

Project Memorandum

To: Matt Green
Company: Green Geotechnics Pty Ltd
CC:
Date: 20 January 2026
From: Siva Annapareddy
Project Ref: S-0350.00 M1
Subject: 815 Pacific Highway, Chatswood NSW - Groundwater Inflow Assessment

1 Introduction

1.1 General Information

Green Geotechnics Pty Ltd (Green Geo) has been engaged to undertake geotechnical investigation works for proposed redevelopment of 815 Pacific Highway, Chatswood NSW.

It is understood that the proposed development is expected to include the following key elements:

- Demolition of existing site structures.
- Bulk excavation to accommodate eight (8) basement levels (noting the existing basement includes two levels; hence an additional six levels are proposed)
- Construction of retention systems, likely comprising anchored or propped retaining walls, followed by permanent propping of the walls by the building structure, and underpinning of adjacent structures where required.
- Construction of slabs on ground, spread footings and/or piled foundations, as required.
- Construction of the proposed building superstructure, expected to comprise up to 61 storeys.

It is understood that a groundwater modelling and seepage assessment is required to support a Development Application (DA). The objectives of the groundwater assessment are to:

- Estimate the steady state extraction rate per annum for a drained basement structure
- Assess potential drawdown effects outside of the basement perimeter and associated risks to adjacent property and infrastructure; and
- Provide recommendations for groundwater monitoring requirements during construction

D&N Geotechnical Pty Ltd (D&N) has been engaged by Green Geo to undertake the groundwater inflow modelling.

1.2 Scope of Work

The scope of work for this groundwater assessment was defined in our fee proposal (Ref: S-0350.00 P1, dated 28 October 2025) and includes the following tasks:

- Interpretation of hydraulic conductivity for the encountered geological units based on in-situ rising / falling head tests.
- Assessment of static groundwater levels (GWL) based on the groundwater monitoring undertaken in the installed wells by others.
- Seepage modelling of a representative unit section to assess potential groundwater inflow rates to the proposed basement excavation.

This memorandum presented the adopted ground model, test findings, interpretation of groundwater monitoring results, calculated hydraulic conductivity values and the results of groundwater modelling and seepage analysis.

1.3 Available Information

The content of this memorandum is based on the available information received to date by Green Geo. The following information was made available:

- **Green Geotechnics** – 815 Pacific Highway, Chatswood - Borehole Logs and Core Photos. Reference: GG12309.001, completed 10 and 21 November 2025.
- **FJCstudio** – 815 Pacific Highway, Chatswood – typical cross-sections of the proposed building.

2 Subsurface Model

A summary of main geotechnical units encountered during the geotechnical investigations undertaken within the proposed development site is presented in Table 1.

Table 1 – Summary of depths below ground level to geological units encountered in the boreholes

Geological Unit	BH1	BH2	BH3
Concrete	0.0 – 0.13	0.0 – 0.10	0.0 – 0.15
Fill	–	0.10 – 0.28	0.15 – 0.25
Silty CLAY (Residual)	0.13 – 0.80	0.28 – 2.60	0.25 – 3.47
Silty CLAY (XW)	0.80 – 6.18	–	3.47 – 4.00
HW SHALE	6.18 – 7.39	2.60 – 3.00	4.00 – 5.36
FR SHALE	7.39 – 21.22	3.00 – 22.07	5.36 – 21.13
FR SANDSTONE	21.22 – 30.21	22.07 – 26.11	21.13 – 26.33

The subsurface model adopted for this assessment has been developed from the borehole logs provided by Green Geotechnics (refer Appendix B). In general, the interpreted subsurface profile comprises a thin surface layer of concrete and/or fill of variable thickness, underlain by residual silty CLAY. The residual soils transition with depth into extremely weathered shale, grading to highly weathered shale and then fresh shale. At greater depths, the fresh shale is underlain by fresh sandstone.

3 Monitoring Well Observations

Green Geotechnics Pty Ltd (Green Geo) installed three (3) standpipe piezometers within the subject site. Monitoring well construction details (including screened intervals, filter pack/backfill, and casing details) were provided to D&N via email dated 1 December 2025.

D&N installed automated water level loggers in each monitoring well on 8 December 2025, following which rising head and falling head slug tests were completed on the same day to support estimation of hydraulic conductivity. It is noted that the loggers installed in MW1 and MW3 were initially configured with longer recording intervals, which limited resolution during the early-time recovery response. Accordingly, the slug testing for MW1 and MW3 was repeated on 5 January 2026 with a 10 second recording interval.

Standing water levels (SWL) were measured using an electronic dip meter: (i) prior to slug testing, (ii) immediately following addition/removal of water, and (iii) at the end of the recovery period. A further set of SWL readings was obtained on 6 January 2026. The manual measurements are summarised in Table 2.

Table 2 – Standing level of groundwater measured from top of casing

MW	Test Type	SWL prior to test on 8/12/2025 (m BTOC)	Depth immediately after water added/removed (m BTOC)	Depth at end of test (m BTOC)	SWL on 6/1/2026 (m BTOC)
MW1	Rising Head	10.22	13.7	10.35	9.90
	Falling Head	10.35	6.02	10.21	
MW2	Rising Head	12.91	15.36	14.4*	12.00
MW3	Rising Head	10.64	14.44	10.75	10.10
	Falling Head	10.75	3.48	9.9*	

Notes: (1) BTOC – Below Top of Collar (i.e., depth measured from the top of the monitoring well collar)

(2) *Tests do not fully recover to initial SWL within the monitoring period

Continuous groundwater monitoring was undertaken between 8 December 2025 and 6 January 2026, with loggers recording water level data at 30-minute intervals. The complete time-series plots are provided in Appendix C.

Based on the monitoring period, groundwater levels were generally stable, ranging from approximately 84 m AHD (MW2) to 87 m AHD (MW1/MW3). Groundwater level elevations (m AHD) were interpreted using the reduced levels (RLs) provided on the borehole logs. A slight increase in groundwater levels was observed across all wells over the monitoring period, with minor short-term fluctuations. The interpreted groundwater table is located within the shale unit based on borehole stratigraphy and screened intervals. These observations were adopted to define the initial and boundary groundwater conditions for the subsequent seepage and groundwater modelling.

4 Hydraulic Conductivity Estimation

4.1 Nature of Groundwater Inflow

As noted in Section 3, the interpreted groundwater table lies within the shale bedrock unit. While the permeability of intact shale is typically very low, groundwater flow in shale is commonly governed by secondary porosity and discontinuities such as bedding planes, joints, fractures, and localised weathering features. Accordingly, groundwater inflows to the proposed excavation are expected to be controlled primarily by the presence, orientation and connectivity of discontinuities intersecting the excavation, rather than flow through the intact rock.

The storage capacity of discontinuities in shale is generally limited and may be periodically recharged by rainfall infiltration and other surface inflows (e.g. preferential seepage pathways and/or leakage from buried services). As a result, groundwater inflows may be relatively higher during the initial stages of excavation but are expected to reduce to a long-term steady-state condition once local fracture storage is depleted and drainage conditions stabilise.

4.2 Slug Test Analysis

Rising head and falling head slug tests were analysed using the Bouwer & Rice (1976) method within the AQTESOLV software. The interpreted hydraulic conductivity values are summarised in Table 3, and the AQTESOLV outputs are provided in Appendix D.

Table 3 – Summary of interpreted hydraulic conductivity values from slug testing

MW ID	Test Type	Manual K_{sat} (m/s)	Automatic (HOBO) K_{sat} (m/s)
MW1	Rising	3.4×10^{-7}	–
	Falling	5.4×10^{-8}	2.0×10^{-11} Likely outlier
MW2	Rising	1.5×10^{-8}	4.5×10^{-7}
	Falling	–	8.7×10^{-6}
MW3	Rising	9.8×10^{-8}	–
	Falling	1.3×10^{-8}	2.4×10^{-8}

Note: Hydraulic conductivity values highlighted in yellow are approximate only and were interpreted manually due to AQTESOLV curve fitting/analysis limitations

4.3 Applicability to Seepage Modelling

The residual clay unit is located above the monitored groundwater levels and is therefore not expected to govern groundwater inflows to the basement excavation. Accordingly, the hydraulic conductivity of the residual clay has not been estimated for this assessment and has not been included in the seepage modelling (noting that its influence may be relevant for infiltration/perched seepage, depending on excavation staging and site drainage provisions).

Fresh sandstone is interpreted beneath the shale. For modelling purposes, and in the absence of unit-specific permeability testing for the sandstone at this site, the sandstone hydraulic conductivity has been conservatively assumed to be similar to the shale rock mass, noting that groundwater flow in both units is expected to be primarily controlled by the discontinuities.

The interpreted hydraulic conductivity values span several orders of magnitude (Table 3), which is generally consistent with groundwater flow in fractured rock where local discontinuities may govern individual and localised test results. The higher interpreted values are therefore considered likely to reflect fracture-dominant short-term behaviour and/or localised preferential flow paths intersected by the boreholes. Given that slug tests involve relatively small test volumes and are completed over short durations, the interpreted results may be more representative of initial transient inflow behaviour, rather than the long-term steady seepage rates relevant to basement excavation performance. Accordingly, for modelling purposes a characteristic hydraulic conductivity has been adopted, as summarised in Table 4.

Table 4 – Adopted hydraulic conductivity (m/s) for seepage analysis

Material Unit	Interpreted Rate (m/s)	Adopted Value (m/s)	Ratio of Vertical to Horizontal Permeability
Shale/Sandstone (rock mass)	Intact 10^{-11} Rock Mass apparent average 10^{-8} to 10^{-5}	Rock Mass 1×10^{-7}	0.5

Given the observed variability in the interpreted slug test results, a characteristic hydraulic conductivity of $K_{\text{sat}} = 1 \times 10^{-7}$ m/s has been adopted for the shale/sandstone rock mass. This value is considered representative of fractured shale rock mass conditions. The adopted anisotropy ratio ($k_v/k_h = 0.5$) is considered appropriate for bedded rock masses where horizontal permeability typically exceeds vertical permeability due to bedding and fracture orientation.

Notwithstanding this, there are natural variations in the permeability rates of soils and rock and variations of one order of magnitude should not be considered unexpected.

5 Groundwater Inflow Modelling

Two-dimensional finite element seepage analyses were undertaken to estimate groundwater inflows to the proposed basement excavation under steady-state conditions. The analyses were completed using the commercially licensed software Slide2 (Version 9.021, 2022).

The seepage model was developed based on the typical basement sections provided by the Green Geo and the adopted hydrogeological parameters described in Section 4. The key assumptions adopted in the seepage analyses are summarised below:

- An initial boundary groundwater level (GWL) of RL +87 m AHD was adopted to represent a typical SLS groundwater condition. This level corresponds to the highest groundwater level recorded during the monitoring period.
- An additional scenario was modelled with a boundary GWL of RL +87.5 m AHD, representing +0.5 m increase above typical conditions to simulate an ULS groundwater condition.
- Based on the typical basement sections, the bulk excavation level was interpreted as approximately RL +77.5 m AHD, allowing for an assumed 0.2 m thick basement slab and potential minor over excavation.
- It is anticipated that a soldier-pile wall or an equivalent shoring system will be adopted to provide temporary support to the soils and the underlying poor-quality shale bedrock.
- No impervious lining or seepage cut-off measure was considered on the cut faces. The excavation will therefore be maintained in a dry state by draining the excavation by means of a sump and pump system located in the base of the excavation. By way of draining of the seepage from the floor and walls, it is assumed that no uplift pore pressure would develop onto the floor system of a drained basement with sufficient drainage blanket material to convey seepage from the floor underside to the collector system.

6 Assessment Results

The predicted steady-state unit inflow rates (per meter run of the wall) are summarised in Table 5 for the assessed groundwater scenarios. Total inflow volumes for the full basement footprint may be estimated by multiplying the unit inflow rate by the total perimeter length of the retained excavation.

It is noted that higher inflow rates may occur during the initial stages of excavation and dewatering (prior to achieving steady-state conditions), particularly in fractured rock where short-term inflows may be influenced by local fracture storage.

Outputs from seepage analysis, showing the unit inflow rates per meter run and the calculated groundwater (phreatic) surface, are provided in Appendix E.

Table 5 – Predicted daily unit inflow rates

Retention System	Modelling Case	Daily Unit Inflow Rate (Litres/day per m run of wall)
No cut-off/drained system	SLS (GWL = RL +87 m AHD)	45
	ULS (GWL = RL +87.5 m AHD)	50

The above inflow rates are based on the currently proposed excavation geometry (eight basement levels) and the interpreted groundwater levels adopted for the SLS and ULS scenarios. The analysis indicates that, for a drained excavation without a seepage cut-off, the predicted steady-state unit inflow rates are low to moderate, in the order of 45 to 50 L/day per metre run of retained wall.

On this basis, regional groundwater drawdown beyond the excavation is expected to be gradual, and any associated settlement impacts are anticipated to be low, noting that the excavation is within bedrock units of relatively high stiffness and low compressibility. Notwithstanding this, the magnitude and extent of drawdown and any resulting settlement will depend on the degree of hydraulic connectivity within the bedrock (fracture frequency/connectivity) and the historical range of groundwater fluctuations. Accordingly, groundwater drawdown should be confirmed through monitoring during construction.

Given the observed groundwater levels and the moderate inflow rates predicted for an open/drained system, the overall dewatering demand may be manageable, subject to confirmation of the final excavation footprint and retained perimeter length. Notwithstanding this, given the depth of excavation and the proximity of adjacent infrastructure, it is recommended that a seepage cut-off retention system (e.g. secant pile wall) be adopted, to reduce groundwater inflows, minimise drawdown beyond the site boundary, and mitigate associated risks to surrounding assets.

Alternatively, a contiguous piled wall with shotcrete facing may be adopted. While this option is expected to reduce seepage relative to an open/drained excavation, it will not provide the same seepage cut-off performance as a secant wall. Accordingly, this option would likely require additional seepage control measures, which may include strip drains behind the shotcrete facing, together with a sump and pump system.

The adopted retention system will influence the groundwater loading conditions and the associated shoring design pressures, which should be confirmed during detailed design.

If an open/drained system is adopted, the design assumptions should be validated through staged excavation and dewatering, with close review of measured inflow rates and groundwater response during the early stages of works.

7 Conclusion and Recommendations

The seepage modelling has been undertaken based on the interpreted geological profile and hydraulic conductivity values for fractured shale bedrock derived from the available slug testing. It is noted that permeability in fractured rock can be highly variable and anisotropic; therefore, seepage modelling results should generally be considered accurate to within approximately one order of magnitude.

Based on the completed seepage analyses and the adopted assumptions, groundwater drawdown outside the proposed excavation is not expected to adversely impact adjoining structures. However, it is essential that groundwater levels are monitored during construction to validate the model predictions and confirm the response of the groundwater regime to dewatering.

The following recommendations are provided:

- *Groundwater Monitoring:* Install and maintain a network of groundwater monitoring wells around the perimeter of the excavation (minimum 3–4 wells or as required), located outside the zone of direct influence of construction activities. Monitoring should commence prior to dewatering to establish baseline conditions and continue throughout excavation and dewatering works.
- *Review of Monitoring Data:* Groundwater monitoring results should be reviewed regularly by the project geotechnical and hydrogeological engineers. If groundwater drawdown or inflow rates differ materially from model predictions, adjustments to the dewatering methodology (e.g., pumping rates, staged excavation, supplementary controls) may be required.
- *Staged Dewatering Validation:* During the early stages of excavation, inflow rates should be measured and compared against predicted unit inflows to validate model assumptions and refine dewatering requirements for subsequent stages.
- *Predicted Extraction Rates:* For the assessed drained system, the expected steady-state extraction demand is approximately 45–50 L/day per metre run of retaining wall, subject to confirmation based on the final excavation footprint and field monitoring results.
- *Disposal Approvals:* Offsite groundwater disposal is expected to discharge to nearby stormwater infrastructure (subject to final design). This will require consultation and approvals (as applicable) from NSW Department of Planning and Environment – Water (DPE Water) / local council, and/or Sydney Water, including confirmation of allowable discharge quality and maximum discharge rates.

8 Limitations

The information contained in this report is solely intended for the client's use, and no responsibility or liability is assumed towards any third party. The data and opinions in the report are not to be used elsewhere without our prior review and agreement. The design and drawings provided herein are based on data collected from specific locations. It should be noted that there are inherent variations in subsurface conditions across the site that cannot be fully defined, even though exhaustive investigation. Subsurface conditions, including groundwater levels, may undergo changes over time.

In cases where data has been furnished by the client or obtained from external sources, including previous site inspections or investigations, it has been assumed that the information is accurate, unless otherwise specified. D&N (D&N Geotechnical Pty Ltd) cannot accept responsibility for any inaccuracies within the data supplied by others.

It is strongly advised that any plans and specifications prepared by other parties pertaining to the content of this report, as well as any subsequent modifications to the original plans and specifications, be thoroughly reviewed by D&N to ensure that our recommendations are appropriately reflected in the design. Furthermore, during the construction phase, we request the opportunity to evaluate our interpretations if the actual site conditions significantly differ from those initially anticipated.

This report may not be reproduced, either in its entirety or in part, without obtaining our prior written consent. In the event of reproduction, the report must be replicated in its entirety.

9 Closing

We trust this memorandum meets your current needs. Should you have questions feel free to contact the undersigned on 0431 628 825.

For and on behalf of D&N



Siva Annapareddy
Associate Geotechnical Engineer

Enclosed:

Appendix A – Client Provided Information

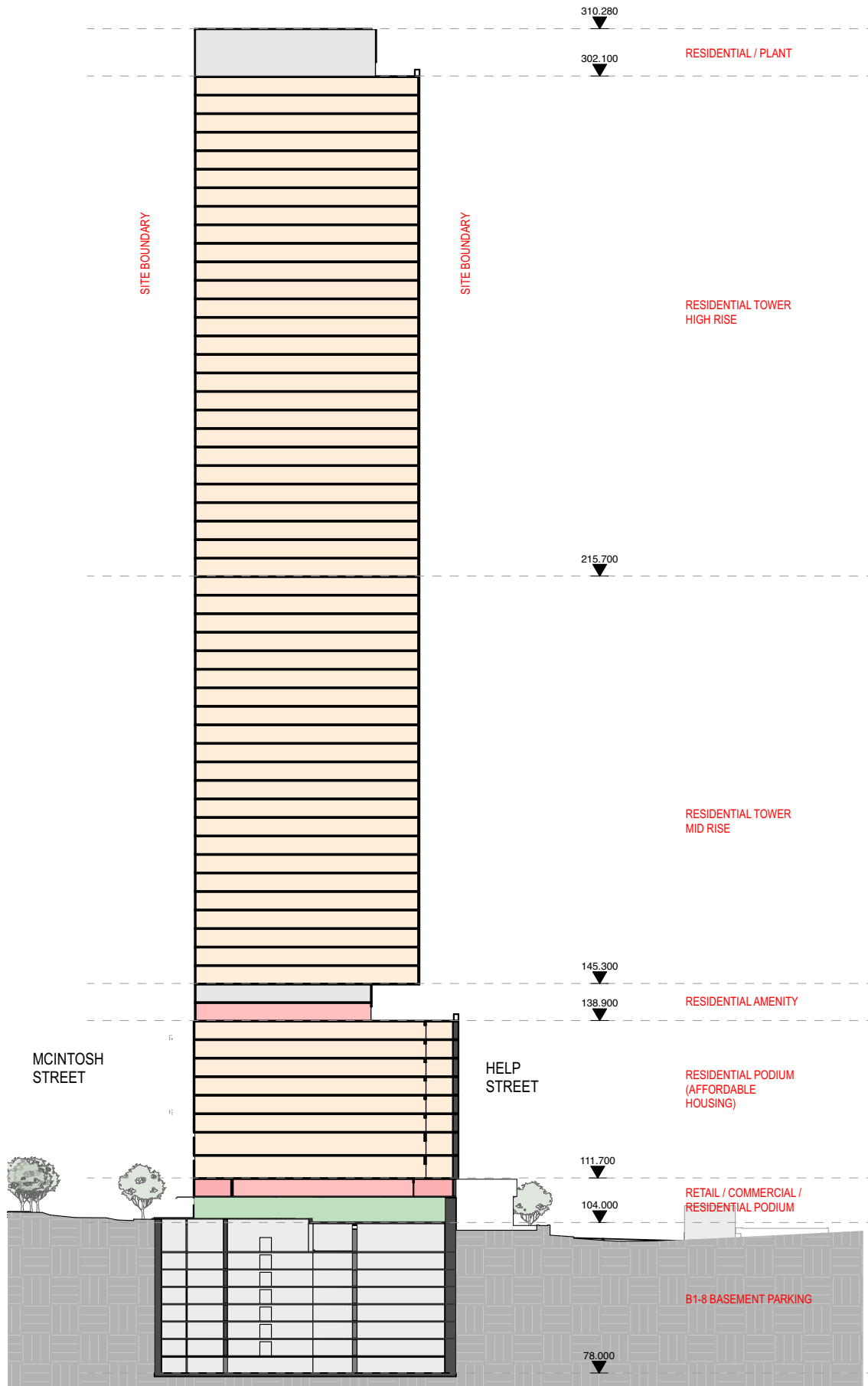
Appendix B – Geotechnical and Groundwater Well Information

Appendix C – Groundwater Monitoring Data

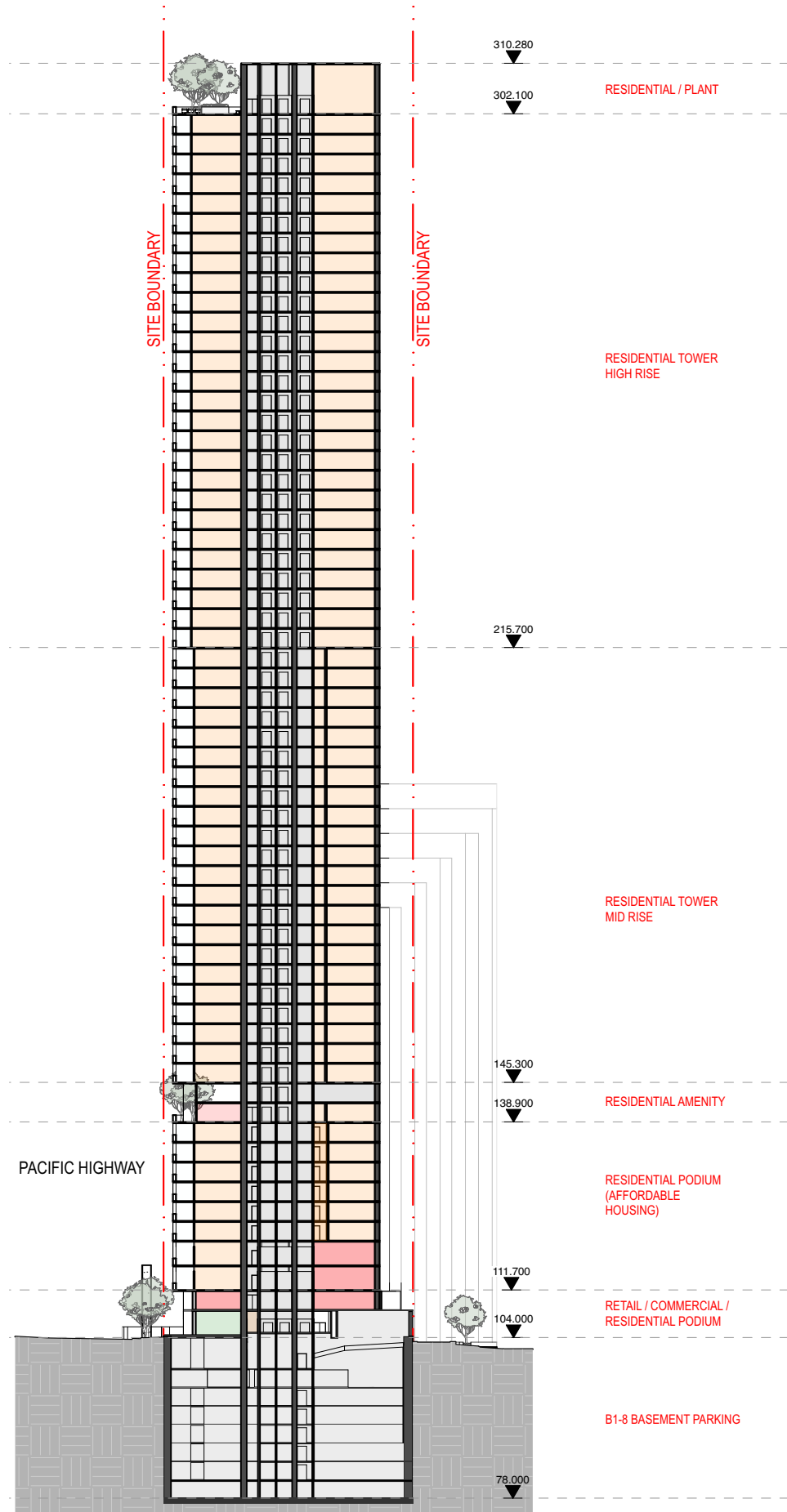
Appendix D – AQTESOLV Outputs

Appendix E – Seepage Analysis: Graphical Outputs

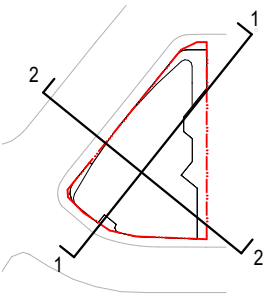
Appendix A – Client Provided Information



DA-4000 — Overall Sections
Fivex — FXPH



Scale
1:1000 @ A3

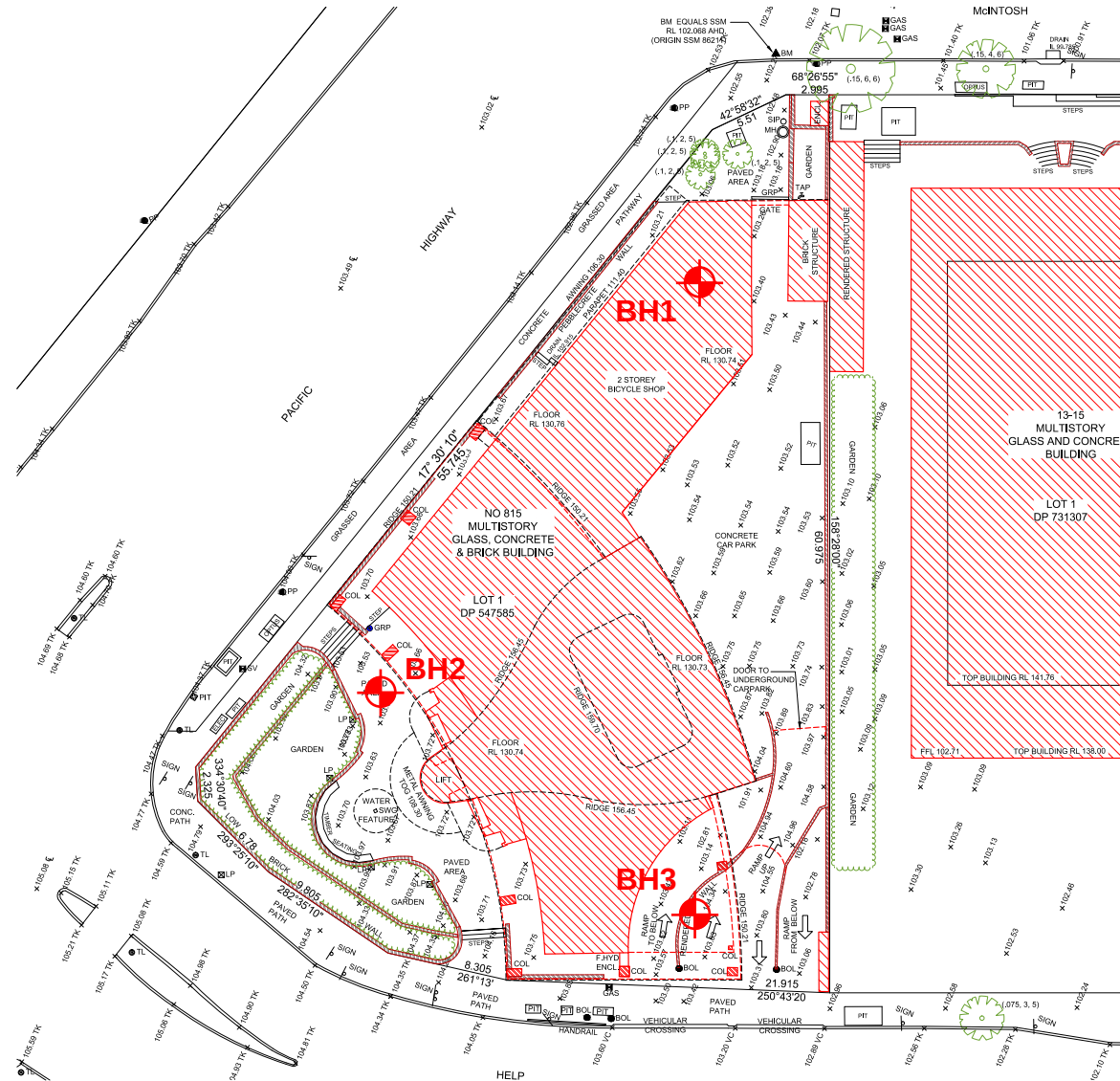
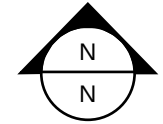


- Apartment
- Residential Amenity
- Commercial
- Retail
- Plant

Appendix B – Geotechnical Information

 = Borehole
 = DCP

 = Test Pit



Date: 28 November 2025

TEST LOCATION PLAN

Scale: Unknown

Engineering Log - Borehole

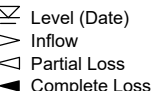
Project No.: GG12309.001

Client: Fabrick		Commenced: 10/11/2025	
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 13/11/2025	
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN	
Hole Position: See Plan		Checked By: MG	
Drill Model and Mounting: Komatsu 05		Inclination: -90°	
Hole Diameter: 110 mm		RL Surface: 97.00 m	
		Datum: AHD Operator: ND	

Drilling Information				Soil Description				Observations	
Method	Support	Penetration	Samples & Field Tests	Recovery	RL (m)	Depth (m)	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density
DT						0.13m	CONCRETE: 130mm thick.		
ADT							Silty CLAY: high plasticity, purple, red and pale grey, strength estimated.	M	VSt to H
						0.80m	Continued on cored borehole sheet		
					96.0	1			
					95.0	2			
					94.0	3			
					93.0	4			
					92.0	5			

Method
AS - Auger Screwing
ADV - Auger V Bit
ADT - Auger Tungsten Carbide Bit
RR - Rock Roller
WB - Washbore

Penetration

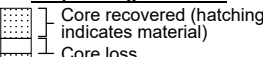

Water


Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet
w - Moisture Content
PL - Plastic Limit
LL - Liquid Limit

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
Fr - Friable
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss


Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

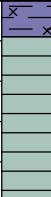
Engineering Log - Cored Borehole

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Project Name:		Geotechnical Investigation: 815 Pacific Highway, Chatswood				Completed:		13/11/2025																					
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Hole Position:		See Plan				Checked By:		MG																					
Drill Model and Mounting:		Komatsu 05		Inclination:		-90°		RL Surface:		97.00 m																			
Barrel Type and Length:		Impreg		Bearing:				Datum:		AHD Operator: ND																			
Drilling Information						Rock Substance						Rock Mass Defects																	
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS = L ₍₅₀₎ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																	
						0.80m	Continued from non-cored borehole sheet																						
							Silty CLAY: high plasticity, purple, red and pale grey, moist with highly weathered, fine grained, purple and red sandstone bands.	XW				0.90: P.P= >450kPa																	
						1.54m	IRONSTONE: fine grained, dark purple, red, laminated to very thinly bedded at 0°, fragmented.	HW				P, SN, PR, RF, Ironstone Px2, 0°, clay VN, PR, RF P, 0°, SN, PR, RF, Ironstone P 1.70: P.P= 350kPa EW, clay, ≈130 mm P, 0°, clay CT, PR, RF IS, clay, ≈50 mm P, 0°, clay CT, PR, RF 2.18: P.P= 350kPa																	
						2.07m	Silty CLAY: high plasticity, pale grey with purple, red, high plasticity, fine highly weathered, sandstone bands moist, estimate hard.	XW				2.60: P.P= 300kPa																	
						2.80m	Silty CLAY: high plasticity, pale grey, high plasticity, moist, estimate very stiff to hard.					2.94: P.P= 300kPa 3.10: P.P= 300kPa																	
								XW				3.65: P.P= 350kPa 3.95: P.P= 400kPa 4.16: P.P= 400kPa 4.50: P.P= >450kPa 4.85: P.P= >450kPa																	
												5.20: P.P= 350kPa																	
						5.46m	Silty CLAY: low to medium plasticity, purple, red and pale grey, high plasticity, with highly weathered, very low estimate strength siltstone bands, moist, estimate hard.	XW																					
Method						Water						Graphic Log/Core Loss						Weathering						Strength					
AS - Auger Screwing						Level (Date)						Core recovered (hatching indicates material)						FR - Fresh						VL - Very Low					
WB - Washbore						Inflow						Core loss						SW - Slightly Weathered						L - Low					
HQ3 - HQ3 Core Barrel						Partial Loss												MW - Moderately Weathered						M - Medium					
NQ3 - NQ3 Core Barrel						Complete Loss												DW - Distinctly Weathered						H - High					
NMLC- NMLC Core Barrel																		HW - Highly Weathered						VH - Very High					
																		XW - Extremely Weathered						EH - Extremely High					
																		RS - Residual Soil											
						Support																							
						T - Timbering																							

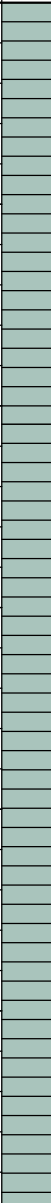
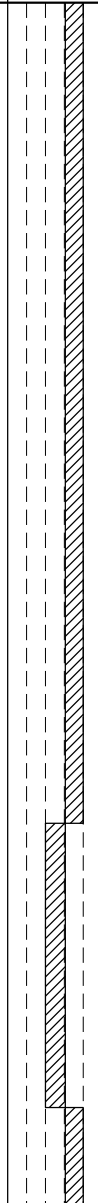
Engineering Log - Cored Borehole

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Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}(\sigma_1 + \sigma_2 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
NMLC	100% Return		100	81	90.0	6.18m		SHALE: with 20-30% fine grained, pale brown sandstone laminations, laminated at 0-10°, dark grey, highly fractured ashfield shale. SHALE: farctured core at 6.43m.	XW			P, 0°, CN, PR, SM P, 0°, SN, PR, SM, Ironstone P, 0 - 5°, CN, PR, SM EW, clay, =20 mm P, 5°, CN, PR, SM J, 35°, SN, PR, RF, Ironstone P, 5°, SN, PR, RF, Ironstone P, 5 - 10°, CN, PR, SM P, 5°, clay CT, PR, SM P, 0°, SN, PR, RF, Ironstone P, 0°, SN, PR, RF, Ironstone IS, clay, =50 mm P, 0°, SN, PR, RF, Ironstone EW, clay, =50 mm P, 0°, CN, PR, SM P, 0°, CN, PR, SM 7.27: P.P.= >450kPa P, 0°, SN, PR, SM, Ironstone P, 0°, clay CT, PR, SM P, 0°, CN, ST, SM P, 5°, clay VN, PR, SM P, 5°, CN, PR, SM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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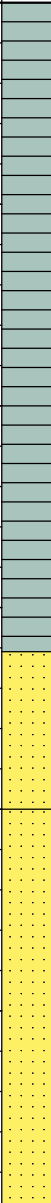
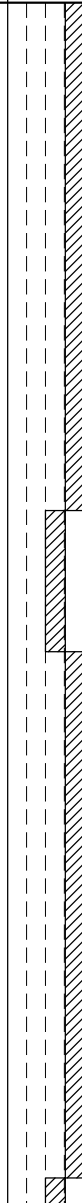
Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 10/11/2025														
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 13/11/2025														
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN														
Hole Position: See Plan		Checked By: MG														
Drill Model and Mounting: Komatsu 05		Inclination: -90°														
Barrel Type and Length: Impreg		RL Surface: 97.00 m														
		Datum: AHD Operator: ND														
Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{2}(\sigma_1 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
NMLC	100% Return		100	84	84.0	13		SHALE: with 20-30% fine grained, pale grey sandstone laminations, laminated at 0-5°, dark grey fractured core, ashfield shale(continued)	FR			P, 0°, clay VN, PR, SM P, 0°, clay CT, PR, SM J, 20°, CN, PR, SM				
			100	85	83.0	14		14.09m				SHALE: dark grey, laminated at 0°, slightly fractured ashfield shale.	J, 50°, CN, CU, SM P, 0 - 5°, CN, PR, SM P, 0 - 5°, CN, PR, SM EW, clay, =20 mm J, 80°, CN, PR, SM EW, clay, =20 mm P, 0 - 5°, CN, PR, SM			
			100	100	82.0	15						P, 0°, CN, PR, SM EW, clay, =20 mm				
			100	100	81.0	16		SHALE: fractured core below 16.07m.				J, 40°, CN, CU, SM P, 0°, clay CN, PR, SM J, 40°, CN, CU, SM P, 5°, CN, PR, SM P, 0°, clay CT, PR, SM P, 0°, CN, PR, SM				
			100	86	80.0	17						J, 50°, CN, PR, SM J, 40°, CN, CU, SM				
			100	100				SHALE: slightly fractured below 17.48m.				P, 0°, CN, PR, SM J, 60°, CN, CU, SM P, 0 - 5°, CN, PR, SM J, 45°, CN, CU, SM				
												J, 50 - 60°, CN, CU, SM				

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 10/11/2025											
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 13/11/2025											
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN											
Hole Position: See Plan		Checked By: MG											
Drill Model and Mounting: Komatsu 05		Inclination: -90°											
Barrel Type and Length: Impreg		RL Surface: 97.00 m											
		Datum: AHD Operator: ND											
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}\sigma_1$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
NMLC	50% Return		100	100	78.0	19		SHALE: dark grey, laminated at 0°, slightly fractured ashfield shale(continued)	FR			J, 0 - 20°, CN, CU, SM	
			100	91	77.0	20		J, 20°, CN, PR, SM					
			100	75	76.0	21		J, 20°, CN, PR, SM					
			100	75	75.0	22		J, 20°, CN, PR, SM					
			100	100	74.0	23		J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
			100	91				J, 20°, CN, PR, SM					
Method		Water		Graphic Log/Core Loss		Weathering		Strength					
AS - Auger Screwing		Level (Date)		Core recovered (hatching indicates material)		FR - Fresh		VL - Very Low					
WB - Washbore		Inflow		Core loss		SW - Slightly Weathered		L - Low					
HQ3 - HQ3 Core Barrel		Partial Loss				MW - Moderately Weathered		M - Medium					
NQ3 - NQ3 Core Barrel		Complete Loss				DW - Distinctly Weathered		H - High					
NMLC - NMLC Core Barrel						HW - Highly Weathered		VH - Very High					
						XW - Extremely Weathered		EH - Extremely High					
						RS - Residual Soil							

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 10/11/2025																
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 13/11/2025																
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN																
Hole Position: See Plan		Checked By: MG																
Drill Model and Mounting: Komatsu 05		Inclination: -90°																
Barrel Type and Length: Impreg		RL Surface: 97.00 m																
		Datum: AHD Operator: ND																
Drilling Information		Rock Substance		Rock Mass Defects														
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
NMLC		50% Return	100	91	72.0	25		SANDSTONE: fine grained, pale grey, very thinly bedded 0°-10°, slightly fractured, with 10% dark grey siltstone laminations(continued)	FR			P, 5°, clay VN, PR, RF						
												P, 5°, CN, PR, RF						
												P, 5 - 10°, clay VN, PR, RF						
												P, 5°, clay VN, PR, RF						
		100% Return	100	95	71.0	26												P, 5 - 10°, CN, PR, RF
																		P, 10°, clay VN, PR, RF
																		P, 10°, clay CN, PR, RF

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 10/11/2025	
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 13/11/2025	
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN	
Hole Position: See Plan		Checked By: MG	

Drill Model and Mounting: Komatsu 05		Inclination: -90°		RL Surface: 97.00 m	
Barrel Type and Length: Impreg		Bearing:		Datum: AHD Operator: ND	

Drilling Information							Rock Substance				Rock Mass Defects							
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}(\sigma_1 + \sigma_2 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
									VL	M	H	VH	EH	10	30	100	300	1000
			100	99				30.21m	FR									
								Hole Terminated at 30.21 m End										
						31		66.0										
						32		65.0										
						33		64.0										
						34		63.0										
						35		62.0										

Method

- AS - Auger Screwing
- WB - Washbore
- HQ3 - HQ3 Core Barrel
- NQ3 - NQ3 Core Barrel
- NMLC - NMLC Core Barrel

Water

-  Level (Date)
-  Inflow
-  Partial Loss
-  Complete Loss

Support

- T - Timbering

Graphic Log/Core Loss

-  Core recovered (hatching indicates material)
-  Core loss

Weathering

- FR - Fresh
- SW - Slightly Weathered
- MW - Moderately Weathered
- DW - Distinctly Weathered
- HW - Highly Weathered
- XW - Extremely Weathered
- RS - Residual Soil

Strength

- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Engineering Log - Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 14/11/2025	
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 18/11/2025	
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN	
Hole Position: See Plan		Checked By: MG	
Drill Model and Mounting: Komatsu 05		Inclination: -90°	
Hole Diameter: 110 mm		RL Surface: 97.00 m	
		Datum: AHD	
		Operator: ND	

Drilling Information				Soil Description				Observations					
Method	Support	Penetration	Samples & Field Tests	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Structure and Additional Observations
DT								GP	0.10m CONCRETE: 100mm thick.				FILL
								CH	0.28m FILL GRAVEL: coarse, dark grey, angular igneous gravel and cobbles. Silty CLAY: red mottled pale grey, estimated hard with dark red, fine angular ironstone gravel..				RESIDUAL SOIL
					96.0	1				M	St to VSt		
					95.0	2			Silty CLAY: pale red and pale grey at 2.0m.				
					94.0	3			2.60m SHALE: dark grey, laminated, highly weathered, very low estimated strength.	D to M			ROCK
					93.0	4			3.00m Continued on cored borehole sheet				
					92.0	5							

Method
AS - Auger Screwing
ADV - Auger V Bit
ADT - Auger Tungsten Carbide Bit
RR - Rock Roller
WB - Washbore

Support
C - Casing

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet
w - Moisture Content
PL - Plastic Limit
LL - Liquid Limit

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
Fr - Friable
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

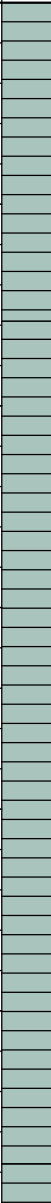
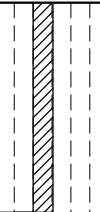
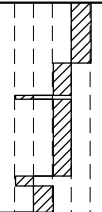
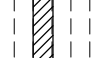
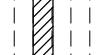
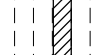
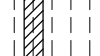
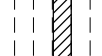
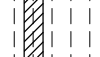
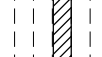
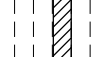
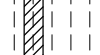
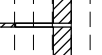
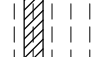
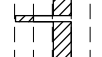
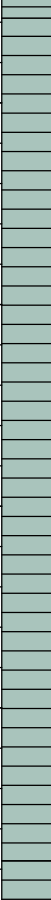
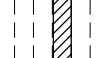
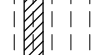
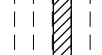
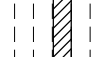
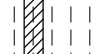
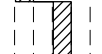
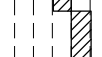
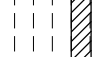
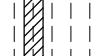
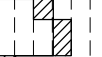
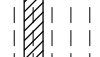
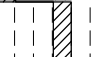
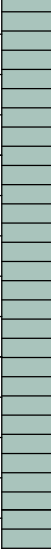
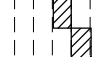
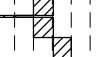
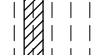
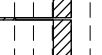
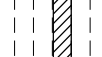
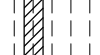
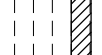
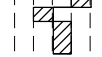
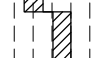
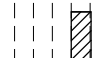
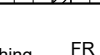
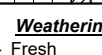
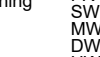
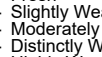
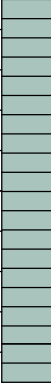
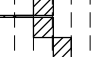
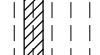
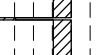
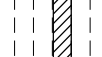
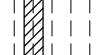
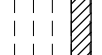
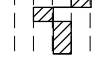
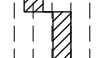
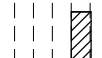
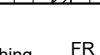
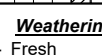
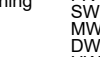
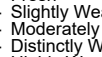
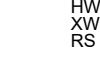
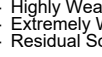
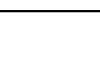
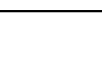
Engineering Log - Cored Borehole

Project No.: GG12309.001

[illegible]

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 14/11/2025																		
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 18/11/2025																		
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN																		
Hole Position: See Plan		Checked By: MG																		
Drill Model and Mounting: Komatsu 05		Inclination: -90°																		
Barrel Type and Length: Impreg		RL Surface: 97.00 m																		
		Datum: AHD Operator: ND																		
Drilling Information							Rock Substance							Rock Mass Defects						
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}\sigma_{1(50)}$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
NMLC	100% Water Return		100	75	90.0	7		SHALE: with 30-40%, fine grained, grey-brown laminated at 0-5°, fractured core, ashfield shale.(continued)	FR			P, 0°, CN, PR, SM								
			100	75	90.0	7			FR			J, 50°, CN, PR, RF								
			100	75	90.0	7			FR			P, 0 - 5°, CN, PR, SM								
			100	75	90.0	7			FR			P, 0 - 5°, clay CT, PR, SM								
			100	75	90.0	7			FR			EW, =50 mm, Clay Seam								
			100	75	90.0	7			FR			J, 70 - 80°, CN, PR, SM								
			100	75	90.0	7			FR											
			100	75	90.0	7			FR											
			100	75	90.0	7			FR											
			100	75	90.0	7			FR											
			100	75	90.0	7			FR											
			100	75	90.0	7			FR											
NMLC	100% Water Return		100	52	89.0	8		7.58m 7.67m SHALE: dark grey, laminated at 0-5°.	FR			IS, =110 mm								
			100	52	89.0	8			FR			P, 5°, clay CT, PR, SM								
			100	52	89.0	8			FR			P, 5°, CN, PR, SM								
			100	52	89.0	8			FR			P, 5 - 10°, clay CT, PR, SM								
			100	52	89.0	8			FR			P, 0°, clay VN, PR, SM								
			100	52	89.0	8			FR			P, 5°, clay VN, PR, SM								
			100	52	89.0	8			FR			J, 50°, CN, PR, SM								
			100	52	89.0	8			FR			P, 5°, CN, PR, SM								
			100	52	89.0	8			FR			P, 10°, CN, PR, SM								
			100	52	89.0	8			FR			P, 5 - 10°, CN, PR, SM								
			100	52	89.0	8			FR			EW, =20 mm, Clay Seam								
			100	52	89.0	8			FR			P, 5°, clay VN, PR, SM								
NMLC	100% Water Return		100	89	88.0	9			FR			EW, =10 mm, Clay Seam								
			100	89	88.0	9			FR			J, 35°, CN, ST, SM								
			100	89	88.0	9			FR			P, 5°, clay CT, PR, SM								
			100	89	88.0	9			FR			EW, =10 mm, Clay Seam								
			100	89	88.0	9			FR			P, 5 - 10°, CN, PR, SM								
			100	89	88.0	9			FR			P, 10°, clay VN, PR, SM								
			100	89	88.0	9			FR			EW, =10 mm, Clay Seam								
			100	89	88.0	9			FR			J, 50°, CN, PR, SM								
			100	89	88.0	9			FR											
			100	89	88.0	9			FR											
			100	89	88.0	9			FR											
			100	89	88.0	9			FR											
NMLC	100% Water Return		100	81	87.0	10			FR			EW, =5 mm, Clay Seam								
			100	81	87.0	10			FR			P, 0°, CN, PR, SM								
			100	81	87.0	10			FR			P, 0°, clay CT, PR, SM								
			100	81	87.0	10			FR			P, 0°, CN, PR, SM								
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
			100	81	87.0	10			FR											
Method AS - Auger Screwing WB - Washbore HQ3 - HQ3 Core Barrel NQ3 - NQ3 Core Barrel NMLC - NMLC Core Barrel				Water ▽ Level (Date) ▽ Inflow ▽ Partial Loss ▲ Complete Loss				Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss				Weathering FR - Fresh SW - Slightly Weathered MW - Moderately Weathered DW - Distinctly Weathered HW - Highly Weathered XW - Extremely Weathered RS - Residual Soil				Strength VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High				
Support T - Timbering																				

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 14/11/2025												
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 18/11/2025												
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN												
Hole Position: See Plan		Checked By: MG												
Drill Model and Mounting: Komatsu 05		Inclination: -90°												
Barrel Type and Length: Impreg		RL Surface: 97.00 m												
		Datum: AHD Operator: ND												
Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{2}(\sigma_1 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
NMLC		100% Water Return	100	91	84.0	13		SHALE: dark grey, laminated at 0-5°, slightly frqactured ashfield shale(continued)	FR	VL L M H VH EH	10 30 100 300 1000	J, 65°, CN, CU, SM		
							J, 15°, CN, PR, SM							
							J, 30°, CN, PR, SM							
							J, 85 - 90°, CN, PR, SM							
							P, 5°, CN, PR, SM							
							Px4, 0 - 5°, clay VN, PR, SM							
							Px4, 0 - 5°, clay VN, PR, SM							
							P, 0°, CN, PR, SM							
							P, 0°, clay VN, PR, SM							
							DB							
							P, 0°, clay VN, PR, SM							
							J, 85 - 90°, CN, PR, SM							
							J, 80°, CN, PR, SM							
							J, 80°, CN, PR, SM							
							J, 30°, CN, PR, SM							
							J, 40°, CN, CU, SM							
							J, 25 - 30°, CN, ST, SM							
							J, 60 - 80°, CN, CU, SM							
							J, 70 - 80°, CN, PR, SM							
							J, 50°, CN, CU, SM							
							IS, ≈20 mm							
							J, 40°, CN, PR, SM							
							J, 20°, CN, PR, SM							
							J, 15 - 20°, CN, PR, SM							
Method		Water		Graphic Log/Core Loss		Weathering		Strength						
AS - Auger Screwing		▽ Level (Date)		Core recovered (hatching indicates material)		FR - Fresh		VL - Very Low						
WB - Washbore		▽ Inflow		Core loss		SW - Slightly Weathered		L - Low						
HQ3 - HQ3 Core Barrel		▽ Partial Loss				MW - Moderately Weathered		M - Medium						
NQ3 - NQ3 Core Barrel		◄ Complete Loss				DW - Distinctly Weathered		H - High						
NMLC - NMLC Core Barrel						HW - Highly Weathered		VH - Very High						
						XW - Extremely Weathered		EH - Extremely High						
						RS - Residual Soil								

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Completed: 14/11/2025																																
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 18/11/2025																																
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN																																
Hole Position: See Plan		Checked By: MG																																
Drill Model and Mounting: Komatsu 05		Inclination: -90°																																
Barrel Type and Length: Impreg		RL Surface: 97.00 m																																
		Datum: AHD Operator: ND																																
Drilling Information							Rock Substance							Rock Mass Defects																				
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}(\sigma_1 + \sigma_2 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																						
NMLC		60% Water Return	84	89	78.0	19		SHALE: dark grey, laminated at 0-5°, slightly frqactured ashfield shale(continued)	FR			J, 80 - 85°, CN, PR, SM																						
			100	100	77.0	20		J, 80 - 85°, CN, PR, SM																										
			100	100	76.0	21		J, 30°, CN, UN, SM																										
			100	100	75.0	22		J, 40°, CN, CU, SM																										
			100	100	74.0	23		J, 80°, CN, CU, SM																										
			100	100				J, 85 - 90°, CN, PR, SM																										
			100	100				P, 0 - 5°, clay CT, PR, SM																										
			100	100				J, 50°, CN, CU, SM																										
			100	100				J, 50°, CN, Su, SM																										
			100	100				P, 0°, CN, PR, RF																										
			100	100				P, 0 - 5°, CN, PR, RF																										
			100	100				P, CN, PR, RF																										
			100	100				DB																										
			100	100				DB																										
			100	100				DB																										
			Method AS - Auger Screwing WB - Washbore HQ3 - HQ3 Core Barrel NQ3 - NQ3 Core Barrel NMLC- NMLC Core Barrel									Water Level (Date) Inflow Partial Loss Complete Loss							Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss							Weathering FR - Fresh SW - Slightly Weathered MW - Moderately Weathered DW - Distinctly Weathered HW - Highly Weathered XW - Extremely Weathered RS - Residual Soil							Strength VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High	
Support T - Timbering																																		

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 14/11/2025										
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 18/11/2025										
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN										
Hole Position: See Plan		Checked By: MG										
Drill Model and Mounting: Komatsu 05		Inclination: -90°										
Barrel Type and Length: Impreg		RL Surface: 97.00 m										
		Datum: AHD Operator: ND										
Drilling Information		Rock Substance		Rock Mass Defects								
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{2}(\sigma_1 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
NMLC			100	100				SANDSTONE: fine grained, with siltstone laminations (20%) very thinly to thinly bedded at 0-10°, slightly fractured minchinbury sandstone.(continued)	FR	VL L M H VH EH	10 30 100 300 1000	DB DB DB DB
			100	100	72.0	25						
					71.0	26						
					70.0	27		Hole Terminated at 26.11 m End				
					69.0	28						
					68.0	29						
Method		Water		Graphic Log/Core Loss		Weathering		Strength				
AS - Auger Screwing WB - Washbore HQ3 - HQ3 Core Barrel NQ3 - NQ3 Core Barrel NMLC - NMLC Core Barrel		☒ Level (Date) ☐ Inflow ☐ Partial Loss ◄ Complete Loss		☐ Core recovered (hatching indicates material) ☒ Core loss		FR - Fresh SW - Slightly Weathered MW - Moderately Weathered DW - Distinctly Weathered HW - Highly Weathered XW - Extremely Weathered RS - Residual Soil		VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High				
Support		T - Timbering										

Method

AS - Auger Screwing
WB - Washbore
HQ3 - HQ3 Core Barrel
NQ3 - NQ3 Core Barrel
NMLC - NMLC Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
MW - Moderately Weathered
DW - Distinctly Weathered
HW - Highly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength

VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 19/11/2025	
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 21/11/2025	
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN	
Hole Position: See Plan		Checked By: MG	
Drill Model and Mounting: Komatsu 05		Inclination: -90°	
Hole Diameter: 110 mm		RL Surface: 97.00 m	
		Datum: AHD Operator: ND	

Drilling Information				Soil Description				Observations				
Method	Support	Penetration	Samples & Field Tests	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Structure and Additional Observations
DT									0.15m CONCRETE: 150mm thick.			
								GP	0.25m FILL GRAVEL: coarse angular gravel and cobbles, dark grey.			FILL
								CI /CH	Silty CLAY: medium to high plasticity, red and pale grey mottled.		VSt	RESIDUAL SOIL
					96.0	1						
					95.0	2				M		
					94.0	3				H		
									3.47m			
									Continued on cored borehole sheet			
					93.0	4						
					92.0	5						

Method
AS - Auger Screwing
ADV - Auger V Bit
ADT - Auger Tungsten Carbide Bit
RR - Rock Roller
WB - Washbore

Support
C - Casing

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet
w - Moisture Content
PL - Plastic Limit
LL - Liquid Limit

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
Fr - Friable
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

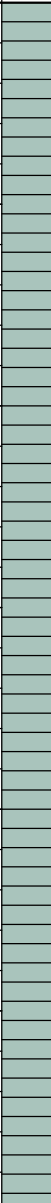
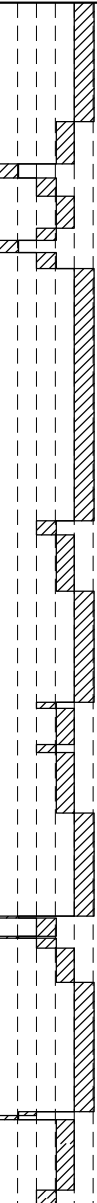
Engineering Log - Cored Borehole

Project No.: GG12309.001

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Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 19/11/2025															
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 21/11/2025															
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN															
Hole Position: See Plan		Checked By: MG															
Drill Model and Mounting: Komatsu 05		Inclination: -90°															
Barrel Type and Length: Impreg		RL Surface: 97.00 m															
		Datum: AHD Operator: ND															
Drilling Information		Rock Substance		Rock Mass Defects													
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}(\sigma_1 + \sigma_2 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
NMLC	100% Water Return		100	67	90.0	7		SHALE: dark grey with 30-40% fine grained, grey-brown sandstone laminations, laminated at 0-5°, fractured core, ashfield shale(continued)	FR			Px5, 0 - 5°, clay CT, PR, SM					
												Px5, 0 - 5°, clay CT, PR, SM					
			100	81	89.0	8						P, 5°, clay VN, PR, SM					
												P, 0°, CN, PR, SM					
			100	94	88.0	9						IS, 70°					
												P, 5 - 10°, CN, PR, SM					
			100	80	87.0	10						J, 25°, CN, PR, SM					
												J, 50°, CN, PR, SM					
			100	88	86.0	11						EW, =60 mm, Clay Seam					
												P, 0°, clay CT, PR, SM					
			100	88	86.0	12						P, 0°, clay CT, PR, SM					
												P, 0°, clay CT, PR, SM					
Method AS - Auger Screwing WB - Washbore HQ3 - HQ3 Core Barrel NQ3 - NQ3 Core Barrel NMLC - NMLC Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered MW - Moderately Weathered DW - Distinctly Weathered HW - Highly Weathered XW - Extremely Weathered RS - Residual Soil Strength VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High Support T - Timbering																	

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 19/11/2025										
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 21/11/2025										
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN										
Hole Position: See Plan		Checked By: MG										
Drill Model and Mounting: Komatsu 05		Inclination: -90°										
Barrel Type and Length: Impreg		RL Surface: 97.00 m										
		Datum: AHD Operator: ND										
Drilling Information		Rock Substance		Rock Mass Defects								
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength UCS= $\frac{1}{3}(\sigma_1 + \sigma_2 + \sigma_3)$ ● - Axial ○ - Diametral ■ - UCS	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
NMLC	100% Water Return	100	100	88	84.0	13		SHALE: dark grey, laminated at 0°, fractured core, ashfield gravel.	FR			P, 0°, clay CN, PR, SM P, 0 - 10°, clay VN, PR, SM EW, =20 mm, Clay Seam J, 40°, CN, PR, SM P, 0°, CN, PR, SM J, 40°, CN, PR, SM
						14	83.0	SHALE: slightly fractured below 13.85m.				Px4, 0°, CN, PR, SM P, 0°, clay CT, PR, SM P, 0°, clay CT, PR, SM P, 0°, clay CT, PR, SM P, 0°, CN, PR, SM J, 10°, CN, ST, SM
						15	82.0					
						16	81.0					
						17	80.0	SHALE: fractured core below 17.25m.				J, 35°, CN, PR, SM J, 55°, CN, PR, SM J, 60°, CN, PR, SM IS, =70 mm J, 40°, CN, PR, SM J, 45°, CN, PR, SM J, 20°, CN, PR, SM
Method		Water		Graphic Log/Core Loss		Weathering		Strength				
AS - Auger Screwing WB - Washbore HQ3 - HQ3 Core Barrel NQ3 - NQ3 Core Barrel NMLC - NMLC Core Barrel		VL Level (Date) ▽ Inflow △ Partial Loss ◄ Complete Loss		 Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered MW - Moderately Weathered DW - Distinctly Weathered HW - Highly Weathered XW - Extremely Weathered RS - Residual Soil		VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High				
Support												
T - Timbering												

Engineering Log - Cored Borehole

Project No.: GG12309.001

Client: Fabrick		Commenced: 19/11/2025										
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 21/11/2025										
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN										
Hole Position: See Plan		Checked By: MG										
Drill Model and Mounting: Komatsu 05		Inclination: -90°										
Barrel Type and Length: Impreg		RL Surface: 97.00 m										
		Datum: AHD Operator: ND										
Drilling Information		Rock Substance		Rock Mass Defects								
Method	Support	Water	TCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength	Average Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
NMLC	100% Water Return		100	84	78.0	19		SHALE: dark grey, laminated at 0°, fractured core, aashfield gravel.(continued)	FR			J, 85 - 90°, CN, CU, SM J, 80 - 85°, CN, CU, SM EW, =20 mm, Clay Seam J, 60°, CN, PR, SM J, 75°, CN, PR, SM
			100	91	77.0	20		SHALE: slightly fractured below 19.27m.				J, 80°, CN, PR, SM J, 35°, CN, PR, SM J, 70 - 75°, CN, PR, SM J, 45°, CN, PR, SM J, 60°, CN, PR, SM J, 10 - 20°, CN, CU, SM P, 0°, CN, PR, SM DB DB
			100	100	76.0	21		SANDSTONE: fine grained, grey with dark grey siltstone laminations, very thinly bedded at 0-5°, minchinbury sandstone, slightly fractured.				J, 85 - 90°, CN, PR, SM DB DB P, 0 - 5°, CN, PR, RF P, 0°, CN, PR, RF DB DB P, 0°, CN, PR, RF P, 5°, clay VN, PR, RF DB EW, =20 mm, Clay Seam P, 5°, CN, PR, RF DB P, 5°, clay CT, PR, RF DB P, 0°, clay VN, PR, RF
			100	93	74.0	23						
			100									
			100									
			100									
			100									
			100									
			100									
Method		Water		Graphic Log/Core Loss		Weathering		Strength				
AS - Auger Screwing		Level (Date)		Core recovered (hatching indicates material)		FR - Fresh		VL - Very Low				
WB - Washbore		Inflow		Core loss		SW - Slightly Weathered		L - Low				
HQ3 - HQ3 Core Barrel		Partial Loss				MW - Moderately Weathered		M - Medium				
NQ3 - NQ3 Core Barrel		Complete Loss				DW - Distinctly Weathered		H - High				
NMLC - NMLC Core Barrel						HW - Highly Weathered		VH - Very High				
						XW - Extremely Weathered		EH - Extremely High				
						RS - Residual Soil						

Engineering Log - Cored Borehole

Project No.: GG12309.001

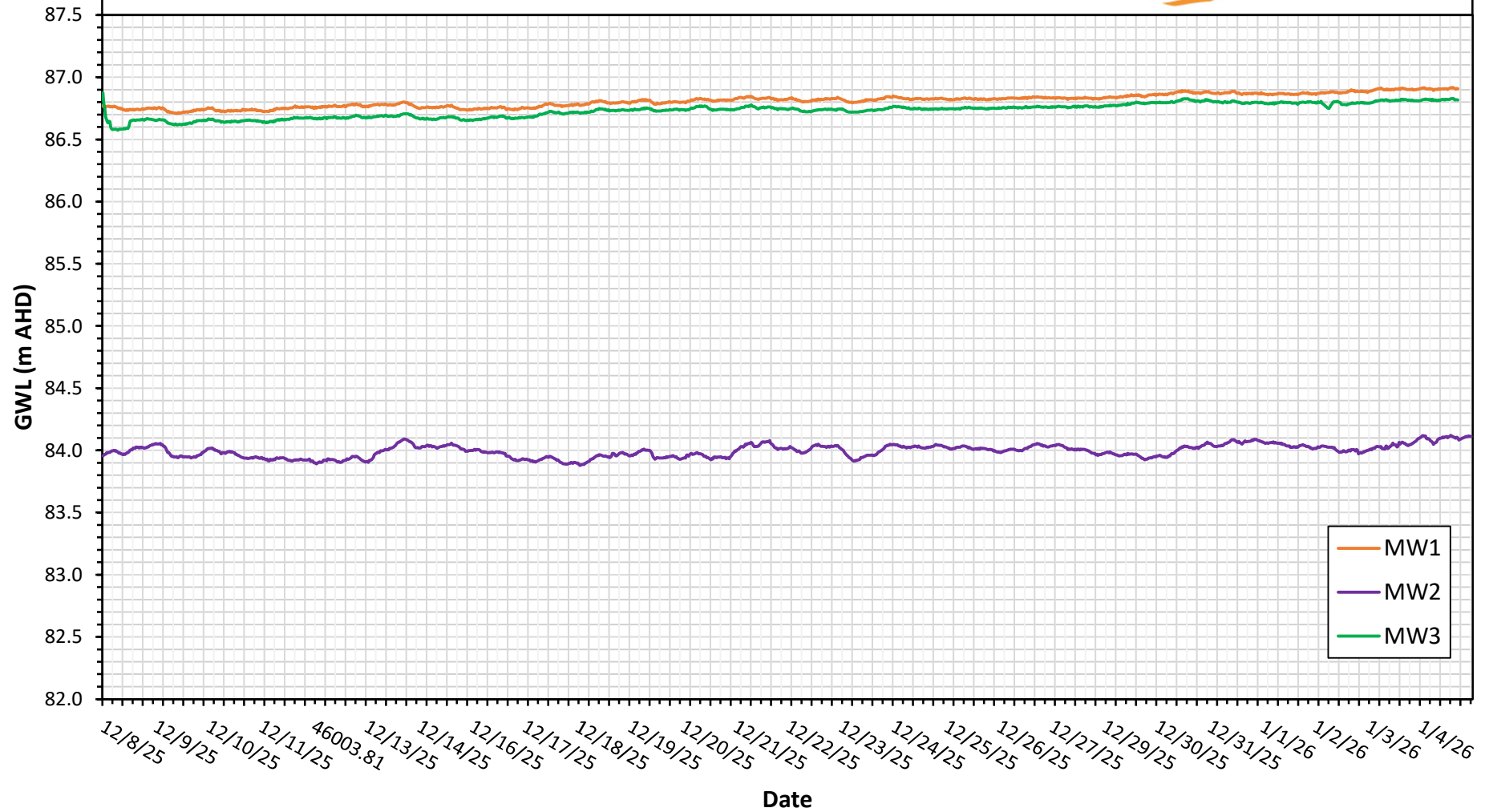
Client: Fabrick		Commenced: 19/11/2025	
Project Name: Geotechnical Investigation: 815 Pacific Highway, Chatswood		Completed: 21/11/2025	
Hole Location: 815 Pacific Highway, Chatswood		Logged By: AN	
Hole Position: See Plan		Checked By: MG	
Drill Model and Mounting: Komatsu 05		Inclination: -90°	
Barrel Type and Length: Impreg		RL Surface: 97.00 m	
		Datum: AHD Operator: ND	
Drilling Information		Rock Substance	
Method	Support	Water	TCR (%)
Water	TCR (%)	RQD (%)	RL (m)
Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering
NMLC		100% Water Return	
		100	
		100	
		72.0	
		25	
		71.0	
		26	
		26.33m	
		Hole Terminated at 26.33 m End	
		70.0	
		27	
		69.0	
		28	
		68.0	
		29	
Method		Water	
AS - Auger Screwing		Level (Date)	
WB - Washbore		Inflow	
HQ3 - HQ3 Core Barrel		Partial Loss	
NQ3 - NQ3 Core Barrel		Complete Loss	
NMLC - NMLC Core Barrel		Support	
		T - Timbering	
Graphic Log/Core Loss		Weathering	
Core recovered (hatching indicates material)		FR - Fresh	
Core loss		SW - Slightly Weathered	
		MW - Moderately Weathered	
		DW - Distinctly Weathered	
		HW - Highly Weathered	
		XW - Extremely Weathered	
		RS - Residual Soil	
Strength		Strength	
VL - Very Low		L - Low	
M - Medium		H - High	
VH - Very High		EH - Extremely High	

Appendix C – Groundwater Monitoring Data

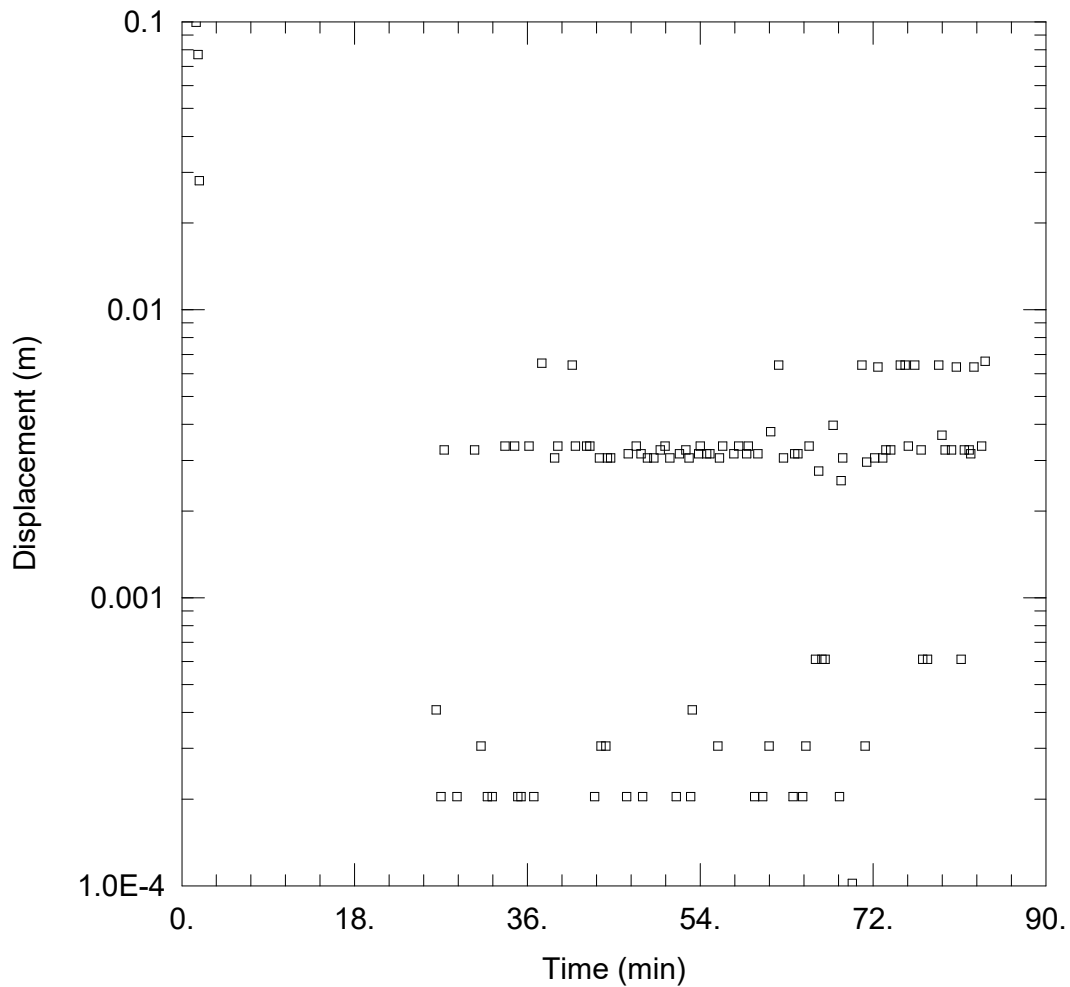
Client: Green Geotechnics Pty Ltd
Job No: S-0350.00
Project: 815 Pacific Highway, Chatswood NSW



D&N
Geotechnical



Appendix D – AQTESOLV Outputs



WELL TEST ANALYSIS

Data Set: C:\...\MW1-F-HOBO.aqt

Date: 01/15/26

Time: 16:57:44

PROJECT INFORMATION

Company: D&N Geotechnical

Client: Green Geotechnics

Project: S-0350.00

Location: 815 Pacific Highway, Chatswood

Test Well: MW1

Test Date: 05/1/2026

AQUIFER DATA

Saturated Thickness: 11.29 m

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW1)

Initial Displacement: 5.74 m

Total Well Penetration Depth: 21.39 m

Casing Radius: 0.025 m

Static Water Column Height: 11.29 m

Screen Length: 4.39 m

Well Radius: 0.025 m

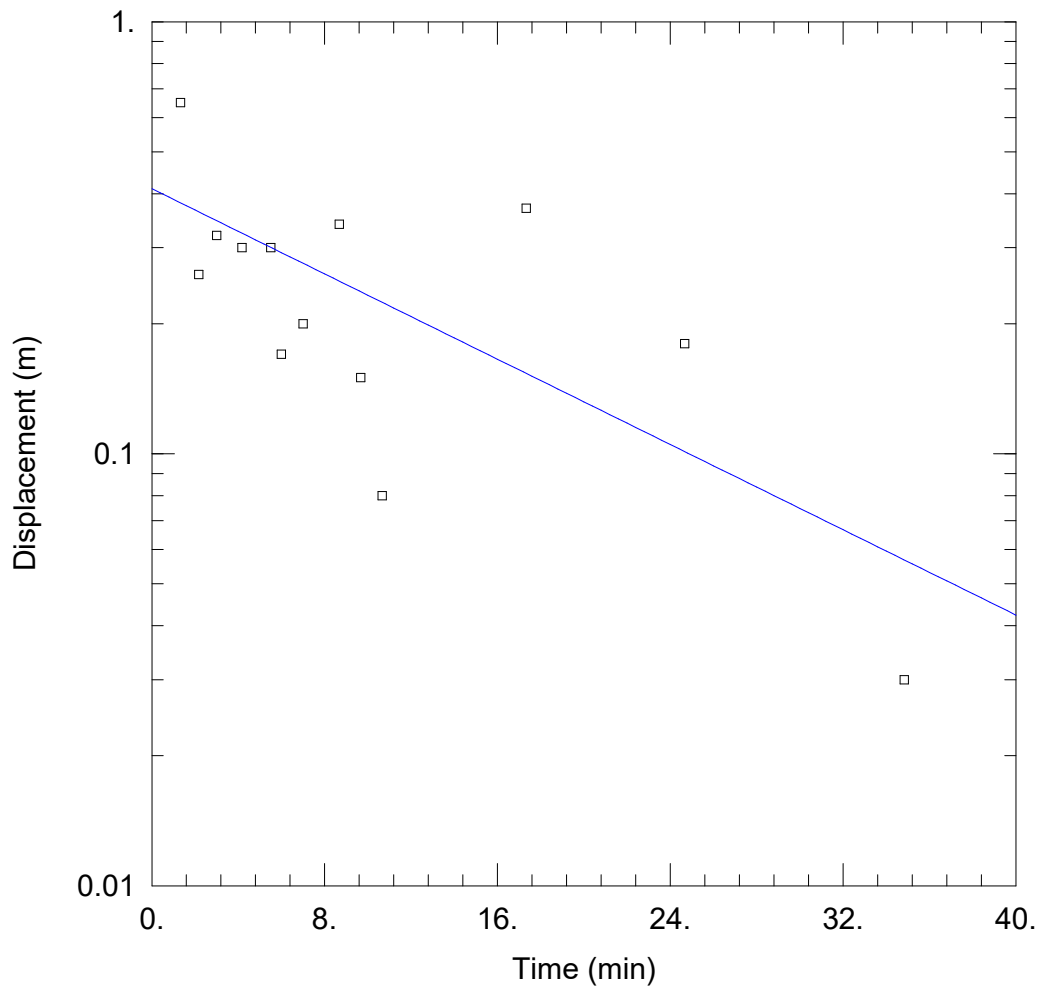
SOLUTION

Aquifer Model: Unconfined

$K = 2.03E-11$ m/sec

Solution Method: Bouwer-Rice

$y_0 = 1.796E-5$ m



WELL TEST ANALYSIS

Data Set: C:\...\MW1-R-MANU.aqt

Date: 01/15/26

Time: 11:15:43

PROJECT INFORMATION

Company: D&N Geotechnical

Client: Green Geotechnics

Project: S-0350.00

Location: 815 Pacific Highway, Chatswood

Test Well: MW1

Test Date: 08/12/2025

AQUIFER DATA

Saturated Thickness: 11.17 m

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW1)

Initial Displacement: 3.48 m

Total Well Penetration Depth: 21.39 m

Casing Radius: 0.025 m

Static Water Column Height: 11.17 m

Screen Length: 4.39 m

Well Radius: 0.025 m

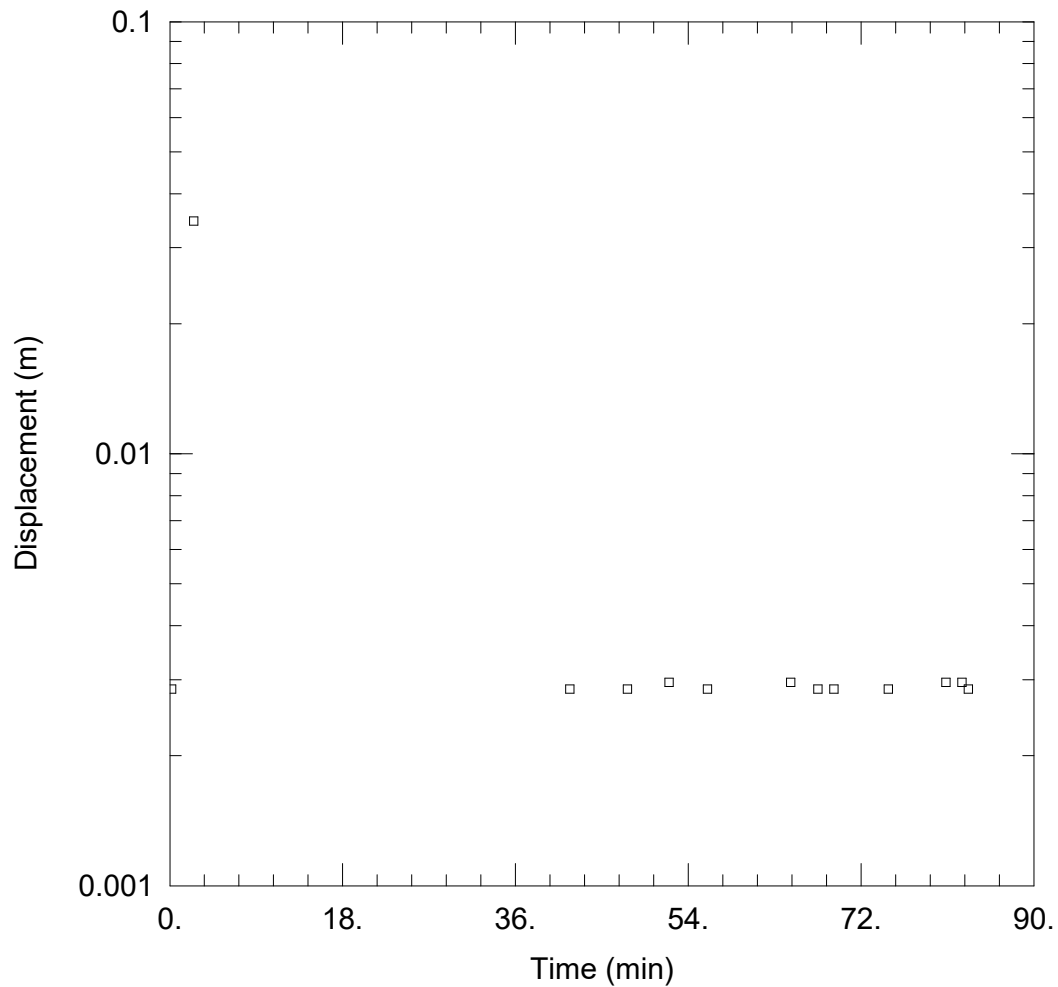
SOLUTION

Aquifer Model: Unconfined

$K = 3.384E-7$ m/sec

Solution Method: Bouwer-Rice

$y_0 = 0.4109$ m



WELL TEST ANALYSIS

Data Set: C:\...\MW2-F-HOBO.aqt

Date: 01/15/26

Time: 17:22:24

PROJECT INFORMATION

Company: D&N Geotechnical

Client: Green Geotechnics

Project: S-0350.00

Location: 815 Pacific Highway, Chatswood

Test Well: MW2

Test Date: 08/12/2025

AQUIFER DATA

Saturated Thickness: 8.6 m

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW2)

Initial Displacement: 1.85 m

Static Water Column Height: 8.6 m

Total Well Penetration Depth: 21.33 m

Screen Length: 4.33 m

Casing Radius: 0.025 m

Well Radius: 0.025 m

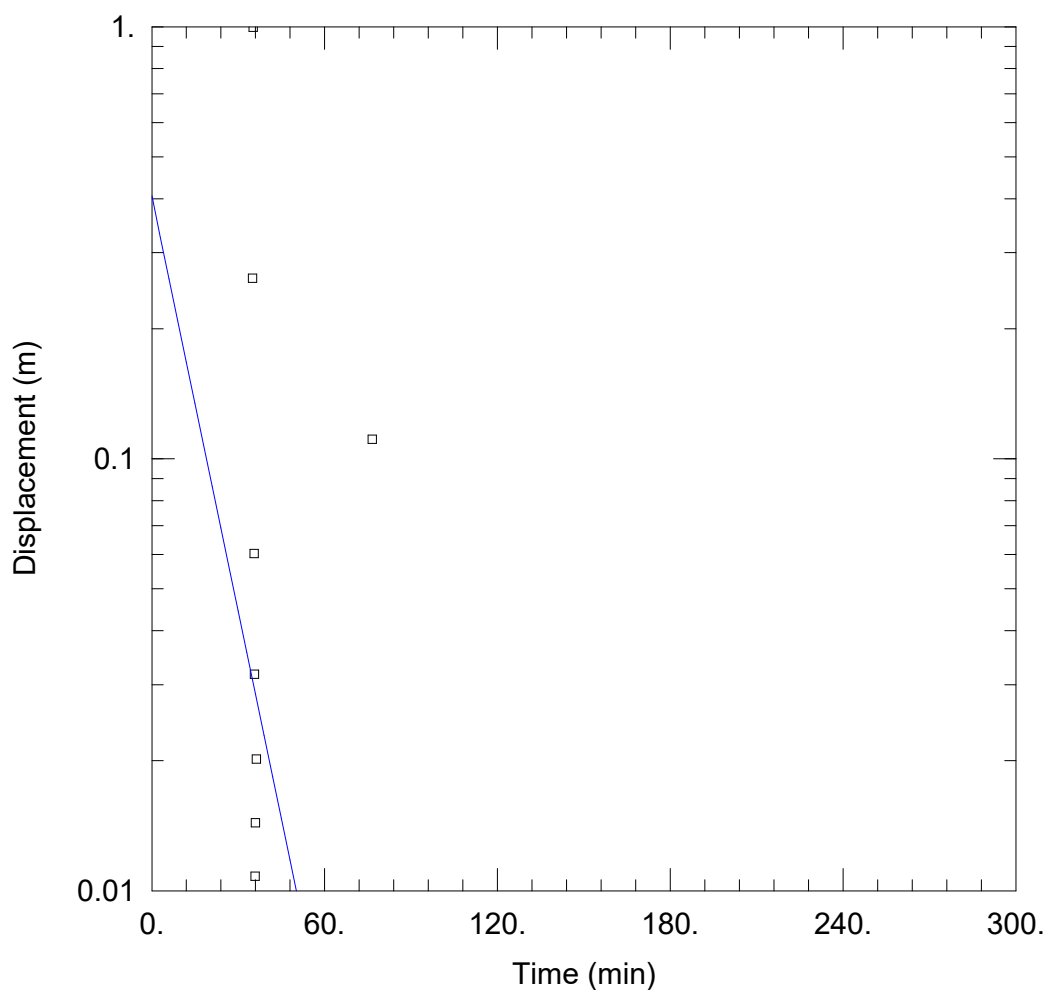
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 8.678E-6$ m/sec

$y_0 = 7.779E-5$ m



WELL TEST ANALYSIS

Data Set: C:\...\MW2-R-HOBO.aqt

Date: 01/15/26

Time: 17:25:47

PROJECT INFORMATION

Company: D&N Geotechnical

Client: Green Geotechnics

Project: S-0350.00

Location: 815 Pacific Highway, Chatswood

Test Well: MW2

Test Date: 08/12/2025

AQUIFER DATA

Saturated Thickness: 8.28 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW2)

Initial Displacement: 3.31 m

Total Well Penetration Depth: 21.33 m

Casing Radius: 0.025 m

Static Water Column Height: 8.28 m

Screen Length: 4.33 m

Well Radius: 0.025 m

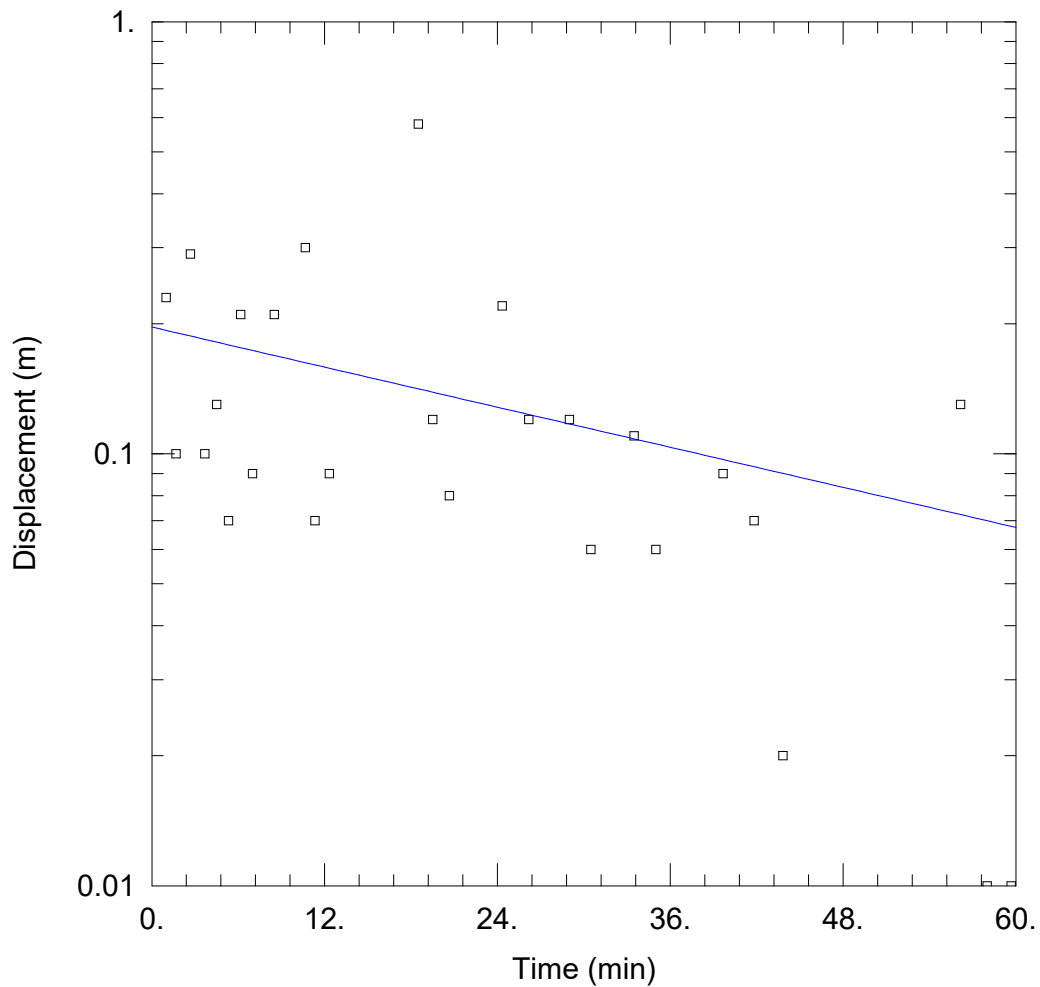
SOLUTION

Aquifer Model: Unconfined

K = 4.445E-7 m/sec

Solution Method: Bouwer-Rice

y0 = 0.4057 m



WELL TEST ANALYSIS

Data Set: C:\...\MW3-R-MANU.aqt

Date: 01/15/26

Time: 17:28:49

PROJECT INFORMATION

Company: D&N Geotechnical

Client: Green Geotechnics

Project: S-0350.00

Location: 815 Pacific Highway, Chatswood

Test Well: MW3

Test Date: 08/12/2025

AQUIFER DATA

Saturated Thickness: 11.06 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW3)

Initial Displacement: 3.8 m

Total Well Penetration Depth: 21.8 m

Casing Radius: 0.025 m

Static Water Column Height: 11.16 m

Screen Length: 4.8 m

Well Radius: 0.025 m

SOLUTION

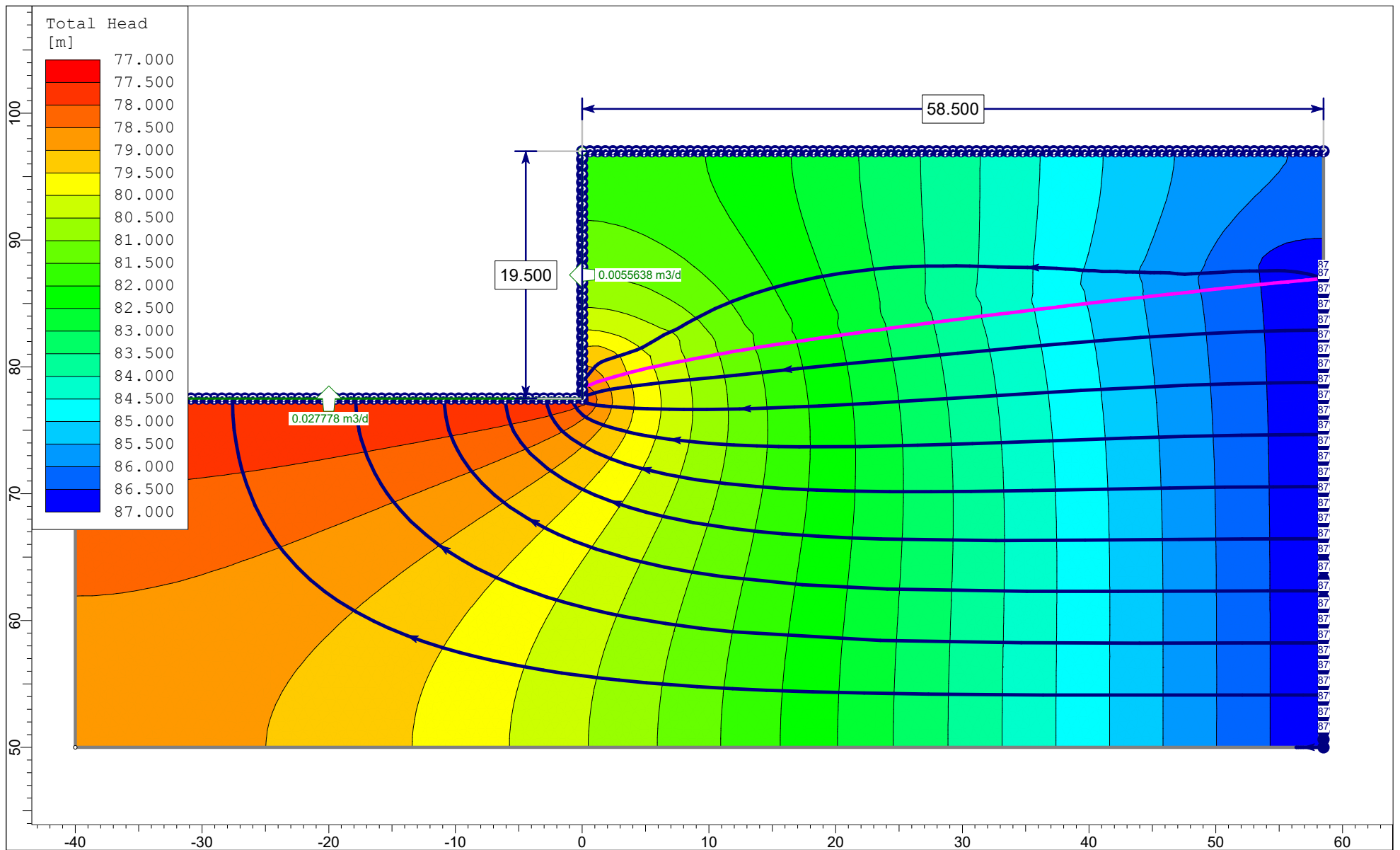
Aquifer Model: Unconfined

K = 9.776E-8 m/sec

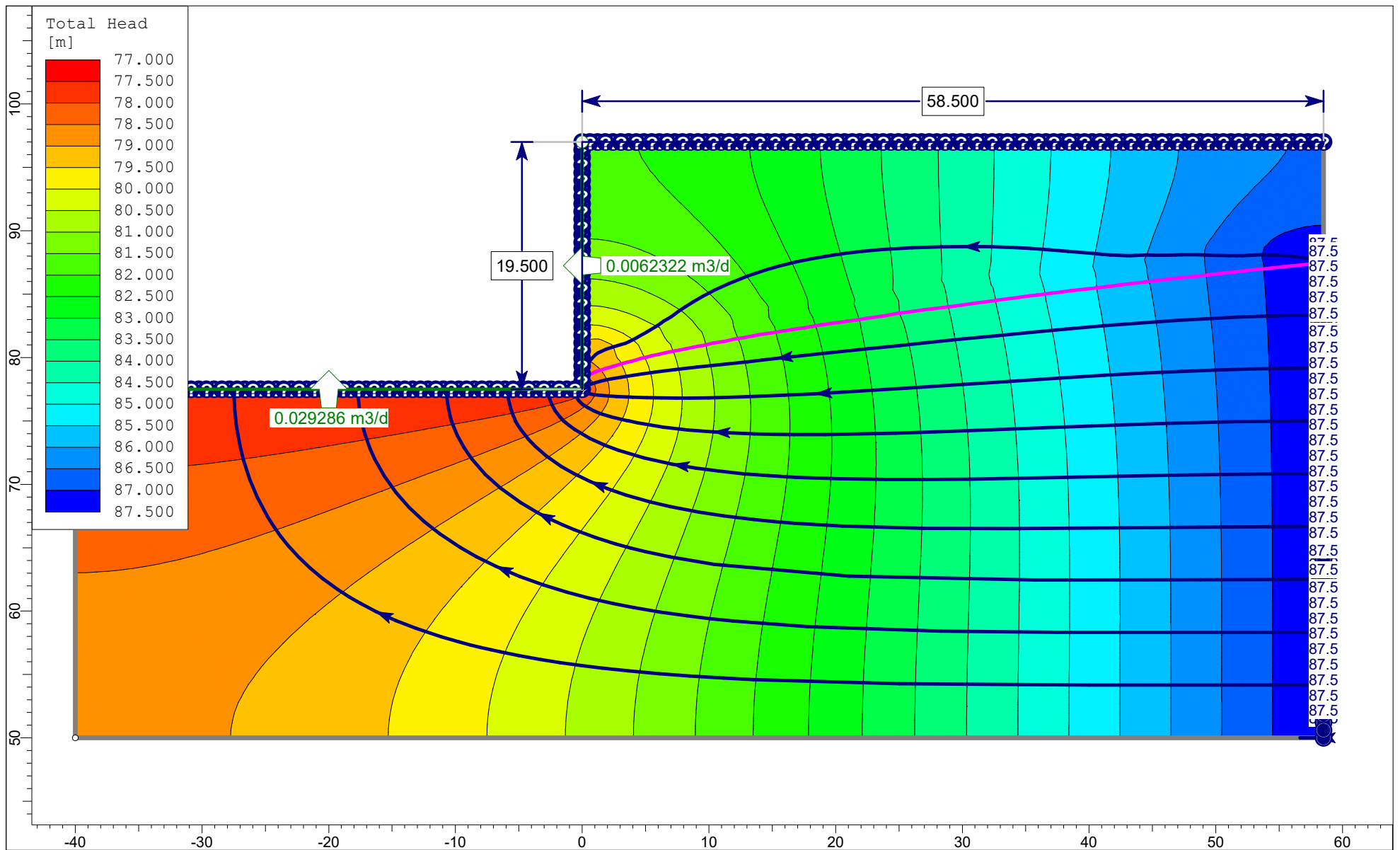
Solution Method: Bouwer-Rice

y0 = 0.1965 m

Appendix E – Seepage Analysis: Graphical Outputs



Project	S-0350.00		
Group	SLS (GWL = 87 m AHD)	Scenario	Master Scenario
Drawn By	SA	Company	D&N Geotechnical Pty Ltd
Date	16/01/2026	File Name	No Cut-off model.slmd



SLIDEINTERPRET 9.039

Project	S-0350.00		
Group	ULS (GWL=87.5 m AHD)	Scenario	Master Scenario
Drawn By	SA	Company	D&N Geotechnical Pty Ltd
Date	16/01/2026	File Name	No Cut-off model.slmd