 - 115	96

Filterable Reactive Phosphorus (FRP)

Method: ME-(AU)-[ENV]JAN278

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383849.002	Filterable Reactive Phosphorus as P	mg/L	0.005	0.099	0.1	80 - 120	99

Forms of Carbon

Method: ME-(AU)-[ENV]JAN190

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383770.002	Total Organic Carbon as NPOC	mg/L	0.2	18	20	80 - 120	91

Full 8270 SVOC in Water

Method: ME-(AU)-[ENV]JAN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383757.002	01-PAHs	Acenaphthene	µg/L	0.1	43	40	60 - 140	107
		Acenaphthylene	µg/L	0.1	44	40	60 - 140	109
		Anthracene	µg/L	0.1	48	40	60 - 140	120
		Benzo(a)pyrene	µg/L	0.1	47	40	60 - 140	119
		Fluoranthene	µg/L	0.1	42	40	60 - 140	104
		Naphthalene	µg/L	0.1	42	40	60 - 140	104
		Phenanthrene	µg/L	0.1	44	40	60 - 140	110
	02-OCs	Pyrene	µg/L	0.1	41	40	60 - 140	103
		Aldrin	µg/L	0.1	3.4	4	60 - 140	85
		Delta-BHC	µg/L	0.1	4.0	4	60 - 140	100
		p,p-DDT	µg/L	0.1	4.1	4	60 - 140	103
		Dieldrin	µg/L	0.1	4.3	4	60 - 140	109
		Endrin	µg/L	0.1	3.2	4	60 - 140	80
		Heptachlor	µg/L	0.1	3.0	4	60 - 140	76
	03-OPs	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	9.2	8	60 - 140	115
		Diazinon (Dimpylate)	µg/L	0.5	10	8	60 - 140	129
		Dichlorvos	µg/L	0.5	11	8	60 - 140	137
		Ethion	µg/L	0.2	10	8	60 - 140	128
	05-SVCH (Cl Benzenes,	Hexachlorobenzene (HCB)	µg/L	0.1	3.9	4	60 - 140	99
		Hexachlorobutadiene	µg/L	0.5	4.1	4	60 - 140	103
		Hexachloroethane	µg/L	0.5	4.0	4	60 - 140	101
		Pentachlorobenzene	µg/L	0.5	4.0	4	60 - 140	99
		1,2,3,4-tetrachlorobenzene	µg/L	0.5	4.3	4	60 - 140	109
	06-Phthalates	Bis(2-ethylhexyl)phthalate	µg/L	10	<10	8	60 - 140	112
		Butyl benzyl phthalate	µg/L	1	7	8	60 - 140	93
		Di-n-butyl phthalate	µg/L	10	<10	8	60 - 140	93
		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	9	8	60 - 140	116
	09-Nitrosamine	N-nitroso-di-n-propylamine (NDPA)	µg/L	1	41	32	60 - 140	130
	10-Nitroaromat	Pentachloronitrobenzene (quintozene)	µg/L	1	5	4	60 - 140	121

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 %
LB383757.002	14-Speciated Routine	2,4-dichlorophenol	µg/L	0.5	46	40	60 - 140
		Phenol	µg/L	0.5	50	40	60 - 140
		2,4,6-trichlorophenol	µg/L	0.5	53	40	60 - 140
		Pentachlorophenol	µg/L	0.5	49	40	60 - 140
	Surrogates	d5-phenol (Surrogate)	µg/L	-	2.4	2	40 - 130
		d5-nitrobenzene (Surrogate)	µg/L	-	0.64	0.5	40 - 130
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.53	0.5	40 - 130
		2,4,6-Tribromophenol (Surrogate)	µg/L	-	5.3	5	40 - 130
		d14-p-terphenyl (Surrogate)	µg/L	-	0.51	0.5	40 - 130

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383927.002	Calcium, Ca	mg/L	0.2	51	50.5	80 - 120	101
	Lithium, Li	mg/L	0.005	0.10	0.1	80 - 120	100
	Magnesium, Mg	mg/L	0.1	47	50.5	80 - 120	93
	Potassium, K	mg/L	0.1	48	55	80 - 120	87
	Silicon, Si*	mg/L	0.05	0.30	0.25	80 - 120	118
	Sodium, Na	mg/L	0.5	49	50.5	80 - 120	97

Nitrite in Water

Method: ME-(AU)-[ENV]AN277

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383849.002	Nitrite Nitrogen, NO ₂ as N	mg/L	0.005	0.096	0.1	80 - 120	96

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383757.002	Lindane (gamma BHC)	µg/L	0.2	7.6	10	60 - 140	76
	Heptachlor	µg/L	0.2	8.4	10	60 - 140	84
	Aldrin	µg/L	0.2	8.0	10	60 - 140	80
	Dieldrin	µg/L	0.2	9.8	10	60 - 140	98
	Endrin	µg/L	0.2	8.5	10	60 - 140	85
	p,p'-DDT	µg/L	0.2	11	10	60 - 140	106

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383757.002	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.5	8.6	10	60 - 140	86
	Diazinon (Dimpylate)	µg/L	0.5	10	10	60 - 140	100
	Dichlorvos	µg/L	0.5	8.0	10	60 - 140	80
	Ethion	µg/L	0.5	9.2	10	60 - 140	92
	Surrogates	2-fluorobiphenyl (Surrogate)	µg/L	-	0.35	0.5	40 - 130
		d14-p-terphenyl (Surrogate)	µg/L	-	0.39	0.5	40 - 130
		d5-nitrobenzene (Surrogate)	µg/L	-	0.35	0.5	40 - 130

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383757.002	Naphthalene	µg/L	0.5	17	20	60 - 140	86
	Acenaphthylene	µg/L	0.5	17	20	60 - 140	84
	Acenaphthene	µg/L	0.5	18	20	60 - 140	90
	Phenanthrene	µg/L	0.5	19	20	60 - 140	97
	Anthracene	µg/L	0.5	18	20	60 - 140	92
	Fluoranthene	µg/L	0.5	20	20	60 - 140	101
	Pyrene	µg/L	0.5	21	20	60 - 140	106
	Benzo(a)pyrene	µg/L	0.5	19	20	60 - 140	95
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.35	0.5	40 - 130
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.35	0.5	40 - 130
		d14-p-terphenyl (Surrogate)	µg/L	-	0.39	0.5	40 - 130

PCBs in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383757.002	Arochlor 1260	µg/L	1	9	10	60 - 140	90

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 %
LB383937.002	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	0.20	0.2	40 - 160	99
	Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.20	0.2	40 - 160	102
	Perfluorononanoic acid (PFNA)	µg/L	0.01	0.22	0.2	40 - 160	111
	Perfluorodecanoic acid (PFDA)	µg/L	0.01	0.21	0.2	40 - 160	103
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	0.22	0.2	40 - 160	111
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	0.14	0.2	40 - 160	72
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.16	0.2	40 - 160	82
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.01	0.20	0.2	40 - 160	100

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383803.003	pH**	pH Units	0.1	7.4	7.415	98 - 102	100

Redox Potential (Eh) in water

Method: ME-(AU)-[ENV]AN240

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383891.001	Eh of Sample Relative to Standard H+ Electrode***	mV	-500	431	428	90 - 110	101

Total and Volatile Suspended Solids (TSS / VSS)

Method: ME-(AU)-[ENV]AN114

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383980.002	Total Suspended Solids Dried at 103-105°C	mg/L	5	94	100	80 - 120	94

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB384116.002	Total Cyanide	mg/L	0.004	0.027	0.025	80 - 120	109

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB384194.002	Total Phenols	mg/L	0.05	0.19	0.2	80 - 120	97

Total Phosphorus by Kjeldahl Digestion DA in Water

Method: ME-(AU)-[ENV]AN279/AN293

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383972.002	Total Phosphorus (Kjeldahl Digestion) as P	mg/L	0.02	1.1	1	80 - 120	107

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383923.002	Aluminium	µg/L	5	22	20	80 - 120	112
	Antimony	µg/L	1	20	20	80 - 120	100
	Arsenic	µg/L	1	19	20	80 - 120	93
	Barium	µg/L	1	20	20	80 - 120	98
	Beryllium	µg/L	1	21	20	80 - 120	105
	Boron	µg/L	5	22	20	80 - 120	110
	Cadmium	µg/L	0.1	20	20	80 - 120	99
	Chromium	µg/L	1	21	20	80 - 120	104
	Cobalt	µg/L	1	21	20	80 - 120	107
	Copper	µg/L	1	22	20	80 - 120	111
	Iron	µg/L	5	20	20	80 - 120	101
	Lead	µg/L	1	20	20	80 - 120	101
	Manganese	µg/L	1	19	20	80 - 120	97
	Molybdenum	µg/L	1	20	20	80 - 120	100
	Nickel	µg/L	1	22	20	80 - 120	108
	Selenium	µg/L	1	16	20	80 - 120	80
	Silver	µg/L	1	20	20	80 - 120	99

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.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383923.002	Strontium	µg/L	1	19	20	80 - 120	96
	Uranium	µg/L	1	21	20	80 - 120	105
	Vanadium	µg/L	1	21	20	80 - 120	104
	Zinc	µg/L	5	21	20	80 - 120	107
LB383923.026	Aluminium	µg/L	5	21	20	80 - 120	106
	Antimony	µg/L	1	20	20	80 - 120	101
	Arsenic	µg/L	1	19	20	80 - 120	95
	Barium	µg/L	1	20	20	80 - 120	100
	Beryllium	µg/L	1	20	20	80 - 120	102
	Boron	µg/L	5	23	20	80 - 120	117
	Cadmium	µg/L	0.1	19	20	80 - 120	97
	Chromium	µg/L	1	21	20	80 - 120	105
	Cobalt	µg/L	1	21	20	80 - 120	106
	Copper	µg/L	1	21	20	80 - 120	107
	Iron	µg/L	5	20	20	80 - 120	102
	Lead	µg/L	1	20	20	80 - 120	101
	Manganese	µg/L	1	20	20	80 - 120	101
	Molybdenum	µg/L	1	20	20	80 - 120	99
	Nickel	µg/L	1	21	20	80 - 120	104
	Selenium	µg/L	1	19	20	80 - 120	97
	Silver	µg/L	1	18	20	80 - 120	89
	Strontium	µg/L	1	20	20	80 - 120	99
	Uranium	µg/L	1	20	20	80 - 120	102
	Vanadium	µg/L	1	21	20	80 - 120	105
	Zinc	µg/L	5	21	20	80 - 120	107

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB383757.002	TRH C10-C14	µg/L	50	800	1000	60 - 140	80
	TRH F Bands	µg/L	50	800	1000	60 - 140	80

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB384024.002	Halogenated	1,1-dichloroethene	µg/L	0.5	52	45.45	60 - 140	114
	Aliphatics	1,2-dichloroethane	µg/L	0.5	44	45.45	60 - 140	97
		Trichloroethene (Trichloroethylene,TCE)		µg/L	0.5	46	45.45	60 - 140
	Halogenated	Chlorobenzene	µg/L	0.5	34	45.45	60 - 140	75
	Monocyclic	Benzene	µg/L	0.5	31	25	60 - 140	126
	Aromatic	Toluene	µg/L	0.5	32	25	60 - 140	126
		Ethylbenzene	µg/L	0.5	29	25	60 - 140	115
		m/p-xylene	µg/L	1	54	50	60 - 140	108
		o-xylene	µg/L	0.5	29	25	60 - 140	116
	Trihalomethan	Chloroform (THM)	µg/L	0.5	51	45.45	60 - 140	113

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB384024.002	TRH C6-C10	µg/L	50	360	400	60 - 140	91
	TRH C6-C9	µg/L	40	340	350	60 - 140	97

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 identifier 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%
SE300017.002	LB383849.004	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	33	31	2.5	56 @

Forms of Carbon

Method: ME-(AU)-[ENV]AN190

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE299978.001	LB383770.005	Total Organic Carbon as NPOC	mg/L	0.2	55	4.439	50	101

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE299970.001	LB383762.004	Mercury, Hg	mg/L	0.0001	0.0022	<0.00005	0.008	110

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE299867.001	LB383927.004	Calcium, Ca	mg/L	0.2	220	170	50.5	101

Nitrite in Water

Method: ME-(AU)-[ENV]AN277

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE300017.002	LB383849.004	Nitrite Nitrogen, NO ₂ as N	mg/L	0.005	0.090	<0.005	0.1	87

Total Cyanide in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN077/AN287

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE300157.001	LB384116.015	Total Cyanide	mg/L	0.004	0.030	<0.004	0.025	106

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE300080.001	LB384194.004	Total Phenols	mg/L	0.05	0.20	<0.05	0.2	100

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE299920.001	LB383923.004	Arsenic	µg/L	1	20	<1	20	96
		Cadmium	µg/L	0.1	21	<0.1	20	104
		Chromium	µg/L	1	21	<1	20	101
		Copper	µg/L	1	37	17	20	103
		Lead	µg/L	1	21	<1	20	103
		Nickel	µg/L	1	36	15	20	105
		Zinc	µg/L	5	73	54	20	95

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE299989.001	LB384024.024	Monocyclic	Benzene	µg/L	0.5	<0.5	25	81
			Toluene	µg/L	0.5	<0.5	25	80
		Aromatic	Ethylbenzene	µg/L	0.5	<0.5	25	74
			m/p-xylene	µg/L	1	<1	50	73
			o-xylene	µg/L	0.5	<0.5	25	75
		Polycyclic	Naphthalene (VOC)*	µg/L	0.5	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	13	-	126
			d8-toluene (Surrogate)	µg/L	-	13	-	127
			Bromofluorobenzene (Surrogate)	µg/L	-	13	-	127
		Totals	Total BTEX	µg/L	3	110	<3	-

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE299989.001	LB384024.024	TRH C6-C10	µg/L	50	270	<50	400	69
		TRH C6-C9	µg/L	40	250	<40	350	71
		Surrogates						
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	13	9.9	-	126
		d8-toluene (Surrogate)	µg/L	-	13	9.4	-	127
		Bromofluorobenzene (Surrogate)	µg/L	-	13	10.0	-	127
		VPH F						
		Benzene (F0)	µg/L	0.5		<0.5	-	-
		Bands						
		TRH C6-C10 minus BTEX (F1)	µg/L	50	160	<50	-	-

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier 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/en-au/industry/environmental-health-and-safety>

- * 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.
- NA Not Applicable
- 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.

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 test report shall not be reproduced, except in full.

Appendix H – DCR and Works Surrender Form

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 activities¹

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 used⁷.
- 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 water³

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 <i>Water Management (General) Regulation 2018</i> ☐ 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 volumes⁷.

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 volumes⁷.
- 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
<i>For Example: MB1</i>	<i>1.000</i>	<i>0.5</i>	<i>4.0</i>	<i>0.6</i>	<i>MB1.xlsx</i>

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 ($\mu\text{S}/\text{cm}$)	
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.Helpdesk@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 91A 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).

Application to surrender a water supply work approval

Please refer to the accompanying [guide](#) to the Application to surrender a water supply work approval under [Section 108 of the Water Management Act 2000 \(WMA\)](#).

What you need to do

Before filling in this form, applicants are advised to read the [guide](#) for an application to surrender a water supply work approval, which has step-by-step instructions on each section.

Please complete the form with a black/blue ink pen and use BLOCK letters. You can also type directly in this form. Once completed, please print and sign the form.

Submit your application form

- by post to **WaterNSW, PO Box 398, Parramatta NSW 2124**, or
- email a scanned copy to Customer.Helpdesk@waterNSW.com.au

If there is not enough space in the form, please attach additional pages to the back of the form.



WaterNSW customers are encouraged to book a phone appointment with us to discuss your water licensing enquiries. Visit waterNSW.com.au/licensing

Section A: Water supply work approval to be surrendered

Complete this section with the details of the water supply work approval to be surrendered and the date of surrender (must be the date the application is submitted or a future date). An example of a type of work can be a bore, dam or a pump.

A1 Water supply work approval number	A2 Date to be surrendered
A3 Type of work to be surrendered	
A4 Reason for surrender	

Section B: Water supply work approval holder/s details

List ALL holders of the water supply work approval that is to be surrendered and all holders must sign the declaration (Section F). See the [guide](#) for further information. If there are more than four holders, photocopy/print additional copies of Section B complete it and attach it to this form. Please note that applications submitted via email must include the email addresses of all listed applicants.

Holder

B1 Title (Mr, Mrs, Ms)	B2 Surname	
B3 Given name(s)		
B4 Company/corporation name (if applicable)		
B5 ACN (if applicable)	B6 ABN (if you do not hold an ACN and are an organisation incorporated in NSW you must provide an ABN and a copy of your certificate of incorporation)	
B7 Position held (if applicable)		
B8 Name of company representative (if applicable)		
B9 Postal address		
B10 Suburb	B11 State	B12 Postcode
B13 Phone	B14 Mobile phone	
B15 Email		

Additional holder (if applicable)

B16 Title (Mr, Mrs, Ms)	B17 Surname	
B18 Given name(s)		
B19 Company/corporation name (if applicable)		
B20 ACN (if applicable)	B21 ABN (if you do not hold an ACN and are an organisation incorporated in NSW you must provide an ABN and a copy of your certificate of incorporation)	
B22 Position held (if applicable)		
B23 Name of company representative (if applicable)		
B24 Postal address		
B25 Suburb	B26 State	B27 Postcode
B28 Phone		B29 Mobile phone
B30 Email		

Additional holder (if applicable)

B31 Title (Mr, Mrs, Ms)	B32 Surname	
B33 Given name(s)		
B34 Company/corporation name (if applicable)		
B35 ACN (if applicable)	B36 ABN (if you do not hold an ACN and are an organisation incorporated in NSW you must provide an ABN and a copy of your certificate of incorporation)	
B37 Position held (if applicable)		
B38 Name of company representative (if applicable)		
B39 Postal address		
B40 Suburb	B41 State	B42 Postcode
B43 Phone		B44 Mobile phone
B45 Email		

Section C: Nominated contact person

Note: If there is only one holder, you do not need to complete this section. If there are multiple holders and this section has not been completed, WaterNSW will assume the first holder listed on the form is the nominated contact person.

If a third party is acting on behalf of the water supply work approval holders and they are to be considered the nominated contact, their details must be provided below.

c1 Title (Mr, Mrs, Ms)		c2 Surname	
c3 Given name(s)			
c4 Company/corporation name <i>(if applicable)</i>			
c5 ACN <i>(if applicable)</i>		c6 ABN <i>(if you do not hold an ACN and are an organisation incorporated in NSW you must provide an ABN and a copy of your certificate of incorporation)</i>	
c7 Position held <i>(if applicable)</i>			
c8 Name of company representative <i>(if applicable)</i>			
c9 Postal address			
c10 Suburb	c11 State	c12 Postcode	
c13 Phone		c14 Mobile phone	
c15 Email			

Listing a nominated contact person assists us in processing your application where there are multiple holders. We may need to contact the nominated contact person to discuss the details contained in your application. In addition, any request for additional information about your application will be sent to the nominated contact person. Any information provided by the nominated contact person will be relied upon by WaterNSW in considering this application. A delay in responding to any such request may result in your application being further delayed or refused.

The rights and liabilities arising in relation to this application is shared by all applicants and not limited to the nominated contact person. Any changes to any details of an application for a surrender (except for minor changes to contact details of an applicant) or withdrawal of the application must be in writing and signed and dated by all holders. Further, the Notice of decision issued in relation to your application will be sent to all applicants.

Section D: Nominated water access licence

Provide details below of any water access licences attached to this water supply work approval. If there is a nominated water access licence and you wish to continue to take water using this water access licence another water supply work will need to be nominated. To nominate a new water supply work approval use [this form](#).

Nominated water access licence

D1 Nominated water access licence number

Section E: Decommission of water supply works

To surrender a water supply work approval the work/s must be unable to be used to take water unless it is exempt. For further information on exemptions, visit waternsw.com.au/approvals and scroll down to the section on exceptions. Refer to the [guide for surrender an approval](#) for information on the action to be taken for decommissioning different types of works.

For bores

All constructed bores have been approved for decommissioning (where required under the Water Sharing Plan (WSP), or relevant information provided. All bores are to be decommissioned in line with the minimum construction requirement for water bores in Australia.

Note: A Bore Construction Report (previously known as a 'Form A') is to be lodged for all decommissioned bores. I/We, the applicant/s, understand and acknowledge that.

Please tick which is applicable.

- ☐ Bore has not been constructed
- ☐ Bore unable to be located on property and statutory declaration provided
- ☐ Bore has been constructed and decommissioned in line with the requirements outlined in the guide to the application and a Bore construction report (Form A) has been submitted by the Driller

Other works

For all other constructed water supply work approvals **including pumps, pipes and dam**, the work has been decommissioned unless exempt. Please tick which is applicable.

- ☐ Work/s have not been constructed
- ☐ Constructed work/s have been decommissioned
- ☐ Constructed works are exempt from requiring an approval

What specific exemption are you claiming? (Please provide justification for the works in their current shape/form/capacity or advise of any proposed modifications).

Section F: Declaration of application



- Each applicant should sign Section F.
- If there are more than two applicants, photocopy/print multiple copies of the entire form after Sections A to E have been completed (before anyone signs Section F).

Section F must be fully completed and signed by each holder of the water supply work approval that is being surrendered. If it is not fully completed, WaterNSW will return the application to the applicant/s as an invalid application. Please refer to the accompanying [guide](#) for surrendering a water supply work approval.

If there are multiple holders, please ensure that you retain signed copies of the completed application form for your records. It is an offence, under section 344 of the *Water Management Act 2000*, to make a statement that you know to be false or misleading in, or in connection with, this application. I/We, the undersigned applicants, acknowledge and agree:

1. that I/we apply to surrender the water supply work approval as described in this application and all works included on the approval have been decommissioned unless exempt.
2. that this application will be determined in accordance with the *Water Management Act 2000* and any associated regulations or guidelines as in force from time to time, and that no right or entitlement shall arise pending determination of this application.
3. that the authorised contact person (where applicable) has my permission to act for and on my behalf in relation to any aspect of this application unless otherwise notified by us, and that WaterNSW will rely on information provided by the authorised contact person in its consideration of this application.
4. that the authorised contact person (where applicable) has my permission to act for and on my behalf in relation to any aspect of this application unless otherwise notified by us, and that WaterNSW will rely on information provided by the authorised contact person in its consideration of this application.
5. that all information contained in this application is accurate, true and complete in every detail and that the State will rely on such information.
6. that I/we have read and understood the information contained in the WaterNSW privacy statement (below).
7. that by entering a mobile phone number and/or email address, you consent to WaterNSW communicating with you electronically in relation to this application. Unless you indicate otherwise, all correspondence will be sent via email or SMS.
8. that WaterNSW may collect, use, and disclose my personal information as outlined in the WaterNSW privacy statement (below) and I consent to WaterNSW collecting, using and disclosing my personal information in accordance with the WaterNSW privacy statement.
9. that I/we consent to WaterNSW sharing my personal information with NSW Government agencies or State-Owned Corporations from time to time.
10. that the State does not provide any legal, financial, or technical advice in connection with this application and that any such advice, if required, is to be obtained independently.
11. that details about any approval arising out of this application will be recorded in the publicly available Water Register pursuant to the *Water Management Act 2000*.

12. that if this application is incomplete, it will not be accepted; and that more information may be requested if it is considered that it would be relevant to the consideration of this application.

I/We, the undersigned, apply for an approval described above for the nature and purpose specified in the application. I/We state that the information provided for the purpose of this application is accurate and true.

For applications made by individuals:

Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date

For applications made by a corporation:

Executed for and on behalf of the applicant in accordance with section 127 of the *Corporations Act 2001 (Cth)* (if a company) or by its duly authorised officer (for other types of corporations):

Name of corporation		
ACN (if applicable)	ABN (If you do not hold an ACN and are an organisation incorporated in NSW you must provide an ABN.)	
Position of signatory (Tick the appropriate box)	☐ company director	☐ sole director
	☐ duly authorised officer	☐ company secretary
Name of signatory	Signature	Date
Position of signatory (Tick the appropriate box)	☐ company director	☐ sole director
	☐ duly authorised officer	☐ company secretary
Name of signatory	Signature	Date

Privacy statement

The personal information you provide on this form will be used and protected in accordance with WaterNSW Privacy policy. It is being collected by WaterNSW and will be used for purposes related to assessing and processing your application, or in connection with the operation of any approval granted, or for research-related purposes such as customer surveys. It may be used from time to time to contact you about services WaterNSW provides.

WaterNSW will not disclose your personal information to anybody else unless authorised by law. The provision of this information is voluntary. However, if you choose not to provide the requested information, we will not be able to process your application. 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 our website at waternsw.com.au

If an approval is granted, the *Water Management Act 2000* requires that various details relating to the approval are to be recorded in the Register of Water Approvals kept by the Minister. Information recorded in the register is publicly available.

Offences and penalties

It is an offence, under section 344 of the *Water Management Act 2000*, to make a statement that you know to be false or misleading in, or in connection with, this application.

A corporation found guilty of an offence against section 344 is liable to a penalty not exceeding \$2.002 million. An individual found guilty of an offence against section 344 is liable to a penalty not exceeding \$500,500. An access licence or approval may be suspended or cancelled under the *Water Management Act 2000* in certain circumstances. These include if the holder of the licence or approval is convicted of an offence under that Act.