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McCrae Landslide - Evacuation Order Area

Geotechnical Factual Report

PSM5665-GFR REV0 9 April 2025

PRIVILEGED AND CONFIDENTIAL

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1. Introduction

This report presents the results of the geotechnical site investigation (**'Investigation'**) carried out by PSM in response to two landslides that occurred on 5 January 2025 and 14 January 2025 between properties located at 10-12 View Point Road and 3 Penny Lane, McCrae, Victoria. Collectively, these are referred to as the '**McCrae Landslide**' and the **"Site"** and highlighted with red shading in Inset 1. The Investigation was carried out within and outside of an Evacuation Order (EO) area impacting 19 properties around the McCrae Landslide. This was part of an EO issued on 14 January 2025 by the State Emergency Service (SES) and Mornington Peninsula Shire Council (MPSC) on 17 January 2025 and updated on the 14 and 20 February 2025, Inset 1.

The Investigation was carried out in accordance with Australian Standard (AS) AS 1726:2017 and the PSM proposal (PSM5665-017L, 6 February 2025).

Inset 1: EO area established in response to the McCrae Landslide.

1.1 Site Description

The McCrae Landslide occurred on the escarpment located between Point Nepean Road and View Point Road. This escarpment is a part of the broader escarpment that spans from McCrae to Dromana.

The term escarpment refers to a steep slope or cliff found at the margin of a flat or gently sloping area[1] that may have formed as a result of faulting and/or erosion.

1.2 Purpose

The purpose of the Investigation is to assess sub surface ground conditions including but not limited to the soil types and extent, rock depth and character, and to investigate the groundwater regime in and around the escarpment.

[1] Allaby, M (ed.) 2020, *A dictionary of geology and earth sciences* Fifth edition., Oxford University Press, Oxford.

The information will be used to separately develop a ground and groundwater model for the Site to infer landslide mechanisms, slope stability and landslide risk.

A list of abbreviations and definitions of terms used throughout the report is shown in Table 1.

Table 1 – List of definitions and acronyms

Acronym	Abbreviation
AHD	Australian Height Datum
As	Arsenic
BH	Borehole
BYDA	Before You Dig Australia
Ca	Calcium
CaCO3	Calcium Carbonate
Cd	Cadmium
Cl	Chlorine
CO3	Carbonate
CPT	Cone Penetration Testing
Cr	Chromium
Cu	Copper
DO	Dissolved Oxygen
EC	Electrical Conductivity
F	Fluorine
GNSS RTK	Global Navigation Satellite System Real Time Kinematic
GPS	Global Positioning System
HCO3	Hydrogen Carbonate
Hg	Mercury
K	Potassium
Mg	Magnesium
MPSC	Mornington Peninsula Shire Council
N	Nitrogen
Na	Sodium
NDT	Non-Destructive Testing
NH3	Ammonia
Ni	Nickel
NO3	Nitrate
Pb	Lead
pH	Potential of Hydrogen
PLT	Point Load Strength Index Testing
SES	State Emergency Services
SO4	Sulphate
TDS	Total Dissolved Solids
VWP	Vibrating Wire Piezometer
Zn	Zinc

2. Site Conditions

2.1 Access

Site access is constrained by the escarpment and urban development.

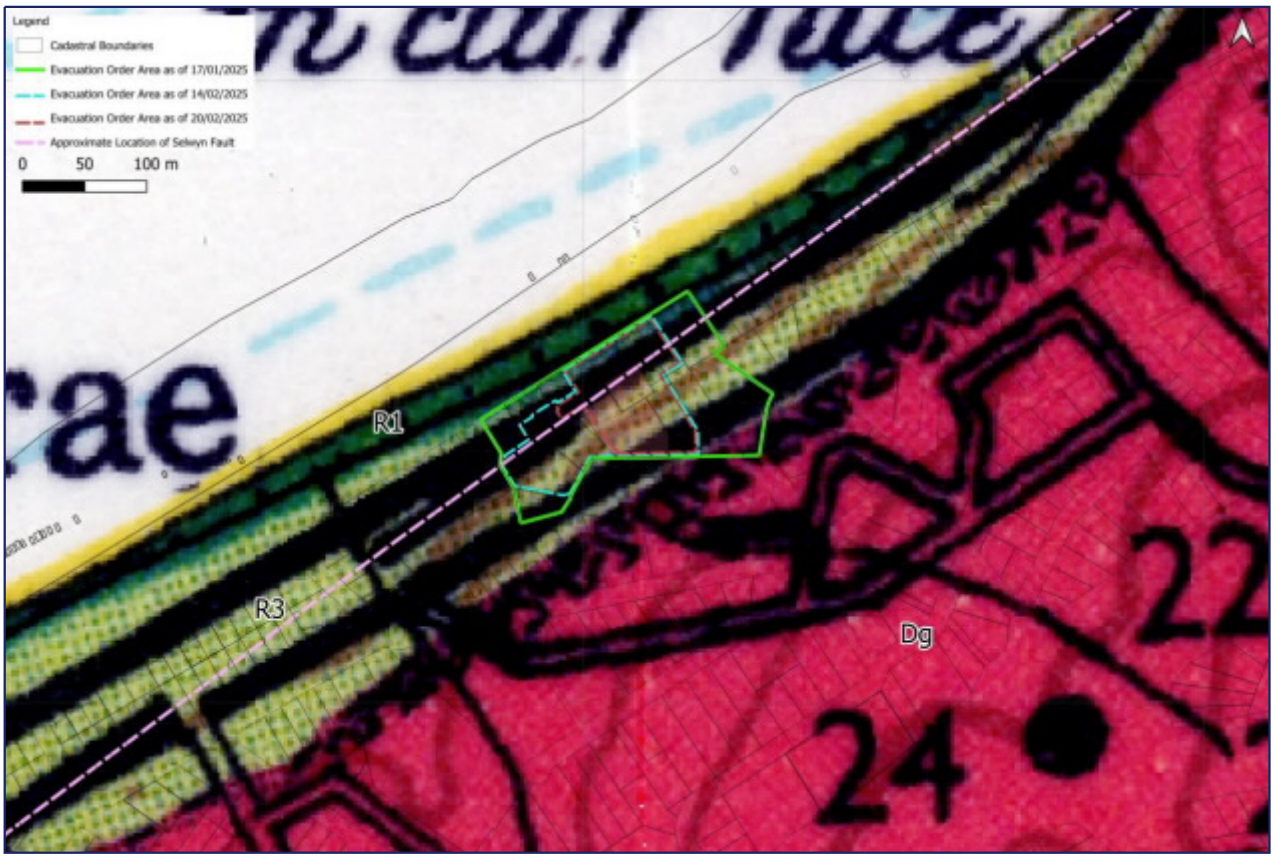
The Site has been progressively occupied since the early 20th century and is now significantly developed with numerous buildings and underground/overhead utilities. Further, access to the escarpment itself to carry out conventional site investigations is difficult due to the very steep slopes. The Investigation was therefore planned around these constraints.

2.2 Geology

The Sorrento 1:63,360 geological map is shown in Inset 2. This indicates the Site is underlain by:

- Quaternary raised coastal deposits comprising siliceous and calcareous sand, shell beds, guano (Mud Islands) at the base of the escarpment (shown as R3 in Inset 2)
- Palaeozoic granodiorite and granite comprising the elevated terrain of and behind the escarpment (shown as Dg in Inset 2).

A major regional thrust fault, the Selwyn Faut is mapped at a scale of 1:250,000 to strike WSW-ENE and crossing immediately north of the Site (ref Inset 2).



Inset 2: Mapped geology from the published Sorrento 1:63,360 geological map.

3. Geotechnical Investigation

3.1 Introduction

The Investigation was carried out between 21 January 2025 to 3 March 2025 comprising:

- Site walk over
- Geotechnical drilling
- Non-destructive testing
- Cone penetration testing
- Laboratory soil testing
- Groundwater monitoring which is ongoing.

The area covered by the investigations including the individual site investigation and sampling locations are shown in Figure 1.

A literature review was carried out for the Site by review of existing records such as:

- Geological maps
- Previous site investigations
- Topographic information
- Historical photographs
- Aerial photography
- Geohazards maps
- Construction records
- Historical newspaper articles.

The above information and a Site inspection were used to plan the Investigation including the type, location, depth and instrumentation.

3.2 Health and Safety

A Safe Work Method Statement was developed and implemented for the Investigation. All locations involving subsurface investigations were cleared of utilities by carrying out BYDA and a physical services search by Precision Pipe and Cable Locations prior to the works.

3.3 Survey

All investigation locations were set out by handheld GPS. All as built collar locations were measured using a GNSS RTK (GPS) by a registered surveyor to an approximate accuracy of ±20 mm. The exception to this is the two hand auger locations, RD1 and RD2, Figure 1, which were measured off known and recently surveyed features and boreholes.

The coordinate system and datum adopted for the Investigation is GDA2020 MGA zone 55 and AHD.

4. Site Walk Over

Site walkovers were carried out by Mr Dane Pope of PSM between 15 to 17 January 2025 and 24 January 2025 to inspect the landslide and surrounding terrain. A further inspection was carried out over two days by Mr Tim Nash of PSM between 21 and 22 January 2025 to inspect the landslide and surrounding escarpment. The results of the inspections were used to plan the Investigation and to record the landslide characteristics. The latter will be reported separately.

5. Geotechnical Drilling

5.1 Detail

Eight vertical boreholes were drilled using a track mounted Geoprobe 7822 DT drilling rig.

BH01 to BH05 used a direct push DT22 continuous sampling method to collect soil samples from the collar up to depths of approximately 14 m below ground level (**bgl**) followed by triple tube HQ coring methods to a maximum depth of 30 m bgl. The remaining boreholes BH01A, BH03A and BH04A were drilled adjacent to the continuous sampled and cored boreholes using augering methods to drill to the target depth as these were intended for groundwater monitoring and sampling.

Rock and soil samples were collected at various depths for laboratory testing and point load strength index testing (PLT).

Geotechnical logs for the eight boreholes are presented in Appendix A.

Point load strength index tests were performed on some of the recovered rock samples, and these results are presented in Appendix B.

5.2 Groundwater

All eight boreholes were completed by installing either VWPs or standpipe piezometers. Standpipe piezometer and VWP construction records including VWP calibration sheets are presented in Appendix C and summarised in Table 2.

The VWP data at BH01, BH02 and BH03 are recorded via five-channel dataloggers at a frequency of three hours.

Hobo data loggers were installed within the standpipes at BH03A and BH04 recording at a frequency of three hours.

All standpipe piezometers were constructed under the groundwater bore construction licence ID WLE089520 in the Victorian Water Register with the following Works ID:

- WRK147484
- WRK147485
- WRK147486
- WRK147487
- WRK147709.

Water observed in the boreholes following drilling completion are presented where applicable on each geotechnical log, Appendix A. Note that these observations may not reflect actual groundwater levels as they are likely to have been influenced by the fluids introduced during drilling.

Table 2 – Borehole summary

ID	Location	Easting	Northing	Collar RL	Drilled depth (m)	Standpipe piezometer/VWP summary
BH01	Carport of 10-12 View Point Road	319565.8	5753704.4	31.57	30.0	Nested VWP1A, VWP1B and VWP1C installed 4.5 m, 14.5 m and 29 m bgl.
BH01A	Adjacent to BH01	319565.7	5753703.3	31.69	6.0	Standpipe STP1A screened between 3 m and 6 m bgl.
BH02	Verge in front of 5 View Point Road	319562.3	5753681.9	31.87	30.0	Nested VWP2A, VWP2B and VWP2C installed at 6.5 m, 14.5 m and 28.5 m bgl.
BH03	10-12 View Point Road Front Lawn	319533.0	5753715.6	28.62	29.5	VWPs VWP3A and VWP3B installed 13 m and 28 m bgl.
BH03A	Adjacent to BH03	319533.7	5753716.7	28.70	6.0	Standpipe STP3A screened between 1.5 m and 6 m bgl with a hobo data

ID	Location	Easting	Northing	Collar RL	Drilled depth (m)	Standpipe piezometer/VWP summary
						logger installed at 6 m bgl. VWP VWP3C installed 6 m bgl, connected to BH03 datalogger.
BH04	Middle of View Point Road Cul-de-sac	319498.1	5753665.8	26.82	30.0	Standpipe STP4 screened between 14.7 m and 29.7 m bgl with a hobo data logger installed at 29.7 m bgl.
BH04A	Adjacent to BH04	319499.2	5753666.0	26.86	6.0	Standpipe STP4A screened between 1 m and 6 m bgl.
BH05	3 Penny Lane Driveway	319500.7	5753775.2	1.98	5.0	VWP VWP5A installed 4.8 m bgl.

6. Non-Destructive Testing

6.1 Detail

6.1.1 NDT

Two Non-Destructive Testing (**NDT**) holes (NDT01 and NDT02) were excavated to a depth between 3.5 and 5.0 m bgl to investigate sewer trench backfill. NDT01 was excavated to 5.0 m bgl, or approximately 1.8 m below the sewer trench invert. NDT02 was excavated to 3.2 m bgl. This hole terminated prior to the target depth due to excavation difficulty and inferred cave in, this being approximately 0.5 m above the design sewer trench invert level.

Both NDTs were excavated using a vacuum excavation truck with a hydrojet. The exception is with NDT01, which had the final 1.0 m excavated using a continuous flight auger.

A downhole video was taken using a GoPro to view the soil profile and identify any groundwater table / water seepage within the hole. Geotechnical logs were prepared to record the hole detail for both, but insufficient information was available from the video to provide material descriptions other than basic observations, Appendix A.

6.1.2 RD

Two hand auger holes (RD1 and RD2) were excavated to a depth of 0.7 to 0.9 m bgl to identify the Reln Drains (**RD**) located in the front lawn of 10-12 View Point Road, and were excavated 0.4 m below the base of the Reln Drain.

Both RDTs were excavated using a 100 mm diameter hand auger.

Geotechnical logs are presented in Appendix A.

Table 3 – NDT and RD summary

Borehole	Location	Easting	Northing	Collar RL	Total drilled depth bgl (m)
NDT01	Front yard of 6 View Point Road	319571.8	5753700.6	32.3	5
NDT02	Verge in front of 6 View Point Road	319575.4	5753696.0	32.7	3.2
RD1	10-12 View Point Road Front Lawn	319531.9	5753714.4	28.6	0.9
RD2	10-12 View Point Road Front Lawn	319534.8	5753717.7	28.8	0.7

6.2 Groundwater

6.2.1 NDT

Groundwater was not observed in both NDT holes however, water introduced from the NDT process made it difficult to distinguish between groundwater and introduced water.

The NDTs were subjected to dye tracing using red and green plumber's tracing dye to identify downstream seepage from the water source. Note that water mixed with dye was added to each NDT. The results of the dye tracing will be reported separately.

Both NDTs had standpipe piezometers installed to monitor long term groundwater levels:

- NDT01
  - 50 mm diameter PVC standpipe installed to 5.0 m depth
  - Screened between 1.5 m and 5 m below ground level
  - Backfilling comprised gravel pack to 1 m below ground level, bentonite seal to the surface and flush mounted concrete encased gatic cover installed.
- NDT02
  - VWP installed 3.2 m below ground level
  - the instrument was enveloped in 0.4 m of sand with gravel pack to 0.9 m below ground level, then a bentonite plug to around 50-100 mm below the surface, then topped with gravel and topsoil.

Appendix C presents the standpipe piezometer and VWP construction records.

6.2.2 RD

Groundwater was not observed in both RD holes. No piezometers were installed within these holes.

Upon completion of excavation, both holes were backfilled with a bentonite plug and topped with site won materials.

7. Cone Penetration Testing (CPT)

Seven CPTs were pushed to approximately 15 m depth bgl using a track mounted drilling rig ('The Pagani') and a truck mounted drilling rig ('The Trakker'), Table 4.

All CPTs included pore pressure readings (CPTu) and were performed adjacent to the boreholes from Section 5.

Predrilling was undertaken using the track mounted drilling rig at CPT01B, CPT04, CPT04A, and CPT05.

Five CPTs terminated prior to the target depth on inferred dense gravels or cobbles/boulders due to refusal of the CPT rod. Two of these (CPT01 and CPT04) were relocated and retested within a few metres of the refused location, to reach target depths.

Dissipation testing (DT) was performed for CPT01B, CPT03, CPT04A and CPT05 at various depths.

CPT03, CPT04 and CPT04A were located at the same location as their corresponding boreholes (BH03A, BH04 and BH04A, respectively) and were converted to standpipes. The other CPTs were backfilled with spoil to the surface and only CPT05 was capped with a concrete plug.

Appendix D presents data from the CPT testing. It also includes the interpreted normalised soil behaviour types in accordance with Robertson & Cabal (2022)[2] assuming an N_{kt} of 14.

[2] Robertson, P. K., and K. Cabal. 2022, *Guide to Cone Penetration Testing* Seventh edition.

Table 4 – CPT summary

CPT	Location	Easting	Northing	Collar RL	Tested depth bgl (m) (1)	Dissipation testing depths (m)
CPT01	Carport of 10-12 View Point Road	319564.8	5753703.8	31.63	2.78 (t)	N/A
CPT01A	Adjacent to CPT01	319565.0	5753702.3	31.69	3.39 (t)	N/A
CPT01B	Adjacent to CPT01A	319565.7	5753702.1	31.70	15.53	6.35 m and 12 m
CPT03	Backyard of 10-12 View Point Road	319533.7	5753716.7	28.70	3.03 (t)	3.03 m
CPT04	Middle of View Point Road Cul-de-sac	319499.2	5753666.1	26.86	1.89 (t)	N/A
CPT04A					13.91	9.1 m and 13.9 m
CPT05	3 Penny Lane Driveway	319501.3	5753776.9	1.91	2.27 (t)	2.26 m

(1) (t) terminated early due to refusal

8. Laboratory Testing

8.1.1 Soil

Soil samples were collected during the Site walkover on 24 January 2025 from the escarpment and flanks of the McCrae Landslide, Figure 1. Soil samples were also taken from boreholes BH01 to BH05 during the February 2025 site investigations. All were tested in a NATA accredited laboratory for moisture content, particle size distribution and Atterberg limits, Table 5. Laboratory testing certificates are presented in Appendix E.

Table 5 – Laboratory testing summary

Sample ID	Sample depth (m)	Location	Testing		
			Natural moisture content	Particle size distribution	Atterberg limits
S1	At surface	Rill/consolidated waste on slope	X	X	
S2	At surface	LHS/NE slope	X	X	
S3	At surface	Lower flank of rill on RHS/SW slope	X	X	
S4	At surface	Upper RHS/SW slope, gum tree/scarp	X	X	X
S5	At surface	S4 upper	X	X	
S6	At surface	SW flank 2022 landslide	X	X	X
BH01	1.4 - 2.3	BH01	X(1)	X	
BH01	7.2 - 8.0	BH01	X(1)	X	X
BH01	17.8 - 17.9	BH01	X		
BH01	22.9 - 23.0	BH01	X		
BH02	1.6 - 2.6	BH02	X(1)	X	
BH02	4.2 - 5.0	BH02	X(1)	X	X
BH02	6.7 – 7.5	BH02	X(1)	X	X
BH03	2.7 - 4.0	BH03	X(1)	X	
BH03	7.2 - 8.0	BH03	X(1)	X	X

Sample ID	Sample depth (m)	Location	Testing		
			Natural moisture content	Particle size distribution	Atterberg limits
BH03	10.8 - 11.5	BH03	X(1)	X	X
BH03	14.75 - 14.85	BH03	X	X	
BH03	15.5 - 15.6	BH03	X		
BH03	21.4 - 21.55	BH03	X	X	
BH03	23.3 - 23.4	BH03	X	X	
BH04	3.1 - 3.6	BH04			X
BH04	5.0 - 5.8	BH04			X
BH04	15.0 - 15.1	BH04	X		
BH05	1.6 - 2.3	BH05	X(1)		
BH05	2.6 - 3.6	BH05	X(1)	X	

(1) Sample was tested for moisture content in error. Moisture content not to be relied upon.

8.1.2 Surface Water

Surface water was sampled on 20 January 2025 by JBS&G in the presence of PSM staff. The sampling was conducted at five locations for field water quality testing and laboratory testing, Figure 1. A calibrated water quality meter was used in the field to measure pH, temperature, dissolved oxygen (DO), electrical conductivity (EC) and redox potential, Table 6. Each of these samples were then tested in a NATA accredited laboratory for the following:

- Cations & Anions [Alkali Metals (Na, K, Ca, Mg), Alkalinity (CO3, HCO3) (as CaCO3), Cl, SO4]
- Ionic Balance [pH, EC]
- Total Dissolved Solids (TDS)
- Non-Metallic Inorganics [NH3 (as N), F, NO3 (as N)]
- Metals [As, Cd, Cr, Cu, Ni, Pb, Zn, Hg].

Appendix F presents the results of the water sample laboratory testing.

Table 6 – Surface water testing summary

ID	Location	Sample Date and Time	pH	Temp (°C)	DO (mg/L)	EC (us/cm)	Redox Potential (mV)	Comment
SW01	Flowing water from 5 Prospect Hill Road into gutter	20/01/2025 9:30am	7.47	22.7	5.92	125.0	91.7	No odour, no sheen, clear, no colour
SW02	Flowing water from 7 Prospect Hill Road into private stormwater pit	20/01/2025 9:55am	6.50	20.6	7.26	332.5	99.0	No odour, no sheen, high turbidity, brown
SW03	Flowing drain around 4 View Point Road	20/01/2025 10:20am	7.19	21.7	6.48	359.5	80.9	No odour, no sheen, high turbidity, brown
SW04	Flowing drain at View Point Road Cul-de-sac	20/01/2025 10:40am	7.74	22.9	8.91	360.6	75.8	No odour, no sheen, high turbidity, brown
SW05	Flowing water along east side of Penny Lane	20/01/2025 1:05pm	7.97	24.2	6.30	1051.0	79.3	No odour, no sheen, very high turbidity, brown

9. Groundwater Monitoring

Piezometric monitoring data for the following VWPs and hobo data loggers are presented in the hydrographs in Appendix G:

- BH01: VWP1A to VWP1C between 20 February 2025 to 25 March 2025
- BH02: VWP2A to VWP2C between 24 February 2025 to 25 March 2025
- BH03: VWP3A to VWP3B between 18 February 2025 to 7 March 2025
- BH03A:
  - VWP3C between 25 February 2025 to 25 March 2025
  - Hobo data logger on 20 March 2025
- BH04: Hobo data logger between 20 March 2025 to 25 March 2025
- BH05: VWP5A on 26 February 2025 and 20 March 2025
- NDT02: VWP2D between 3 March 2025 to 25 March 2025.

Yours Sincerely

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Legend

Site Investigation Locations

- BH
- NDT
- CPT
- RD
- Soil Sampling Locations 24/01/2025
- Surface Water Sampling Locations 20/01/2025

Cadastral

- Cadastral Boundaries

Surface Contours 5/02/2025

- 1m Contours
- 5m Contours

NOTES:
1. Aerial imagery is taken on 6 February 2025 (Source: Nearmap.com, 2025).
2. Surface contours based on Diospatial survey (Ref. 250205_25010_McCrae_LargerArea_DTM25cm, dated 5 February 2025).
3. CPT03 and BH03A are at the same location. CPT03 was pushed and then BH03A was augered.

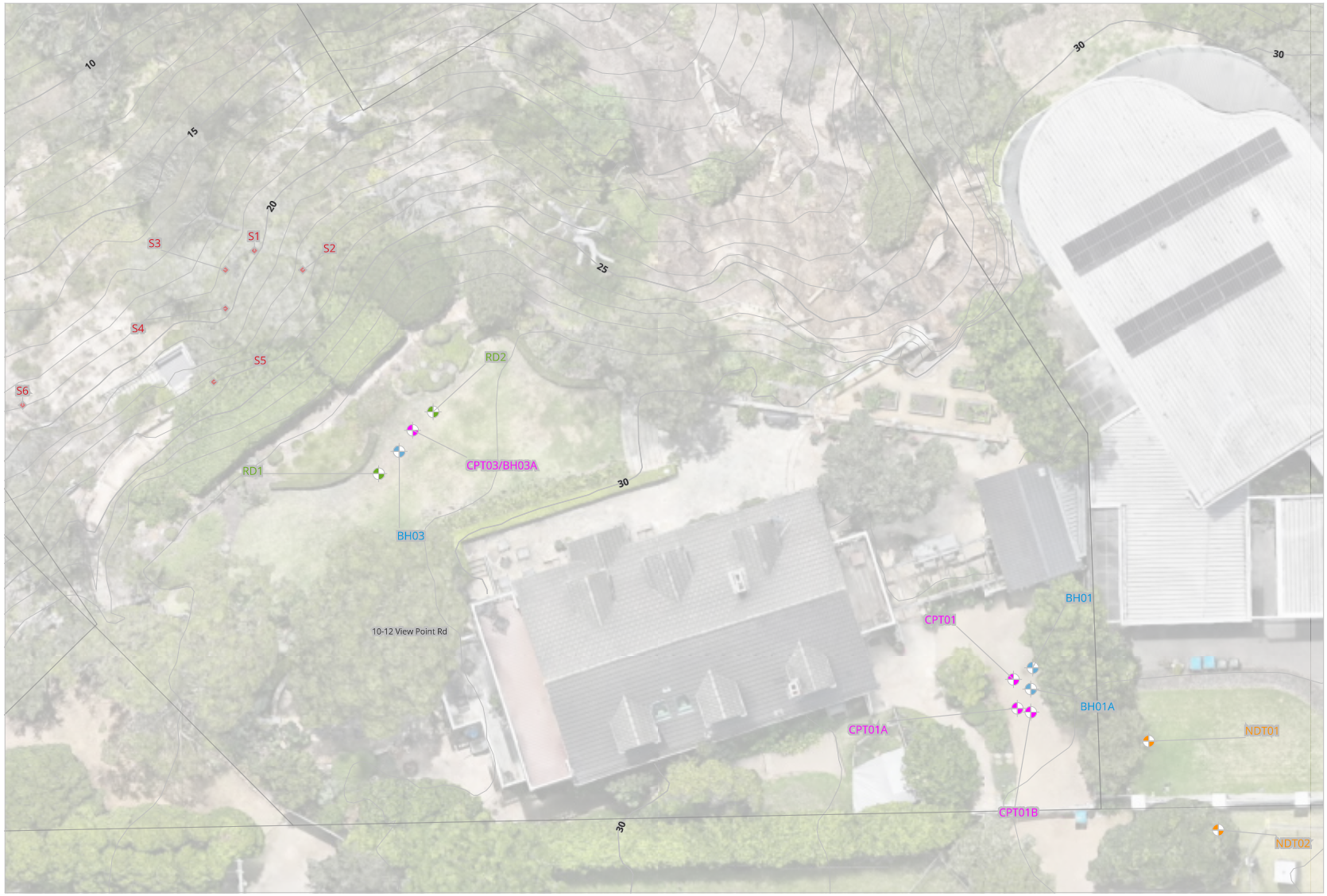
Scale 1:750

N

0 20 40 m

Map Projection:
Horizontal Datum:
Grid: EPSG:7855

P S M	Created By: JW	Revision: A	MORNINGTON PENINSULA SHIRE COUNCIL MCCRAE LANDSLIDE GEOTECHNICAL AND GROUNDWATER INVESTIGATION PLAN
	Date: 27 Mar 2025	Paper Size: A3	PSM5665-GFR FIGURE 1



Legend

Site Investigation Locations

- BH
- NDT
- CPT
- RD
- Soil Sampling Locations 24/01/2025
- Surface Water Sampling Locations 20/01/2025

Cadastral

- Cadastral Boundaries

Surface Contours 16/01/2025

- 1m Contours
- 5m Contours

NOTES:
1. Aerial imagery is based on Diospatial survey undertaken on 16 January 2025 (Ref. 250116_25010_McCrae Landslip_Ortho2cm)
2. Surface contours based on Diospatial survey (Ref. 250116_25010_McCrae Landslip_Ortho2cm, dated 16 January 2025).
3. CPT03 and BH03A are at the same location. CPT03 was pushed and then BH03A was augered.

Scale 1:200

N

0 5 10 m

Map Projection:
Horizontal Datum:
Grid: EPSG:7855

P S M	Created By: JW	Revision: A	MORNINGTON PENINSULA SHIRE COUNCIL MCCRAE LANDSLIDE GEOTECHNICAL AND GROUNDWATER INVESTIGATION PLAN (ZOOMED)
	Date: 27 Mar 2025	Paper Size: A3	PSM5665-GFR FIGURE 2

Appendix A
Geotechnical Logs

GEOTECHNICAL LOGGING EXPLANATION SHEET

This explanation document presents the definitions and details used on PSM borehole logs. It is not intended to replace the details in AS 1726: 2017.

Geotechnical logs are shown as either non-cored, for the soil component, or cored for the rock interval.

The document is divided into three parts: drilling information, soil logging and rock logging.

Drilling Information

General

Method	AD/T	Auger drilling TC bit
	AD/V	Auger drilling V bit
	WB	Washbore
	PT	Push tube
	DT	Diatube
	E	Excavator
	CS	Continuoussampling
	NQ3	Wireline triple tube core (45.1 mm)
	HQ3	Wireline triple tube core (61.1 mm)
	NMLC	Triple barrel large core (51.2mm)
Core Quality	RQD	Rock Quality Designation (%)
Water	Inflow	Indicates inflow of groundwater through the base of the borehole observed as net excess drilling fluid return.
	Partial loss	Indicates an outflow of drilling fluid from the closed drilling system through the base of the borehole observed as net loss of drilling fluid return.
	Complete loss	Indicates zero drilling fluid return from the borehole. Losses into the soil or rock mass through the base of the borehole.

Penetration

Penetration is a qualitative measure of how easily the auger advances. This varies from no resistance to refusal.

Support

Borehole wall support during drilling will either be listed as casing (C) or where no casing as was required no support (N) or left blank.

Water

Observations of water down the borehole as observed, not observed, not encountered or return as a percentage of the drilling fluid. If not noted then return was 100%.

Sampling and Field Testing

	Abbreviation	Description
Sample	U	Undisturbed tube sample
	D	Disturbed sample
	ES	Environmental sample
	TW	Thin walled
	LB	Large disturbed sample
	B	Bulk disturbed sample
Test	Is(50) – a	Axial point load test result (MPa)
	Is(50) – d	Diametral point load test result (MPa)
	SPT	Standard penetration test
	RW	Rod Weight
	HW	Hammer Weight
	HB	Hammer Bouncing

Hole Positioning

The following geodetic conventions are adopted.

- Map Grid of Australia 1994 (MGA94)
- Geocentric Datum of Australia 1994 (GDA94)
- Australian Height Datum (AHD)
- Bearings relate to magnetic north. Where required, magnetic values have been converted from grid using a magnetic declination of -12°.

Hole location relates to the street or project area the borehole was drilled on.

Depth is the downhole depth in metres below the borehole collar (i.e. surface level).

RL shows the elevation relative to AHD.

WPT (Lugeon)

The Water Pressure Test (usually using packers) measures water pressure and flow rate over time to assess the Lugeon value - an empirical measure of the hydraulic conductivity.

RQD

Rock quality designation is a measure of the quality of cored rock. The sum of intact intervals more than 100 mm in length are given as a percentage of the total drill run recovered.

Termination Details

Hole terminated means the hole was discontinued at a depth that corresponds to the downhole depth in metres. How the borehole was completed is also stated. This includes the following main categories:

- Grouted to surface using a cement grout mix.
- Instrumented by construction of groundwater (open standpipe, screened piezometer, grout in place vibrating wire piezometer (VWP)) or geotechnical (inclinometer, extensometer).
- Any other details such as if a hole was abandoned.

Soil Logging

General

In engineering terms, soil includes every type of uncemented, or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms

Classification Symbol

Soil name is described in accordance with the Unified Soil Classification System (USCS) with the following prefix

O organic soils
C inorganic fine-grained soils behaving as clays
M inorganic fine-grained soils behaving as silts
G coarse grained soils behaving as gravel
S coarse grained soils behaving as sand

These are defined by the particle size limits shown in the grading table below.

The above group symbols are appended with minor component modifiers, for coarse grained soils.

W well graded, little or no fines
P poorly graded, little or no fines
G gap graded
M silty mixtures
C clayey mixtures

For fine grained soils, with plasticity or liquid limit

L low plasticity or liquid limit
I medium plasticity or liquid limit
H high plasticity or liquid limit.

Material Description

Soil Name

Soil name is based on the identifiable primary component of the soil and is given in block letters, thereafter is a description based on secondary components.

Plasticity

Non-plastic	3 mm thread cannot be rolled at any moisture content (cannot conduct toughness or dry strength tactile tests), slow to rapid dilatancy.
Low plasticity silt/clay mixtures	A 3 mm thread can barely be rolled; lump cannot be formed when drier than plastic limit (PL); low to medium dry strength, medium toughness; none to slow dilatant behaviour
Medium plasticity silt/clay mixtures	3 mm thread is easy to roll, little time required to reach PL; thread cannot be rerolled after reaching PL; lump crumbles when drier than PL; medium to high dry strength, medium toughness; no to slow dilatant behaviour; slightly tacky feel when wet
High plasticity clays	It takes considerable time rolling and kneading to reach PL; thread can be rolled several times after reaching PL; high toughness, high to very high dry strength; non-dilatant; tacky/sticky feel when moisture content >PL.

Graphic Log

	ASPHALT
	CONCRETE
	FILL
CH	High plasticity CLAY
CI	Medium plasticity CLAY
CL	Low plasticity CLAY
GC	clayey GRAVEL
GP	Poorly graded GRAVEL
MH	High liquid limit SILT
ML	Low liquid limit SILT
OH	High plasticity ORGANIC CLAY and SILTS
OL	Low plasticity ORGANIC CLAY and SILTS
SC	Clayey SAND
SM	Silty SAND
SP	Poorly graded SAND
SW	Well graded SAND

Grading (coarse grained soils)

Where possible for coarse grained soils, include particle shape: equidimensional - rounded, sub-rounded, sub-angular, angular; two- dimensional - flaky/ platy; one dimensional - elongated.

Well graded	Having good representation of all particle sizes from largest to smallest
Poorly graded	One or more intermediate sizes poorly represented
Gap graded	Absence of one or more intermediate sizes
Uniform	Most particles are about the same size

Particle Size Descriptive Terms

Fraction	Coarse-Grained								Fine-grained		Organic
	Boulders	Cobbles	Gravel			Sand			Silt	Clay	Organic soils
			Coarse	Medium	Fine	Coarse	Medium	Fine			
Particle size limits [mm]	200	60	20	6.0	2.0	0.6	0.2	0.06	0.002		
AS Sieve equivalent [mm]	-	63	19	6.7	2.36	0.6	0.15	0.075	-		

Colour

Described in a moist condition, using simple colour terms such as green, red, orange, etc. These may have been modified using 'pale', 'dark' or 'mottled'. 'Light' is avoided as it can be confused with mass.

Secondary Component Modifiers

Term	Coarse grained soil		Fine grained soil
	Percentage of fines in a granular soil	Percentage of coarse in a granular soil (i.e. other than the primary component)	Percentage of coarse grained component (sand or gravel) in a fine-grained soil
Add trace	≤ 5	≤ 15	≤ 15
Add with	> 5 and ≤ 12	> 15 and ≤ 30	> 15 and ≤ 30
Add prefix to name	> 12	> 30	> 30

Moisture Condition

Coarse grained soil	
Dry (D)	Looks and feels dry; dusty; dry to the touch, non-cohesive, free running
Moist (M)	Soil feels cool; soil tends to stick together; damp but no visible water, darkened in colour
Wet (W)	Visible free water when handled, soil feels cool, darkened in colour
Fine grained soil	
Judge based on the soil's moisture condition relative to the plastic limit or liquid limit for soils with high moisture contents, refer to plasticity table above	

Consistency/Relative Density

Consistency - Cohesive soils (fine grained)

Consistency	Field Guide to Consistency	Indicative Undrained Shear Strength (Su, kPa)
Very soft (VS)	Exudes between the fingers when squeezed in hand	≤ 12
Soft (S)	Moulded by light finger pressure	> 12 & ≤ 25
Firm (F)	Moulded by strong finger pressure	>25 & ≤ 50
Stiff (St)	Cannot be moulded by fingers	>50 & ≤ 100
Very stiff (VSt)	Readily indented by thumb nail	>100 & ≤ 200
Hard (H)	Indented with difficulty by thumbnail	>200
Friable (Fr)	Easily crumbled by hand	-
Weakly Cemented (WCe)	Material easily disaggregated by hand in air or water	-
Moderately Cemented (MCe)	Material requires effort to disaggregate by hand in air or water	-

Relative density - Non-cohesive soils (coarse grained)

Term	Symbol	Density Index %
Very Loose	VL	<15
Loose	L	>15 & ≤ 35
Medium Dense	MD	>35 & ≤ 65
Dense	D	>65 & ≤ 85
Very Dense	VD	>85

The relative density of coarse-grained soils is inherently difficult to assess by visual or tactile means. Relative density assessment should be carried out using penetration test procedures.

Hand Penetrometer

Refers to pocket penetrometer tests, results shown in kPa.

Structure, Zoning

Soil *in situ* or in samples may consist of separate zones differing in colour, grain size or other properties.

Zoning[1]		Cementing[2]	
Layer	Continuous across exposure or sample	Weakly	Soil fractured by hand in air/water
Lens	Discontinuous layer with lenticular shape	Strongly	Difficulty fracturing by hand in air/water
Pocket	Irregular inclusion		
Homogenous	Same colour/texture/ structure throughout		

[1] Record the orientation, contact character (sharp regular/ irregular, gradual/ gradational). Use interlaminated or inter- bedded if too thin to describe individually

[2] If unable to be disaggregated, treat as rock. Note cementing agent by appearance, strength or reaction to water/acid.

Origin, Additional Observations

Where there is doubt, the terms 'possibly' or 'probably' are used (as per AS1726:2017).

Origin		
Anthorpogenic	Fill	placed by human activity (controlled versus uncontrolled)
Formed in place	Topsoil	upper surface layer of soil with high proportion of organic material
Transported	Alluvial	deposited by streams and rivers
	Colluvial	deposited on slopes chiefly by gravity
	Aeolian	deposited by wind
	Lacustrine	deposited in lakes/still bodies of water
	Marine	deposited in oceans, bays, beaches & estuaries
Formed in place	Residual soils	structure and fabric of parent rock not visible
	Extremely weathered	structure and fabric of parent rock visible

Rock Logging

General

Rock Substance is defined in engineering terms as any naturally occurring aggregate of minerals and organic material which cannot be disintegrated or remoulded by hand in air or water. Other material is described using soil descriptive terms. Effectively homogenous material may be isotropic or anisotropic.

Defects are defined as discontinuities or breaks in the continuity of a substance or substances

Rock mass is defined as a body of material that is not effectively homogeneous. It can consist of two or more substances without defects, or one or more substances with one or more defects

Rock substance and mass characteristics are shown on the logs as rock substance and rock mass defect categories and are presented in this document in the same order

Rock substance

Graphic Log

BRECCIA

CONCRETE

CONGLOMERATE

NO CORE

DOLERITE

INTERBEDDED SILTSTONE & SANDSTONE

SANDSTONE

SHALE

SHALE BRECCIA

SILTSTONE

Material Description

Rock Name	Simple rock names are used rather than precise geological classification		
Particle/grain Characteristics	Grains of rock described in terms of type, size and shape;		
	sedimentary rocks:	Coarse	0.6 - 2 mm
		Medium	0.2 - 0.6 mm
		Fine	0.06 - 0.2 mm
	igneous rocks	Coarse	>2 mm
		Medium	0.06 – 2 mm
		Fine	<0.06 mm (just visible)
Colour	Simple terms such as white, red, orange etc. modify using pale of sark; describe in moist condition; use combinations of these when necessary		
Inclusions/ Minor components	Record isolated inclusions within the rock substance such as vesicles, nodules, phenocrysts, concretions, veins, ironstone bands; Indicate proportion – trace or minor (include thickness)		

Texture/Fabric

Term	Description	Spacing
Massive	No stratification visible	-
Bedded	Very thickly bedded	>2 m
	Thickly bedded	0.6 m to 2 m
	Medium bedded	0.2 m to 0.6 m
	Thinly bedded	60 mm to 200 mm
	Very thinly bedded	20 mm to 60 mm
Laminated	Laminated	6 mm to 20 mm
	Thinly laminated	<6 mm

Bedding Development

Term	Description
Massive / poorly	No obvious development; rock homogeneous
Developed	Barely obvious; faint mineralogical layering or banding; planes poorly defined
Well developed	Apparent in outcrops or drill core as distinct layers/lines marked by mineralogical or grain-size layering
Very well developed	Often marked by distinct colour banding or mineralogical /grain size layering

Weathering

Term		Description
Residual Soil (RS)		Soil derived from insitu weathering of rock; structure and substance fabric of parent rock no longer evident; soil has not been transported; log using soil descriptive terms
Extremely Weathered (XW)		Rock exhibits soil properties; mass texture/structure of original rock still visible; log using soil descriptive terms
Highly weathered (HW)	(DW)[1]	Iron staining or bleaching affects the entire rock substance and parent rock colour no longer recognisable; porosity may be increased or less than original rock substance by leaching or deposition of minerals; substance strength altered by weathering. Primary minerals may have weathered to clay
Moderately weathered (MW)		Iron staining or bleaching extends throughout the entire rock substance; original rock colour of fresh rock no longer recognisable
Slightly weathered (SW)		Partial staining or bleaching along joints; colour and texture of fresh rock is recognisable; little or no change of strength from fresh rock
Fresh (FR)		No sign of mineral decomposition or colour change

[1] The terms Highly weathered (HW) or Moderately weathered (MW) are preferred to Distinctly weathered (DW).

Strength

Rock strength is based on UCS (MPa), point load strength index testing (Is(50) in MPa) and field estimated strengths. Is(50) values from axial and/or diametral point load tests and field estimated strengths are plotted in the strength column.

Term / Abbreviation		Point load index, Is(50) (UCS (MPa))	Field guide to strength
Very low	VL	0.03 to ≤0.1; (0.6-2)	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm thick can be broken by finger pressure.
Low	L	>0.1 to ≤0.3; (2-6)	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3 to ≤1.0; (6-20)	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1 to ≤3; (20-60)	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very high	VH	>3 to ≤10 (60-200)	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely high	EH	> 10 (>200)	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Rock Mass Defects

General

Sequence of terms: defect type, orientation, shape, roughness, infill type/width, number, spacing/length/aperture.

Defect Description

Symbol	Description
BF	bedding fabric
BP	Bedding parting – surface crack across which there is little to no tensile strength, parallel to bedding fabric, maybe open or closed
BSH	Bedding Shear
CO	Contact – surface between two lithologies
CZ	Crushed Zone – zone with roughly parallel, planar boundaries (commonly slickensided) containing disoriented usually angular rock fragments of variable size often in a soil matrix
DB	Drilling Break – breaks caused by the drilling process, including handling breaks when boxing core
FL	Foliation
FT	Fault – fracture along which displacement is recognisable, may be open or closed
FZ	Fractured Zone – a zone of closely spaced defects comprising core lengths < 50 mm
IS	Infilled Seam – seam of soil substance formed by migration of soil into an open cavity or defect
JT	Joint – a single fracture across which rock has little or no tensile strength, is not obviously related to rock fabric and no shearing, maybe open or closed
SM	XW seam of soil material formed by weathering of the parent rock material in situ
SS	Sheared seam– fracture along which movement has taken place; no displacement recognisable; slickensides, polishing and/or clay gouge may suggest movement
SZ	Sheared Zone – zone of multiple closely spaced shears
VN	Vein – intrusion of tabular or sheet-like minerals
VO	void

Orientation

Field mapping: defect dip/dip direction recorded in degrees, noting datum.

Infill

CN	Clean	RF	Rock fragments
CA	Calcite	G	Gravel
X	Carbonaceous	S	Sand
FE	Iron	Z	Silt
QZ	Quartz	CL	Clay

For infills <1 mm thick:

Stained (SN) – no visible coating but defect surfaces are discoloured

Veneer (VR) – visible uniform or patchy coating too thin to measure

Coating (CO)

Shape

Planar (PR)	No variation in orientation
Curved (CU)	Gradual change in orientation
Undulating (UN)	Wavy surface shape
Stepped (ST)	One or more well defined steps
Irregular (IR)	Many sharp changes of orientation

Surface Roughness

Slickensided (SL)	Grooved or striated surface, usually polished
Polished (POL)	Shiny smooth surface
Smooth (S)	Smooth to touch, few or no surface irregularities
Rough (RF)	Many small surface irregularities (ampl. <1mm) feels like fine to coarse sandpaper
Very rough (VR)	Many large mall surface irregularities (ampl. >1mm) feels like (or coarser than) very coarse sandpaper

Borehole ID

BH01

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS		N	Water encountered at 4.5m bgl.						OL	FILL: Gravelly SAND: fine to coarse grained; gravel fine to medium grained.	D			0.00: Roadbase 0.10: Topsoil
									SM	TOPSOIL: Sandy SILT: low plasticity, brown; sand fine grained.	D			0.30: Possibly Fill
										FILL: Silty SAND: fine to medium grained, low plasticity, grey.	D			
				PP 0.70 m >600 kPa					CL	CLAY trace sand: low plasticity, brown; sand fine grained.	w > PL	H		0.70: Possibly Colluvium or Fill to 5.75 m
						30.6	1							
										No recovery.				
				D 1.40-2.30 m					SM	Silty SAND trace gravel: fine to coarse grained, brown; silt low plasticity; gravel fine to medium grained.	M			
						29.6	2							
									SW	Gravelly SAND: fine to coarse grained, brown; gravel fine grained.	M			
										No recovery.				
									SW	Gravelly SAND: fine to coarse grained, brown; gravel fine grained.	M			
				PP 2.90 m =280 - 320 kPa		28.6	3		CL	CLAY with sand: low plasticity, grey mottled orange; sand fine grained.	w < PL	VSt		
									SW	SAND with gravel trace clay: fine to coarse grained, brown; gravel subangular, fine to coarse grained.	M			
									SC	Clayey SAND: fine to medium grained, brown; clay low plasticity.	M			
						27.6	4							
									SM	Silty SAND: fine grained, grey; silt low plasticity.	M W			

Method
- AD/T - Auger drilling TC bit
- AD/V - Auger drilling V bit
- WB - Washbore
- SPT - Standard penetration test
- PT - Push tube
- AS - Auger screwing
- CS - Continuous sampling (DT22)
- NDD - Non destructive drilling
- CC - Concrete coring
- HA - Hand Auger

Penetration
- No resistance
- Refusal

Water
- Inflow
- Partial Loss
- Complete Loss

Samples and Tests
- U - Undisturbed Sample
- D - Disturbed Sample
- SPT - Standard Penetration Test
- ES - Environmental Sample
- TW - Thin Walled
- LB - Large Disturbed Sample

Moisture Condition
- D - Dry
- M - Moist
- W - Wet

Consistency/Relative Density
- VS - Very soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very stiff
- H - Hard
- VL - Very loose
- L - Loose
- MD - Medium dense
- D - Dense
- VD - Very dense
- Ce - Cemented
- C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH01

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS		N							SM	Silty SAND: fine grained, grey; silt low plasticity. *(continued)*	W			
									SP	Gravelly SAND: fine to coarse grained, grey; gravel fine to coarse grained.	W			
				PP 5.75 m =260 kPa PP 5.85 m =340 kPa PP 5.95 m =520 kPa PP 6.05 m =380 kPa PP 6.15 m =300 kPa		25.6	6		CL	(RS/XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to medium grained; gravel medium grained.				5.75: Possibly Residual or Extremely Weathered Granite
						24.6	7					VSt to H		
				D 7.20-8.00 m										
						23.6	8			Varies from Sandy CLAY to Clayey SAND.	w > PL			
				PP 8.80 m =380 kPa PP 8.95 m =550 kPa PP 9.00 m >600 kPa		22.6	9					H		

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Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

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VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH01

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS		N	NOT ENCOUNTERED						CL	(RS/XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to medium grained; gravel medium grained. *(continued)*	w > PL	H		
									SW	(RS/XW GRANITE) SAND trace gravel: fine to coarse grained, brown; gravel fine grained.	D			
HQ3		N				20.6	11		CL	(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine to medium grained.	w > PL	H		10.80: Extremely Weathered Granite to EOH
						19.6	12		SC	(XW GRANITE) Clayey SAND trace gravel: fine to coarse grained, grey mottled orange; clay low plasticity; gravel subangular, fine grained.	M			
						18.6	13		SP	(XW GRANITE) Gravelly SAND trace clay: medium to coarse grained, yellow brown; gravel fine to medium; clay low plasticity.	M			
									SC	(XW GRANITE) Clayey SAND: medium to coarse grained, grey mottled brown; clay low plasticity.	M			
						17.6	14			Becomes gravelly; fine to medium gravels at 13.90 m. NO CORE: 14.0 - 14.4 m				
									CL	(XW GRANITE) Sandy CLAY with gravel: low plasticity, grey mottled orange; sand medium to coarse grained; gravel fine grained.	M	H		

Method
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Water
Inflow
Partial Loss
Complete Loss

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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH01

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	NOT ENCOUNTERED						CL		M	H		
									SC	(XW GRANITE) Clayey SAND: fine to coarse grained, yellow mottled grey; clay low plasticity. MW granite inclusions at 15.3 - 15.5 m. Becomes brown at 15.7 m.	M			
						15.6	16		SW-SC	(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, brown grey; clay low plasticity; gravel fine grained.	M			
						14.6	17			NO CORE: 17.0 - 17.1 m				
									SW-SC	(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, brown grey; clay low plasticity; gravel fine grained. FELDSPAR inclusions at 17.25 m.	M			
				Is(50): 4.6 MPa C 17.80-17.90 m		13.6	18		SW-SC	(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, brown; clay low plasticity; gravel fine grained.	M			
				PP 18.45 m =400 kPa PP 18.55 m =300 kPa PP 18.65 m =300 kPa PP 18.75 m =420 kPa PP 18.85 m =400 kPa		12.6	19		CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine grained; gravel fine grained.	w > PL	H		
				PP 19.60 m =500 kPa PP 19.70 m =700 kPa PP 19.80 m					CL	(XW GRANITE) CLAY trace sand: low plasticity, grey; sand fine grained.	w > PL	H		

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID
BH01
Page 5 of 7

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	NOT ENCOUNTERED	>700 kPa PP 19.95 m =380 - 500 kPa					CL	(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine to coarse grained. *(continued)* Coarse grained MW granite gravel clast at 20.15 m.	w > PL	H H		
						10.6	21		SP-SC	(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, grey; clay low plasticity; gravel angular, fine grained.	M			
						9.6	22			NO CORE: 21.5 - 22.6 m				
									SW	(XW GRANITE) Gravelly SAND with clay: fine to coarse grained, brown; gravel fine grained; clay low plasticity.	M			
				Is(50): 0.1 MPa C 22.90-23.00 m		8.6	23			NO CORE: 23.05 - 23.2 m				23.00: PLT carried out on an isolated granite clast. 50 mm diameter
									SP	(XW GRANITE) SAND: medium to coarse grained, brown.	M			
						7.6	24		SP	(XW GRANITE) Gravelly SAND trace clay: fine to coarse grained, grey brown; gravel subangular to angular, fine grained; clay low plasticity.	M			23.75: Coarse grained angular granite gravel
									SC	(XW GRANITE) Clayey SAND: fine to medium grained, grey; clay low plasticity.	M			
										NO CORE: 24.5 - 24.85 m				
									SP		M			

Method
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AD/V - Auger drilling V bit
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AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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VSt - Very stiff
H - Hard
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L - Loose
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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH01

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	NOT ENCOUNTERED						SP	(XW GRANITE) Gravelly SAND with clay: medium to coarse grained, brown; gravel fine grained; clay low plasticity. *(continued)*	M			
				PP 26.05 m =500 - 600 kPa		5.6	26		CL	NO CORE: 26.0 - 26.05 m (XW GRANITE) CLAY with sand: low plasticity, grey; sand fine to medium grained.	M	H	× ×	
						4.6	27			NO CORE: 27.0 - 28.3 m				
						3.6	28		SP CL SP-SC	(XW GRANITE) SAND: fine to medium grained, brown. (XW GRANITE) Sandy CLAY: low plasticity, brown; sand fine to medium grained. (XW GRANITE) SAND with clay trace gravel: fine to medium grained, brown; clay low plasticity; gravel fine grained granite.	W M M	F		
						2.6	29			NO CORE: 29.2 - 29.7 m				29.10: HW granite cobble / corestone. 70 mm diameter
									GP SP	(XW GRANITE) Sandy GRAVEL: fine grained, brown; sand fine to coarse grained granite. (XW GRANITE) SAND: fine grained, brown.	M M			

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
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AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
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SPT - Standard Penetration Test
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TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH01

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	19/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	JW/LL
Hole Position:	319565.8 m E 5753704.4 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.57 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
										Hole Terminated at 30.00 m Target depth. Nested VWPs grouted and sand packed in place at various depths.					
						0.6	31								
						-0.4	32								
						-1.4	33								
						-2.4	34								

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH01 Depth Range: 0.00 - 4.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 0.00 m - 4.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH01 Depth Range: 4.00 - 8.00 m

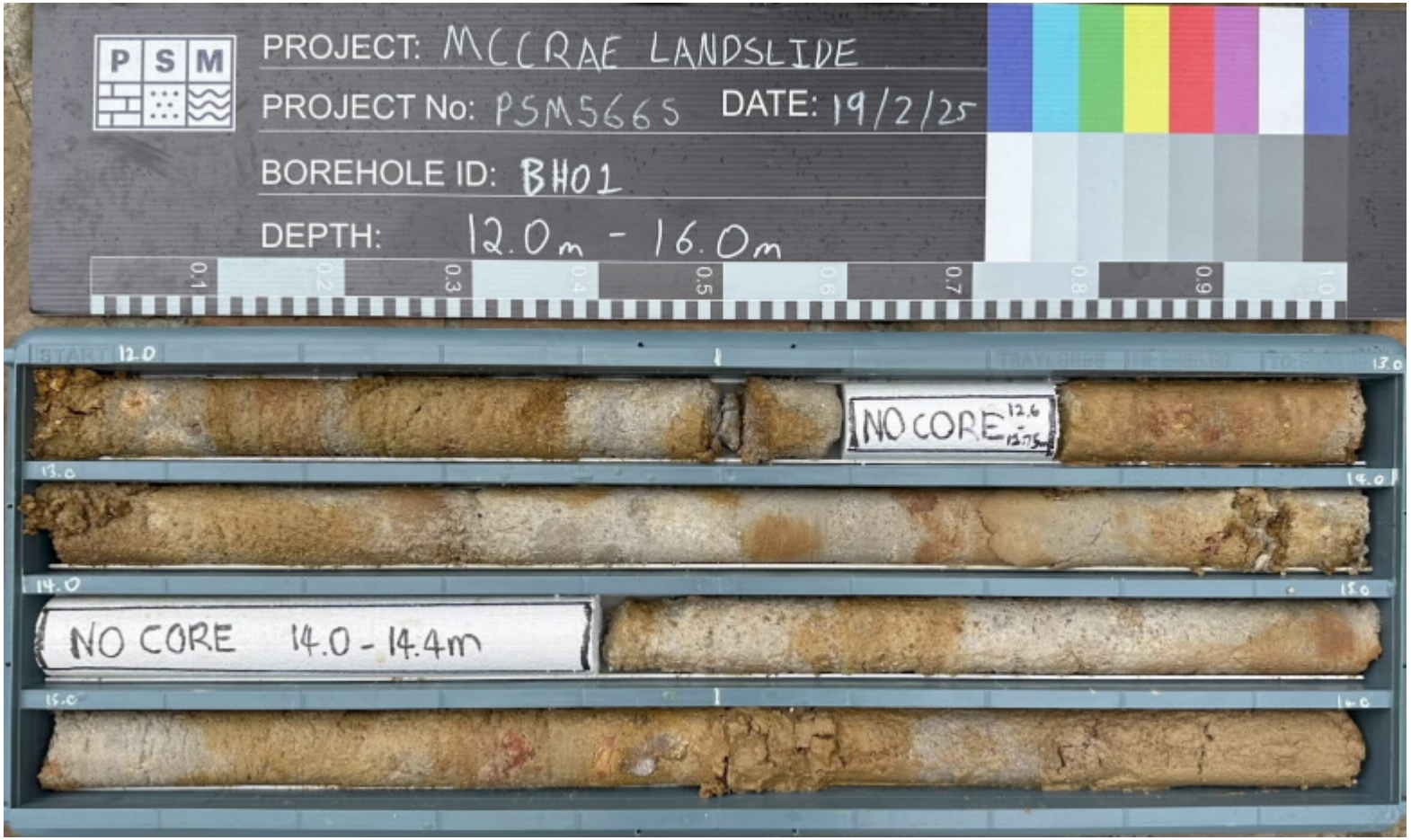
PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 4.00 m - 8.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 2/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH01 Depth Range: 8.00 - 12.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 8.00 m - 12.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 3/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH01 Depth Range: 12.00 - 16.00 m

TITLE: Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 12.00 m - 16.00 m	DRAWN: BTA	DATE: 6/03/2025	
	CHECKED: TN	DATE: 6/03/2025	
	SCALE: Not To Scale		A4
	PROJECT No: PSM5665	FIGURE No: 4/8	

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH01 Depth Range: 16.00 - 20.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 16.00 m - 20.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 5/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH01 Depth Range: 20.00 - 24.00 m

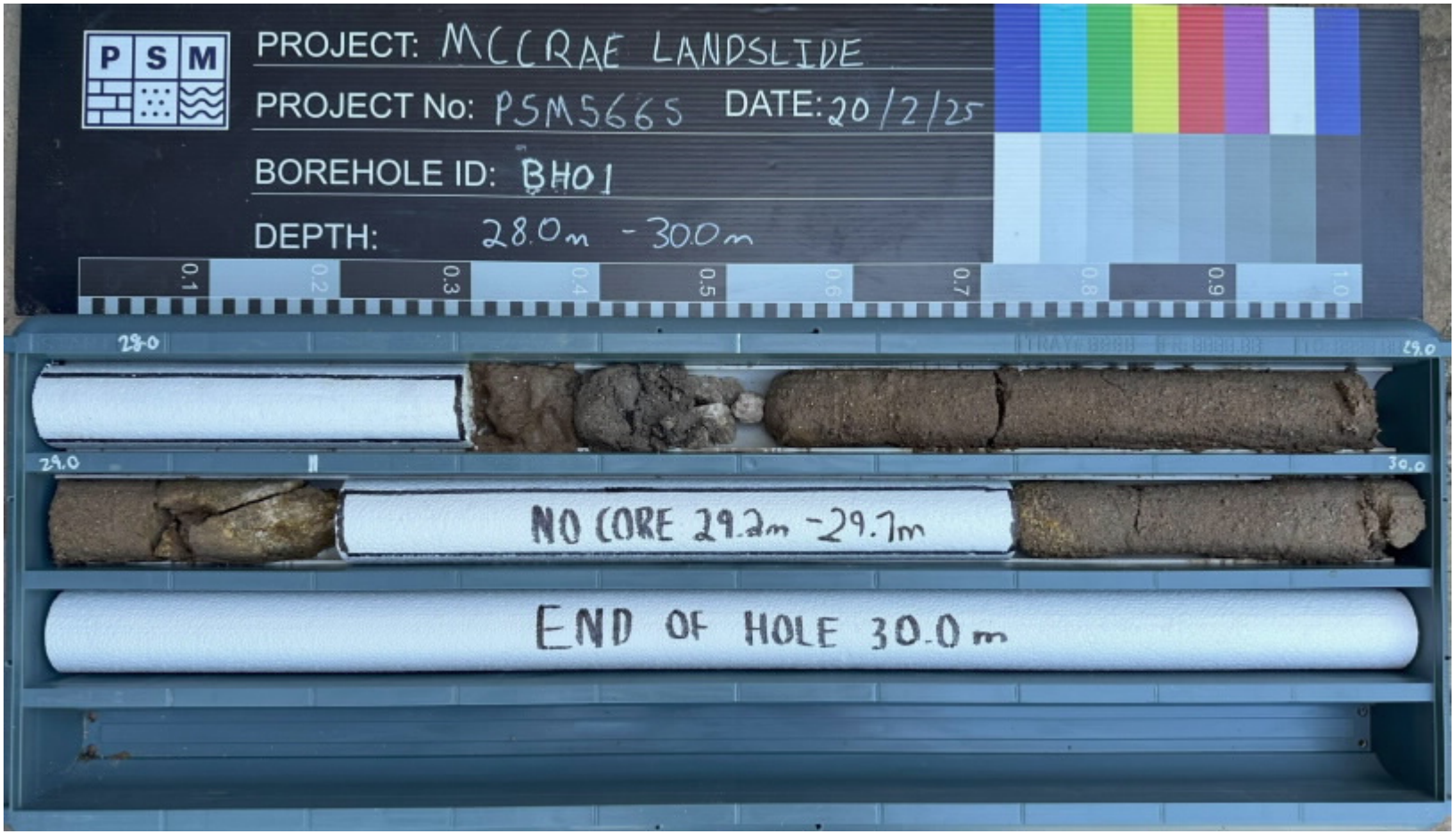
PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 20.00 m - 24.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 6/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH01 Depth Range: 24.00 - 28.00 m

TITLE: Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 24.00 m - 28.00 m	DRAWN: BTA	DATE: 6/03/2025	
	CHECKED: TN	DATE: 6/03/2025	
	SCALE: Not To Scale		A4
	PROJECT No: PSM5665	FIGURE No: 7/8	

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH01 Depth Range: 28.00 - 30.00 m

	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH01: 28.00 m - 30.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 8/8

Borehole ID

BH01A

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	25/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	25/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	LL
Hole Position:	319565.7 m E 5753703.3 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.69 m		
Hole Diameter:	150 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
AD/V		N				30.7 29.7 28.7 27.7	1 2 3 4			Refer to BH01 for Lithology.					

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB -Washbore
SPT -Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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Moisture Condition
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C - Compact

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PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH01A

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	25/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	25/02/2025
Hole Location:	10-12 View Point Road Driveway	Logged By:	LL
Hole Position:	319565.7 m E 5753703.3 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.69 m		
Hole Diameter:	150 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
AD/V		N													
						25.7	6			Hole Terminated at 6.00 m Target depth. Standpipe Installed, and sand, gravel and bentonite packed in place.					
						24.7	7								
						23.7	8								
						22.7	9								

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH02

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	21/02/2025
Hole Location:	5 View Point Road Verge	Logged By:	JW/LL
Hole Position:	319562.3 m E 5753681.9 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.87 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | **Soil Description** | **Observations**

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa)	Structure, Zoning, Origin, Additional Observations
CS		N	Not Encountered			30.9	1		OL SM	TOPSOIL: Sandy SILT: low plasticity, brown; sand fine. FILL: Silty SAND: fine grained, grey; silt low plasticity.	w < PL D	F		0.00: Topsoil 0.10: Possibly Fill
										No recovery.				
				D 1.60-2.60 m		29.9	2		SC	Clayey SAND trace gravel: fine to coarse grained, grey; clay low to medium plasticity; gravel subangular, fine to medium grained.	D			1.50: Possibly Colluvium
$PT		N		SPT 2.80-2.87 m 25/70mm N=R		28.9	3					D to VD		
AD/V		N		SPT01 2.80m 25 N=25 70/150mm							M			
SPT		N		SPT02 3.50-3.95m 9,15,16 N=31 400/450mm										
						27.9	4							
CS		N		D 4.20-5.00 m					CL	Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine grained.	w < PL	H		

Method
- AD/T - Auger drilling TC bit
- AD/V - Auger drilling V bit
- WB - Washbore
- SPT - Standard penetration test
- PT - Push tube
- AS - Auger screwing
- CS - Continuous sampling (DT22)
- NDD - Non destructive drilling
- CC - Concrete coring
- HA - Hand Auger

Penetration
- No resistance
- Refusal

Water
- Inflow
- Partial Loss
- Complete Loss

Samples and Tests
- U - Undisturbed Sample
- D - Disturbed Sample
- SPT - Standard Penetration Test
- ES - Environmental Sample
- TW - Thin Walled
- LB - Large Disturbed Sample

Moisture Condition
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- M - Moist
- W - Wet

Consistency/Relative Density
- VS - Very soft
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- F - Firm
- St - Stiff
- VSt - Very stiff
- H - Hard
- VL - Very loose
- L - Loose
- MD - Medium dense
- D - Dense
- VD - Very dense
- Ce - Cemented
- C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH02

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	21/02/2025
Hole Location:	5 View Point Road Verge	Logged By:	JW/LL
Hole Position:	319562.3 m E 5753681.9 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.87 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS		N	Not Encountered						CL	Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine grained. *(continued)*	w < PL	H		
									CL-CI	(RS/XW GRANITE) Sandy CLAY: low to medium plasticity, mottled grey brown; sand fine to coarse grained.				5.40: Possibly Residual Soil or Extremely Weathered Granite
						25.9	6							
				PP 6.30 m >450 kPa							w > PL	H	×	
										As above but no sand at 6.5 m.				
				D 6.70-7.50 m PP 6.70 m >450 kPa									×	
						24.9	7			As above but with pale grey, fine grained sand at 7.1 m.				
									CL	(RS/XW GRANITE) Sandy CLAY: low plasticity, red brown; sand fine grained.	w > PL	H		
						23.9	8							
				PP 8.10 m >500 kPa									×	
									CL	(RS/XW GRANITE) CLAY trace sand: low plasticity, grey brown; sand fine grained.				
						22.9	9				w > PL	H	×	
				PP 9.10 m >500 kPa										

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH02

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	21/02/2025
Hole Location:	5 View Point Road Verge	Logged By:	JW/LL
Hole Position:	319562.3 m E 5753681.9 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.87 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | **Soil Description** | **Observations**

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa)	Structure, Zoning, Origin, Additional Observations
CS		N	Not Encountered	PP 10.10 m >500 kPa					CL	(RS/XW GRANITE) CLAY trace sand trace gravel: low plasticity, brown; sand fine grained; gravel fine grained.	w > PL	H		
				PP 11.10 m >500 kPa		20.9	11							
										No recovery.				
						19.9	12		CL	(XW GRANITE) Sandy CLAY: low plasticity, grey brown; sand fine grained.	w > PL	H		11.80: Extremely Weathered Granite
				PP 12.50 m >500 kPa		18.9	13		CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, brown; sand fine to coarse grained; gravel fine to medium grained. Gravels becomes angular, coarse grained at 12.15 m.	w > PL	H		
HQ3		N				17.9	14		CL	(XW GRANITE) Sandy CLAY trace gravel trace cobbles: low plasticity, brown; sand fine to medium grained; gravel angular, fine to medium grained; cobbles granite, coarse grained, red brown, angular, high strength.	w > PL	VSt to H		
									SP	(XW GRANITE) Gravelly SAND: medium to coarse grained, yellow brown; gravel fine to medium grained.	M			
									SC	(XW GRANITE) Clayey SAND: fine to coarse grained, brown; clay low plasticity.	M			

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH02

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	21/02/2025
Hole Location:	5 View Point Road Verge	Logged By:	JW/LL
Hole Position:	319562.3 m E 5753681.9 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.87 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered								M			
									CL	(XW GRANITE) Sandy CLAY: low plasticity, grey; sand angular, fine to coarse grained.	w > PL	H		
						15.9	16			NO CORE: 15.70 - 16.20 m				
									SC	(XW GRANITE) Clayey SAND with gravel: fine to medium grained, brown; clay low plasticity; gravel fine to medium grained.	M			
						14.9	17			NO CORE: 17.0 - 18.20 m				
						13.9	18							
									CL	(XW GRANITE) CLAY: low plasticity, brown.	w > PL	S to F		
									CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, brown; sand fine to coarse grained; gravel fine to coarse grained, granite.	w > PL	S to F		
									CL	NO CORE: 18.50 - 18.65 m (XW GRANITE) Sandy CLAY: low plasticity, grey brown; sand fine to medium grained.	w > PL	St	×	
				PP 18.90 m =110 kPa PP 19.10 m =110 kPa		12.9	19		SW	(XW GRANITE) SAND trace gravel: fine to coarse grained, grey brown; gravel fine grained.	M		×	

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
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VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

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Borehole ID

BH02

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	21/02/2025
Hole Location:	5 View Point Road Verge	Logged By:	JW/LL
Hole Position:	319562.3 m E 5753681.9 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.87 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa)	Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered							NO CORE: 20.00 - 21.15 m				
						10.9	21							
				PP 21.10 m =300 kPa Is(50): 3.12 MPa C 21.30-21.40 m					CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine to medium grained, granite source.	w > PL	VSt	×	21.30: PLT carried out on an granite cobble clast
									SC	(XW GRANITE) Clayey SAND with gravel: fine to coarse grained, grey brown; clay low plasticity; gravel fine to medium grained.				
						9.9	22				M			
						8.9	23							
									SP-SC	(XW GRANITE) Gravelly SAND with clay: medium to coarse grained, grey brown; gravel subangular to angular, fine to medium grained; clay low plasticity.				
						7.9	24				M			
										Gravel 40mm diameter, angular, high strength. Becomes trace Clay at 24.5 m.				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH02

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	21/02/2025
Hole Location:	5 View Point Road Verge	Logged By:	JW/LL
Hole Position:	319562.3 m E 5753681.9 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	31.87 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered						SP-SC		M			
									CL	(XW GRANITE) CLAY: low plasticity, mottled grey, brown and white.	w > PL	H		
				PP 25.90 m =300 kPa PP 26.40 m =310 kPa PP 26.80 m =320 kPa		5.9 4.9	26 27		CL	(XW GRANITE) CLAY trace gravel trace sand: low plasticity, grey; gravel fine to medium grained; sand fine grained.	w > PL	VSt	300	
									CL	(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine to coarse grained.	w > PL	St to VSt		
						3.9	28			NO CORE: 27.50 - 28.45 m				
				PP 28.80 m =180 kPa		2.9	29		CL	(XW GRANITE) Sandy CLAY with gravel trace cobbles: low plasticity, brown; sand coarse grained; gravel fine grained; cobbles isolated, angular, high strength, slightly weathered granite, >70 mm diameter.	w > PL	St	200	
										NO CORE: 29.00 - 29.37 m				
				PP 29.50 m >500 kPa					SC	(XW GRANITE) Clayey SAND with gravel: medium to coarse grained, brown; clay low plasticity; gravel fine grained. Hole Terminated at 30.00 m Target depth. Nested VWPs grouted in place at various depths.	M			500

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

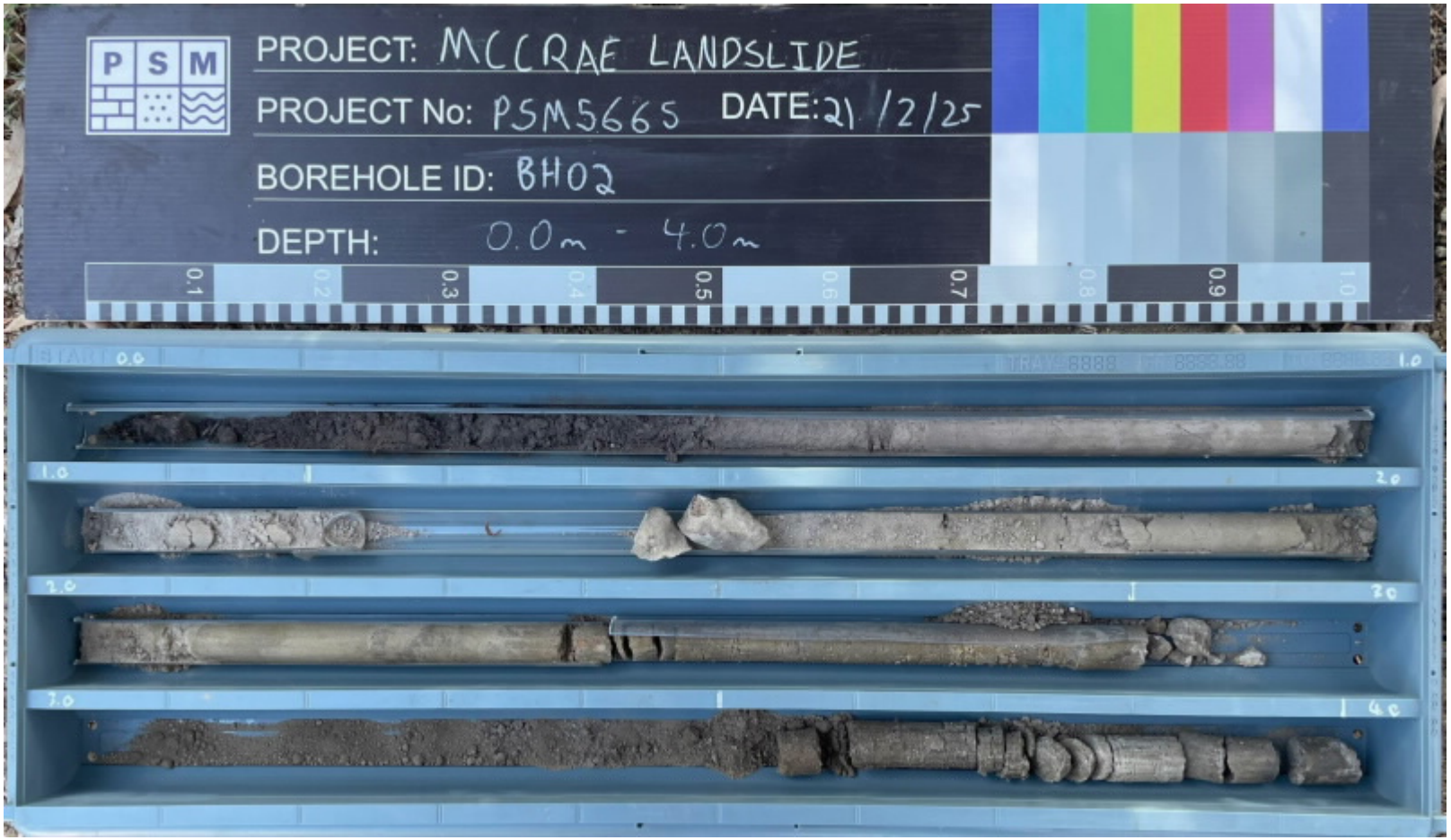
Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

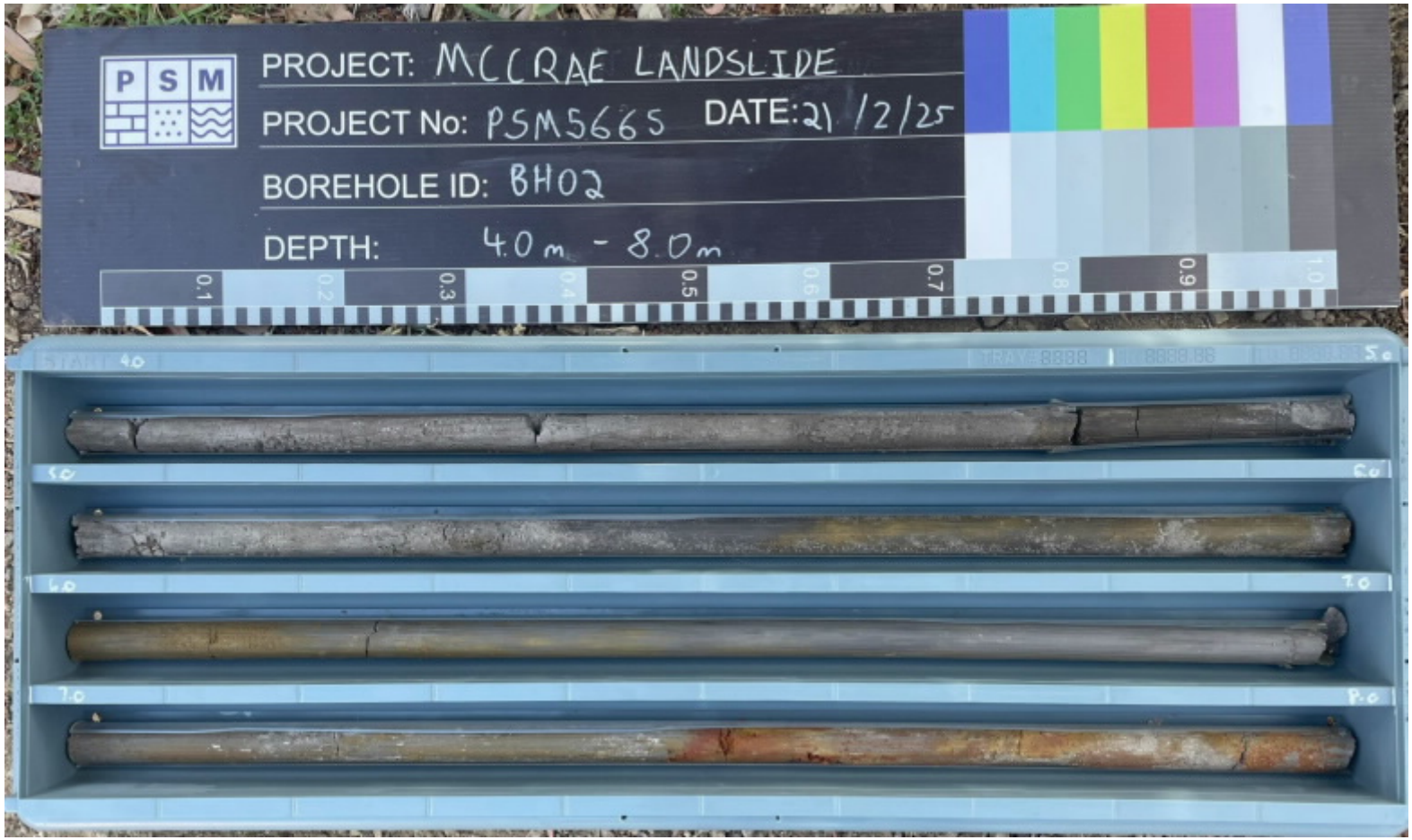
PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH02 Depth Range: 0.00 - 4.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 0.00 m - 4.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH02 Depth Range: 4.00 - 8.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 4.00 m - 8.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 2/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH02 Depth Range: 8.00 - 12.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 8.00 m - 12.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 3/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH02 Depth Range: 12.00 - 16.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 12.00 m - 16.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 4/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH02 Depth Range: 16.00 - 20.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 16.00 m - 20.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 5/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH02 Depth Range: 20.00 - 24.00 m

TITLE: Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 20.00 m - 24.00 m	DRAWN: BTA	DATE: 6/03/2025	
	CHECKED: TN	DATE: 6/03/2025	
	SCALE: Not To Scale		A4
	PROJECT No: PSM5665	FIGURE No: 6/8	

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH02 Depth Range: 24.00 - 28.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 24.00 m - 28.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 7/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:31 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH02 Depth Range: 28.00 - 30.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH02: 28.00 m - 30.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 8/8

Borehole ID

BH03

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	17/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	18/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	JW/LL
Hole Position:	319533.0 m E 5753715.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.62 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS			Water level observed at 2.5m bgl.						OL	TOPSOIL: Sandy SILT: low plasticity, brown; sand fine grained.	w < PL			0.00: Topsoil
									SP-SM	FILL: SAND with silt trace gravel: fine to medium grained, poorly graded, pale brown; gravel fine to medium grained, subangular gravel.	D			0.20: Possibly Fill 0.30: Rootlets observed down to 0.3 m
						27.6	1			No recovery.				
						26.6	2		SP	SAND with gravel trace silt: fine to medium grained, poorly graded, pale brown; gravel fine to coarse grained, subangular gravel.	D			1.60: Possibly Colluvium
									SW	SAND trace silt: fine to coarse grained, well graded, yellow brown; silt low plasticity.	M			
										No recovery.				2.50: Water level inferred based on soil becoming wet
				D 2.70-4.00 m		25.6	3		SM	Silty SAND trace gravel: fine to coarse grained, well graded, yellow brown; silt low plasticity; gravel fine grained. Becomes dark brown with granite gravels at 3 m. Becomes yellow brown at 3.5 m.	M			
						24.6	4		SC	(RS/XW GRANITE) Clayey SAND: fine to coarse grained, well graded, sub-angular to angular, mottled brown and pale brown; clay low plasticity.	M			4.30: Probably Residual Soil or Extremely Weathered Granite
				PP 4.70 m =420 kPa						No recovery.				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH03

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	17/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	18/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	JW/LL
Hole Position:	319533.0 m E 5753715.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.62 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa)	Structure, Zoning, Origin, Additional Observations
CS			NOT ENCOUNTERED							No recovery. *(continued)*				
				PP 5.30 m >400 kPa					SC	(RS/XW GRANITE) Clayey SAND: fine to coarse grained, well graded, mottled brown and pale brown; clay low plasticity.	M		400	
						22.6	6		SP	(RS/XW GRANITE) SAND trace clay: medium to coarse grained, well graded, sub-angular, grey brown; clay low plasticity.				
				PP 6.50 m =280 kPa						Becomes fine to medium grained sand at 6.5 m.	M		300	
						21.6	7							
				D 7.20-8.00 m PP 7.20 m =200 - 220 kPa PP 7.50 m =500 kPa PP 7.70 m =500 kPa					CL	(XW GRANITE) Sandy CLAY: low plasticity, grey brown; sand fine to coarse grained.	w > PL	VSt to H	200 500 500	7.20: Extremely Weathered Granite to EOH
						20.6	8							
HQ3										NO CORE: 8.4 - 10.0 m				
						19.6	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
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VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH03

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	17/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	18/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	JW/LL
Hole Position:	319533.0 m E 5753715.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.62 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS			NOT ENCOUNTERED						SW-SC	(XW GRANITE) SAND with clay: fine to coarse grained, grey; clay low plasticity.	M			
CS				D 10.80-11.50 m		17.6	11		CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, dark grey; sand fine to coarse grained; gravel fine grained, subangular gravel.	w > PL	H		
									SW	(XW GRANITE) SAND trace clay trace gravel: fine to coarse grained, brown mottled orange; clay low plasticity; gravel fine grained, subangular gravel.	M			
HQ3						16.6	12			NO CORE: 12.00 - 13.8 m				
HQ3						15.6	13							
SPT				SPT01 13.35m-13.8m 11,15,20 N=25 0/450mm										
HQ3				PP 14.00 m >400 kPa		14.6	14		CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey brown to brown; sand fine to coarse grained; no structure; gravel fine grained.	w > PL	VSt to H	×	
HQ3				PP 14.55 m =320 kPa									×	
HQ3				Is(50): 0.02 MPa C										

Method
- AD/T - Auger drilling TC bit
- AD/V - Auger drilling V bit
- WB - Washbore
- SPT - Standard penetration test
- PT - Push tube
- AS - Auger screwing
- CS - Continuous sampling (DT22)
- NDD - Non destructive drilling
- CC - Concrete coring
- HA - Hand Auger

Penetration
- No resistance
- Refusal

Water
- Inflow
- Partial Loss
- Complete Loss

Samples and Tests
- U - Undisturbed Sample
- D - Disturbed Sample
- SPT - Standard Penetration Test
- ES - Environmental Sample
- TW - Thin Walled
- LB - Large Disturbed Sample

Moisture Condition
- D - Dry
- M - Moist
- W - Wet

Consistency/Relative Density
- VS - Very soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very stiff
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- MD - Medium dense
- D - Dense
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- Ce - Cemented
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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH03

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	17/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	18/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	JW/LL
Hole Position:	319533.0 m E 5753715.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.62 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3			NOT ENCOUNTERED	14.75-14.85 m					CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey brown to brown; sand fine to coarse grained; no structure; gravel fine grained. *(continued)*	w > PL	VSt to H		
				Is(50): 0.02 MPa C 15.50-15.60 m		12.6	16		SW	(XW GRANITE) SAND trace clay: fine to coarse grained, yellow brown; clay low plasticity.	M			
				PP 16.40 m =320 kPa					CL	(XW GRANITE) Gravelly Sandy CLAY: low plasticity, grey; sand fine to coarse grained; gravel fine to medium grained subangular.	w > PL	VSt	×	
						11.6	17		SW-SC	(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, brown; clay low plasticity; gravel fine grained, subangular gravel.	M			
										NO CORE: 17.45 - 19.0 m				
						10.6	18							
						9.6	19		SP	(XW GRANITE) SAND trace gravel: medium to coarse grained, brown; gravel fine grained, subangular gravel.	M			
				PP 19.30 m =280 kPa PP 19.40 m =400 kPa					CL	(XW GRANITE) Sandy CLAY: low plasticity, brown; sand fine grained.	w > PL	VSt	× ×	
										NO CORE: 19.50 - 20.15 m				

Method
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Penetration
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Refusal

Water
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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH03

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	17/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	18/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	JW/LL
Hole Position:	319533.0 m E 5753715.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.62 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3			NOT ENCOUNTERED							NO CORE: 19.50 - 20.15 m*(continued)*				
									CL	(XW GRANITE) Sandy CLAY: low plasticity, brown; sand fine grained.	w > PL	VSt		
				PP 20.88 m =600 - 900 kPa PP 21.00 m =450 - 500 kPa		7.6	21		CL-CI	(XW GRANITE) Sandy CLAY trace gravel: low to medium plasticity, grey; sand fine to coarse grained; gravel fine grained, subangular gravel.			>>x x	
				Is(50): 0.02 MPa C 21.40-21.55 m							w > PL	H		
						6.6	22			NO CORE: 22.00 - 22.65 m				
						5.6	23		SC	(XW GRANITE) Clayey SAND trace gravel: fine to coarse grained, grey; clay low to medium plasticity; gravel fine grained, subangular gravel.				
				Is(50): 0.02 MPa C 23.30-23.40 m							M			
						4.6	24							
									SM	(XW GRANITE) Silty SAND: fine grained, brown; silt low plasticity.	M			
									SW-SC	(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, grey; clay low plasticity; gravel fine grained, subangular gravel.	M			

Method
AD/T - Auger drilling TC bit
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WB -Washbore
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NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
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Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH03

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	17/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	18/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	JW/LL
Hole Position:	319533.0 m E 5753715.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.62 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3			NOT ENCOUNTERED							NO CORE: 25.00 - 25.30 m				
				PP 25.35 m =540 kPa PP 25.45 m =700 kPa PP 25.55 m =420 kPa PP 25.65 m =500 kPa		2.6	26		CL	(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine grained.	w > PL	H		25.70: Possible Clay Seam, 700 mm thick
										NO CORE: 26.50 - 26.95 m				
				PP 27.50 m =380 - 400 kPa		1.6	27		CL	(XW GRANITE) Gravelly Sandy CLAY: low plasticity, grey; sand fine to coarse grained; gravel fine grained; no structure.	w > PL	H		
						0.6	28		SP-SC	(XW GRANITE) Gravelly SAND with clay: medium to coarse grained, grey; gravel fine grained, subangular gravel; clay low plasticity.	M			
						-0.4	29							
										Hole Terminated at 29.50 m Target depth. Nested VWPs grouted in place at various depths.				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
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NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
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Moisture Condition
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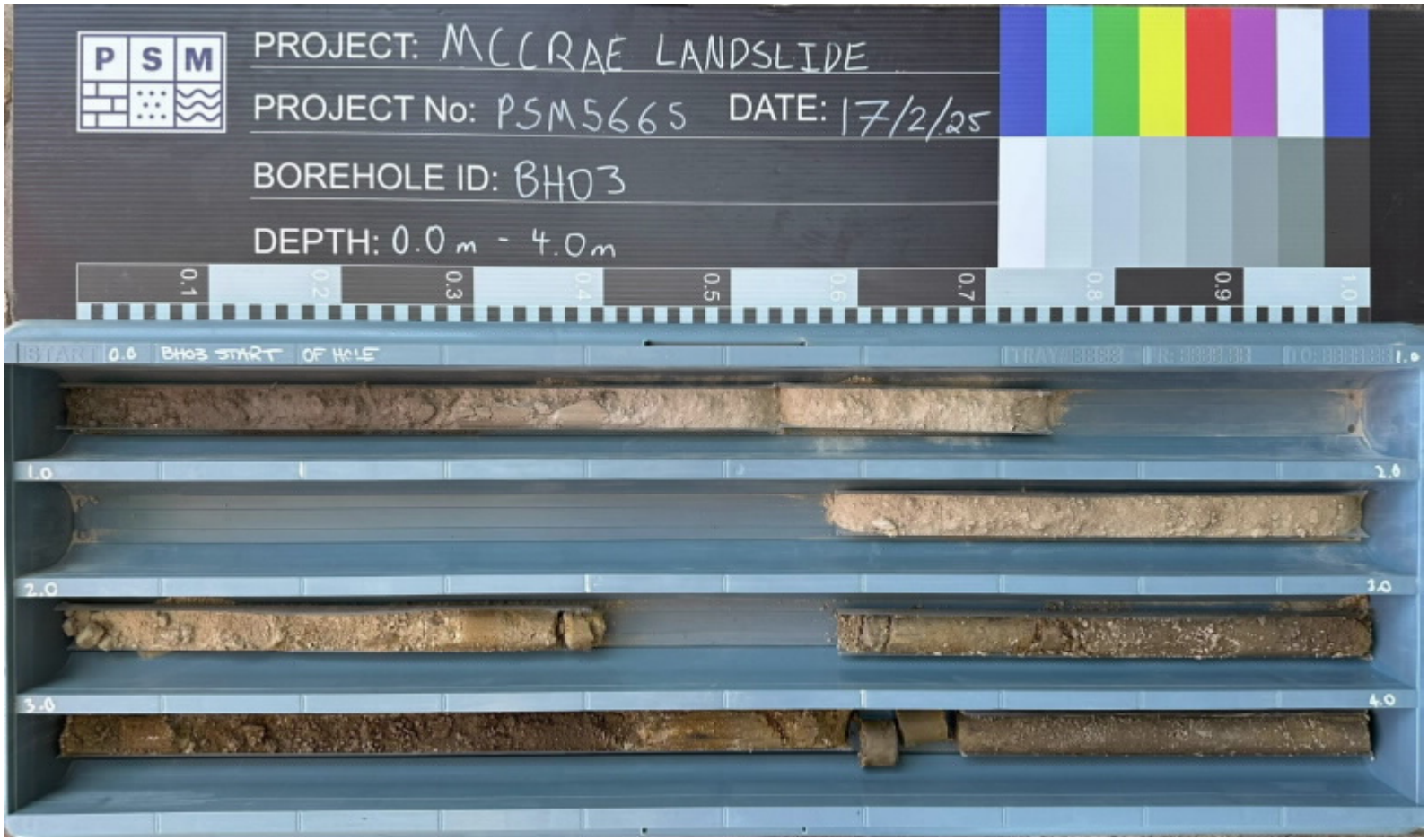
Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:40 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH03 Depth Range: 0.00 - 4.00 m

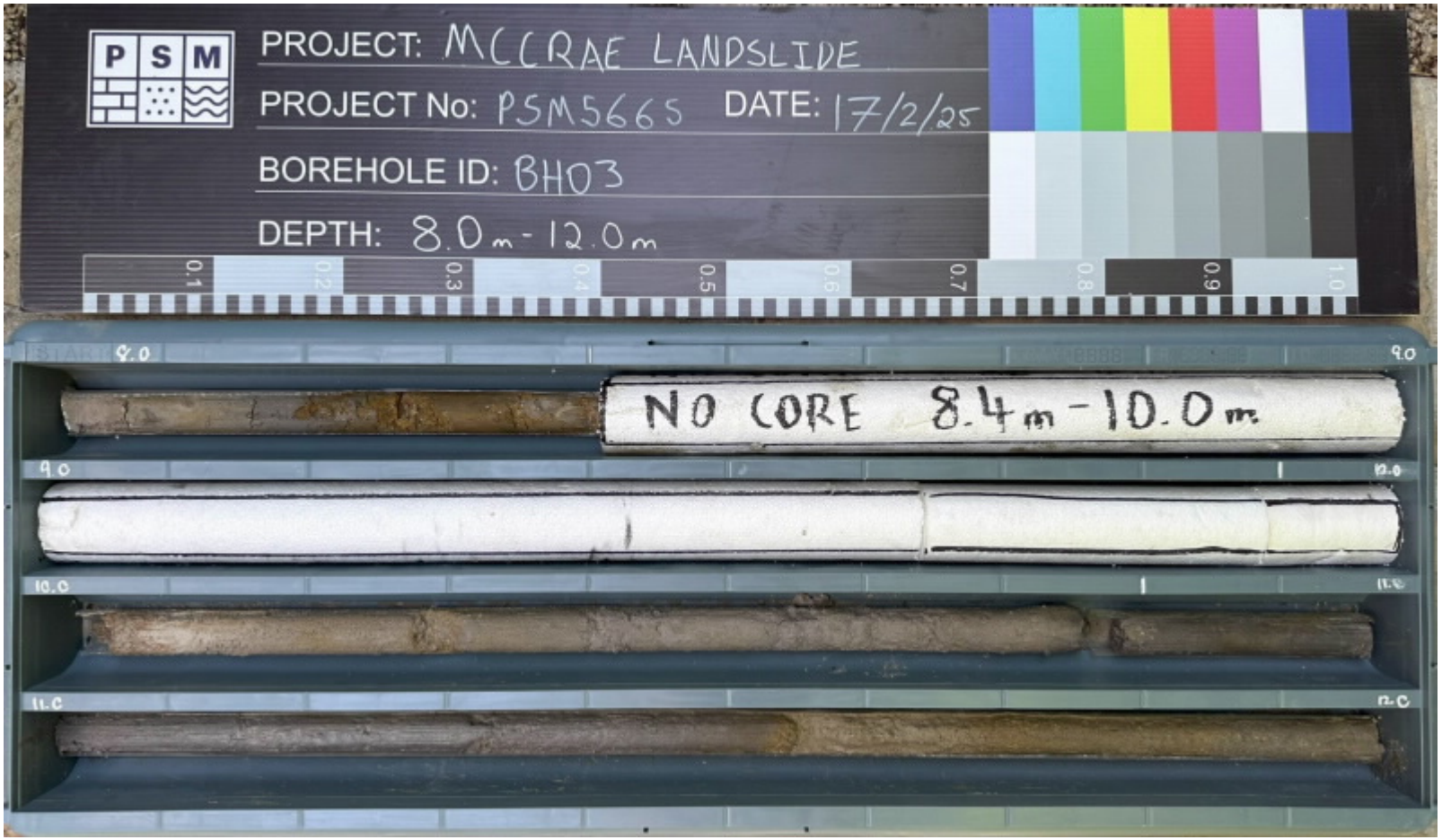
PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 0.00 m - 4.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH03 Depth Range: 4.00 - 8.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 4.00 m - 8.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 2/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH03 Depth Range: 8.00 - 12.00 m

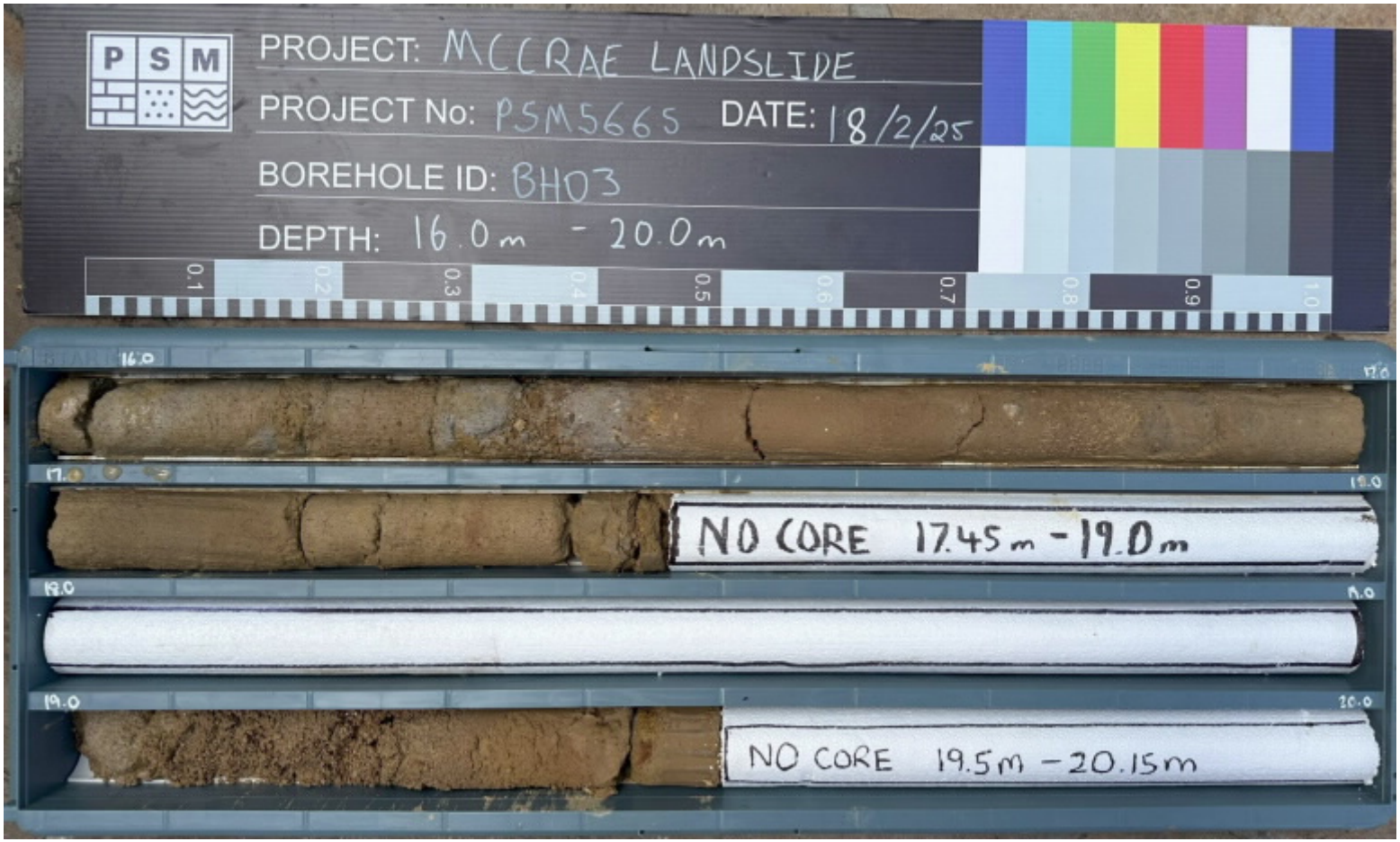
PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 8.00 m - 12.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 3/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH03 Depth Range: 12.00 - 16.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 12.00 m - 16.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 4/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH03 Depth Range: 16.00 - 20.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 16.00 m - 20.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 5/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH03 Depth Range: 20.00 - 24.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 20.00 m - 24.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 6/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH03 Depth Range: 24.00 - 28.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 24.00 m - 28.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 7/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH03 Depth Range: 28.00 - 29.50 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH03: 28.00 m - 29.50 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 8/8

Borehole ID

BH03A

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	25/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	25/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	LL
Hole Position:	319533.7 m E 5753716.7 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.70 m		
Hole Diameter:	150 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
AD/V		N				27.7 26.7 25.7 24.7	1 2 3 4			Refer to BH03 for Lithology.					

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB -Washbore
SPT -Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

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Borehole ID

BH03A

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	25/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	25/02/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	LL
Hole Position:	319533.7 m E 5753716.7 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	28.70 m		
Hole Diameter:	150 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
AD/V		N													
						22.7	6			Hole Terminated at 6.00 m Target depth. Standpipe and VWP Installed, and sand, gravel and bentonite packed in place.					
						21.7	7								
						20.7	8								
						19.7	9								

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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SPT - Standard Penetration Test
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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa)	Structure, Zoning, Origin, Additional Observations
CC		N								Asphaltic Concrete: Black				0.00: Asphalt
										No recovery.				
									SP-SM	SAND with silt trace gravel: fine grained, poorly graded, pale yellow; silt low plasticity; gravel fine grained, angular.	D			0.50: Possibly Fill/Colluvium
						25.8	1							
										No recovery.				
									SP	SAND trace gravel: fine to medium grained, yellow grey; gravel fine grained, angular.	M			1.50: Possibly Colluvium
						24.8	2							
CS		N	Not Encountered			23.8	3							
				D 3.10-3.60 m					ML	SILT: low plasticity, yellow grey.	D to M	VSt		
				PP 3.50 m =300 kPa					CL	(RS) Sandy CLAY: low plasticity, mottled				3.60: Possibly Residual
				PP 3.80 m =380 kPa		22.8	4							
				PP 4.10 m =400 kPa							w ≈ PL	VSt to H		
				PP 4.30 m >400 kPa										
				PP 4.70 m >400 kPa										

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB -Washbore
SPT -Standard penetration test
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NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
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Moisture Condition
D - Dry
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H - Hard
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C - Compact

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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CS		N	Not Encountered	D 5.00-5.80 m					CL	(RS) Sandy CLAY: low plasticity, mottled brown and grey; sand fine to medium grained. *(continued)*	w ≈ PL	VSt to H		
				PP 6.00 m >600 kPa		20.8	6		CL	(XW GRANITE) CLAY trace sand: low plasticity, grey mottled orange; sand fine grained; rock fabric observed.			×	5.80: Possibly Extremely Weathered Granite to EOH
				PP 7.00 m >600 kPa		19.8	7				w > PL to w ≈ PL	H	×	
				PP 8.00 m >600 kPa		18.8	8						×	
				PP 9.00 m >600 kPa		17.8	9						×	
HQ3		N								NO CORE: 9.50 - 9.60 m				
									CL	(XW GRANITE) CLAY trace sand trace gravel: low plasticity, grey mottled orange; sand fine grained; rock fabric observed; gravel fine grained, angular.		H		

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
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Moisture Condition
D - Dry
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VS - Very soft
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C - Compact

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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered						CL	(XW GRANITE) CLAY trace sand trace gravel: low plasticity, grey mottled orange; sand fine grained; rock fabric observed; gravel fine grained, angular. *(continued)*	w > PL to w ≈ PL	H		
									SW	(XW GRANITE) SAND with gravel: fine to coarse grained, orange; gravel fine grained.	M			
									CL	(XW GRANITE) CLAY: low plasticity, grey.	w > PL	H		
						15.8	11		SC	(XW GRANITE) Clayey SAND: fine to medium grained, grey yellow; clay low plasticity.	M			
									CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine grained.				
				PP 12.10 m =310 kPa		14.8	12						×	
				PP 12.50 m =320 kPa							w > PL	VSt	×	
				PP 12.70 m =370 kPa									×	
						13.8	13		SW	(XW GRANITE) Gravelly SAND: fine to coarse grained, yellow brown; gravel fine to medium grained.	M			
									CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey yellow; sand fine to coarse grained; gravel fine to coarse grained, red brown angular moderately weathered granite clasts.	w > PL			
						12.8	14			NO CORE: 14.00 - 14.52 m				
									SP	(XW GRANITE) Gravelly SAND trace clay: fine to coarse grained, yellow brown; gravel fine to coarse grained red brown high to very high strength moderately weathered; clay low plasticity.	M			

Method
AD/T - Auger drilling TC bit
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CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered	Is(50) = 0.11 MPa C 15.00-15.10 m											15.00: PLT carried out on an MW granite clast
									CL	(XW GRANITE) CLAY trace gravel trace sand: low plasticity, red brown; gravel fine to medium grained; sand fine grained.	w > PL	VSt			
						10.8	16		GP	(XW GRANITE) Sandy GRAVEL trace clay: fine to medium grained, brown; sand fine to coarse grained; clay low plasticity.	M				
										NO CORE: 16.30 - 17.50 m					
						9.8	17								
									SC	(XW GRANITE) Clayey SAND trace gravel: fine to medium grained, grey brown; clay low plasticity; gravel fine grained, angular.					
						8.8	18				M				
										NO CORE: 18.50 - 20.50 m					
						7.8	19								

Method
AD/T - Auger drilling TC bit
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NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
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Moisture Condition
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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered							NO CORE: 18.50 - 20.50 m*(continued)*				
									SW	(XW GRANITE) SAND trace gravel: fine to coarse grained, grey; gravel occasional granite gravels red brown, very low to low strength, moderately weathered.	M			
									CL	NO CORE: 20.75 - 20.80 m	M			
				PP 21.00 m =380 kPa		5.8	21			(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine to medium grained.			×	
				PP 21.40 m =420 kPa									×	
				PP 21.60 m =370 kPa							w > PL	VSt to H	×	
						4.8	22							
										NO CORE: 22.50 - 22.95 m				
						3.8	23		CL	(XW GRANITE) CLAY trace gravel trace sand: low plasticity, grey; gravel fine grained; sand coarse grained.	w > PL	H		
									SP	(XW GRANITE) Gravelly SAND: coarse grained, grey; gravel fine grained.	M			
						2.8	24			NO CORE: 24.00 - 25.50 m				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
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NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HQ3		N	Not Encountered							NO CORE: 24.00 - 25.50 m*(continued)*				
									SW	(XW GRANITE) SAND trace gravel trace clay: fine to coarse grained, brown; gravel (quartz) fine grained; clay low plasticity.	M			
						0.8	26			NO CORE: 26.00 - 26.30 m				
									CL	(XW GRANITE) Gravelly CLAY with sand: low plasticity, brown; gravel fine grained; sand fine to coarse grained.	M			
										NO CORE: 26.50 - 26.65 m				
									CL	(XW GRANITE) Sandy CLAY trace gravel: low plasticity, brown; sand fine grained; gravel (quartz) fine grained.	w > PL	H		
				PP 27.10 m >450 kPa		-0.2	27		CL	(XW GRANITE) CLAY trace gravel: low plasticity, grey; gravel (quartz) fine grained, angular.	w > PL	H	×	
				PP 27.40 m >450 kPa									×	
										NO CORE: 27.50 - 27.65 m				
				PP 27.80 m =380 kPa					CL	(XW GRANITE) CLAY trace gravel: low plasticity, grey; gravel (quartz) fine grained, angular.	w > PL	VSt	×	
						-1.2	28			NO CORE: 28.00 - 28.75 m				
									CL	(XW GRANITE) CLAY with sand: low plasticity, grey brown; sand fine to coarse grained.	w > PL	VSt to H		
						-2.2	29			NO CORE: 29.00 - 29.35 m				
									CL	(XW GRANITE) CLAY with sand: low plasticity, grey brown; sand fine to coarse grained.	w > PL	St to VSt		
										NO CORE: 29.50 - 29.95 m				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
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Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

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Borehole ID

BH04

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319498.1 m E 5753665.8 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.82 m		
Hole Diameter:	CS - 57 mm, HQ3 - 96 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
									CL	(XW GRANITE) CLAY with sand: low plasticity, grey brown; sand fine to coarse grained.	w > PL	St to VSt			
										Hole Terminated at 30.00 m Target depth. Standpipe Installed, and sand, gravel and bentonite packed in place.					
						-4.2	31								
						-5.2	32								
						-6.2	33								
						-7.2	34								

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

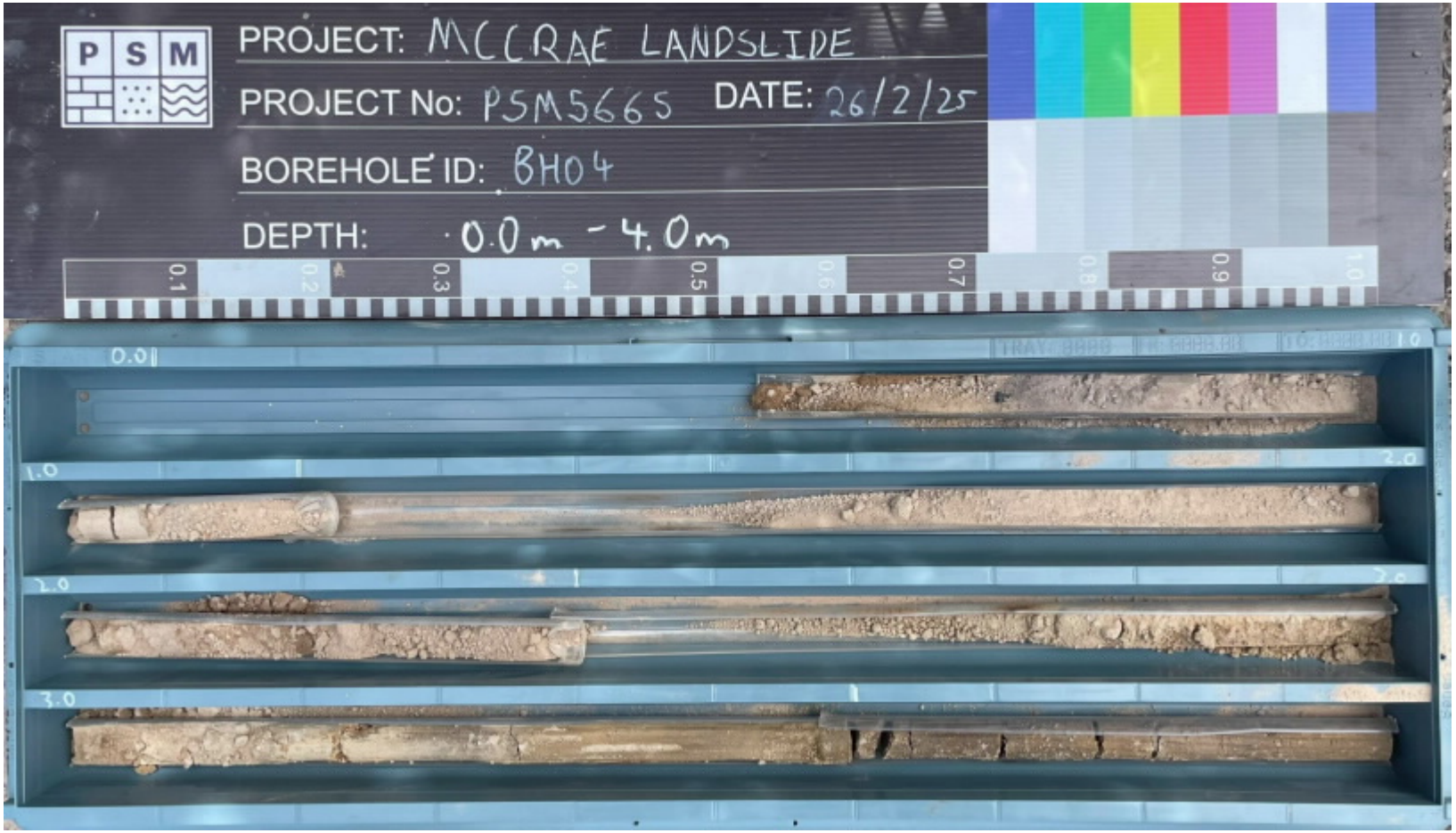
Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH04 Depth Range: 0.00 - 4.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 0.00 m - 4.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH04 Depth Range: 4.00 - 8.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 4.00 m - 8.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 2/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH04 Depth Range: 8.00 - 12.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 8.00 m - 12.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 3/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH04 Depth Range: 12.00 - 16.00 m

	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 12.00 m - 16.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 4/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH04 Depth Range: 16.00 - 20.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 16.00 m - 20.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 5/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH04 Depth Range: 20.00 - 24.00 m

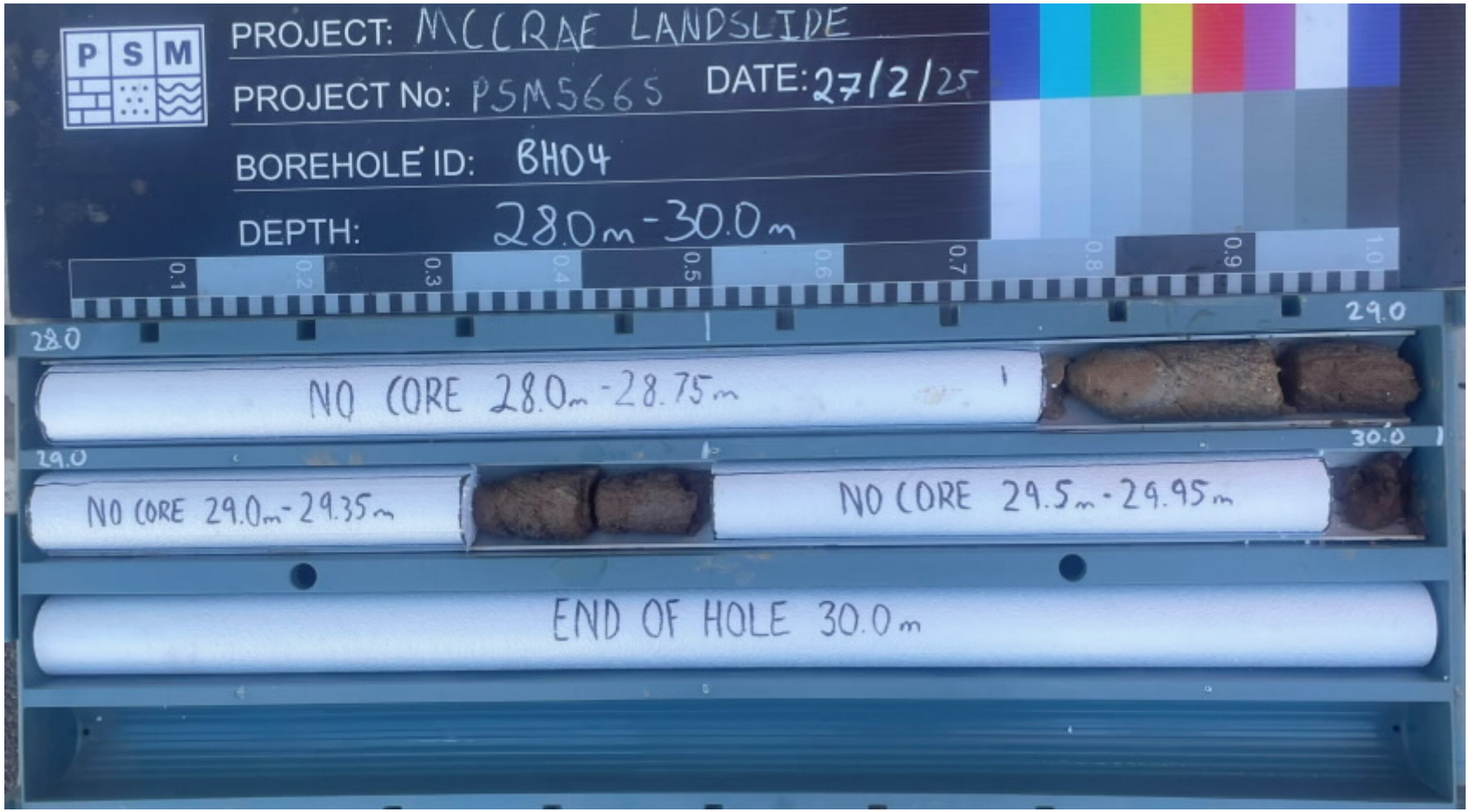
PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 20.00 m - 24.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 6/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PointID : BH04 Depth Range: 24.00 - 28.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 24.00 m - 28.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 7/8

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH04 Depth Range: 28.00 - 30.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH04: 28.00 m - 30.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 8/8

Borehole ID

BH04A

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	27/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319499.2 m E 5753666.1 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.86 m		
Hole Diameter:	150 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
AD/V		N				25.9 24.9 23.9 22.9	1 2 3 4			Refer to BH04 for Lithology.					

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH04A

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	27/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	27/02/2025
Hole Location:	Middle of View Point Road Cul-de-sac	Logged By:	LL
Hole Position:	319499.2 m E 5753666.1 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	26.86 m		
Hole Diameter:	150 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
AD/V		N													
						20.9	6			Hole Terminated at 6.00 m Target depth. Standpipe Installed, and sand and bentonite packed in place.					
						19.9	7								
						18.9	8								
						17.9	9								

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH05

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	26/02/2025
Hole Location:	3 Penny Lane Driveway	Logged By:	LL
Hole Position:	319500.7 m E 5753775.2 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	1.98 m		
Hole Diameter:	CS - 57 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
CC		N								Concrete				0.00: Concrete
CS		N								No recovery.				
									SP	Gravelly SAND: fine to medium grained, grey brown; gravel angular, fine grained.	M			0.50: Possibly Aeolian Dune or Marine
						1.0	1		SP	SAND: medium to coarse grained, pale yellow.	M			
										No recovery.				
			26/02/25, Water observed at 1.60 mbgl.	D 1.60-2.30 m					SW	SAND: fine to coarse grained, grey.	D W			
						0.0	2							
										No recovery.				
				D 2.60-3.60 m					SC	Clayey SAND trace gravel: fine to coarse grained, grey; gravel fine grained.	W			
						-1.0	3							
				PP 3.60 m =180 kPa					CL-CI	CLAY: low to medium plasticity, brown mottled grey.	D w > PL	St	×	
									SW	SAND: fine to coarse grained, angular, grey.	W			
						-2.0	4							
									SC	Clayey SAND: fine to medium grained, grey; clay low to medium plasticity.	W			
									CL	(RS) CLAY trace sand: low plasticity, brown;	w >	St		4.90: Possibly Residual

Method
- AD/T - Auger drilling TC bit
- AD/V - Auger drilling V bit
- WB - Washbore
- SPT - Standard penetration test
- PT - Push tube
- AS - Auger screwing
- CS - Continuous sampling (DT22)
- NDD - Non destructive drilling
- CC - Concrete coring
- HA - Hand Auger

Penetration
- No resistance
- Refusal

Water
- Inflow
- Partial Loss
- Complete Loss

Samples and Tests
- U - Undisturbed Sample
- D - Disturbed Sample
- SPT - Standard Penetration Test
- ES - Environmental Sample
- TW - Thin Walled
- LB - Large Disturbed Sample

Moisture Condition
- D - Dry
- M - Moist
- W - Wet

Consistency/Relative Density
- VS - Very soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very stiff
- H - Hard
- VL - Very loose
- L - Loose
- MD - Medium dense
- D - Dense
- VD - Very dense
- Ce - Cemented
- C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

BH05

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	26/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	26/02/2025
Hole Location:	3 Penny Lane Driveway	Logged By:	LL
Hole Position:	319500.7 m E 5753775.2 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Geoprobe 7822 DT	Inclination:	-90°	RL Surface:	1.98 m		
Hole Diameter:	CS - 57 mm	Bearing:	-	Datum:	AHD	Operator:	SW Drilling

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
										sand fine grained.	PL				
										Hole Terminated at 5.00 m Target depth. VWP grouted, and sand and bentonite packed in place.					
						-4.0	6								
						-5.0	7								
						-6.0	8								
						-7.0	9								

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

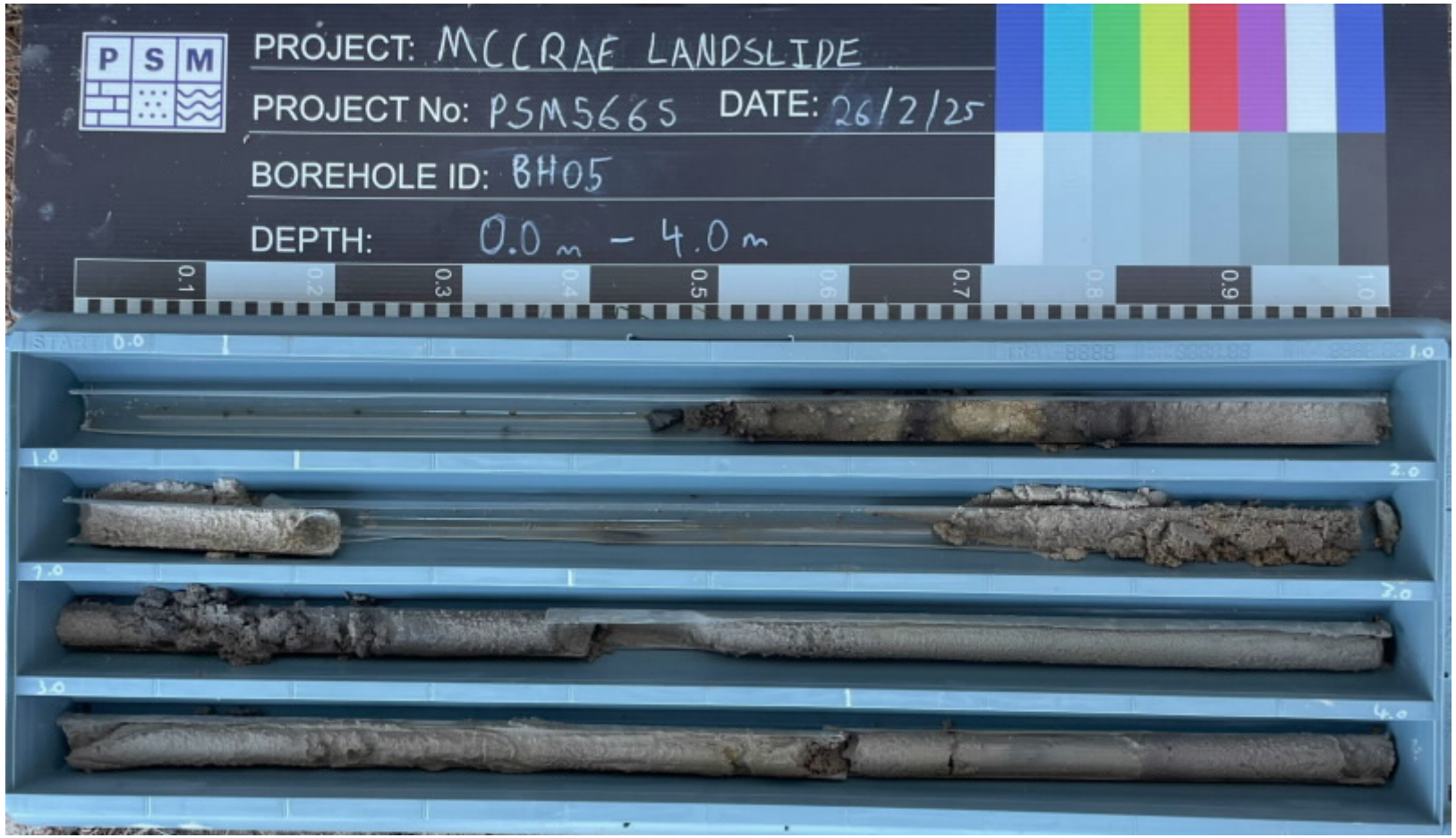
Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 26/03/2025 22:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

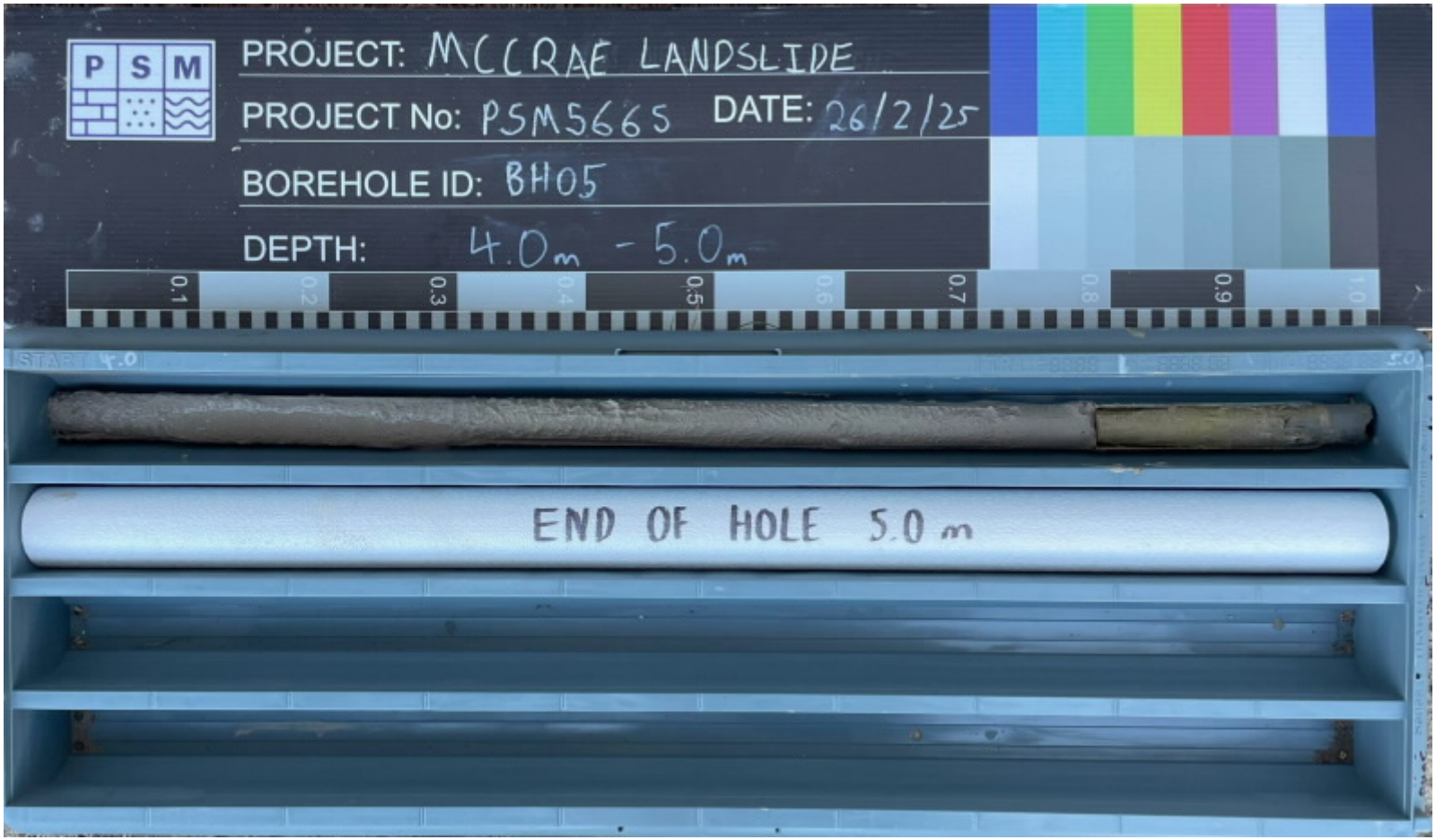
PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH05 Depth Range: 0.00 - 4.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH05: 0.00 m - 4.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/2

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO CORE PHOTO 1 PER PAGE A4L PSM5665.GPJ <<DrawingFile>> 06/03/2025 14:32 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06



PointID : BH05 Depth Range: 4.00 - 5.00 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Core Photo - BH05: 4.00 m - 5.00 m	DRAWN BTA	DATE 6/03/2025
		CHECKED TN	DATE 6/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 2/2

Borehole ID
NDT01
Page 1 of 1

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	12/02/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	12/02/2025
Hole Location:	Front Yard of 6 View Point Road Driveway	Logged By:	JW
Hole Position:	319571.8 m E 5753700.6 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Vacuum Truck	Inclination:	-90°	RL Surface:	32.34 m		
Hole Diameter:	400 mm	Bearing:	-	Datum:	AHD	Operator:	Fulton Hogan

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
NDD		N	Not Encountered						ML	TOPSOIL: Sandy SILT: low plasticity, dark grey; sand fine grained.	w > PL				0.00: Topsoil
										Insufficient information to provide a detailed material description, but inferred to be FILL sandy CLAY from observations of material near surface and video inspection.					0.20: Possibly FILL above sewer trench
						31.3	1								
															1.30: Obstruction in hole, possibly a cobble that could not be excavated by the vacuum truck 1.50: Rootlets observed down 1.5 m
						30.3	2								
															2.60: Horizontal dark grey band/contact - possibly water level mark
						29.3	3								
										Insufficient information to provide a detailed material description, but inferred to be natural gravelly clayey SAND below the fill based on observed cuttings and video inspection.					3.20: Possibly Colluvium or Residual. Inferred to be insitu mateiral below sewer invert level
AD/V						28.3	4								
										Hole Terminated at 5.00 m Target depth. Standpipe Installed, and sand, gravel and bentonite packed in place.					

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID

NDT02

Page 1 of 1

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	03/03/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	03/03/2025
Hole Location:	Verge in front of 6 View Point Road	Logged By:	SD
Hole Position:	319575.4 m E 5753696.0 m N GDA2020 / MGA Zone 55	Checked By:	TN

Drill Model and Mounting:	Vacuum Truck	Inclination:	-90°	RL Surface:	32.73 m		
Hole Diameter:	200 mm	Bearing:	-	Datum:	AHD	Operator:	Fulton Hogan

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500		Structure, Zoning, Origin, Additional Observations
NDD		N	Not Encountered			31.7 30.7 29.7	1 2 3		ML	TOPSOIL: Sandy SILT: low plasticity, dark grey; sand fine grained. Insufficient information to provide a detailed material description, but inferred to be FILL based on proximity to sewer trench.	w > PL				0.00: Topsoil 0.20: Possibly FILL above sewer trench
						28.7	4			Hole Terminated at 3.20 m Target depth. VWP installed, and sand, gravel and bentonite packed in place.					3.20: Uncertainty regarding hole termination depth due to cave-in. Measured depth was 3.2 m

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID
RD1
Page 1 of 1

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/03/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/03/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	DP
Hole Position:	319531.9 m E 5753714.4 m N GDA2020 / MGA Zone 55	Checked By:	DP

Drill Model and Mounting:	Hand Auger	Inclination:	-90°	RL Surface:	28.60 m		
Hole Diameter:	100 mm	Bearing:	-	Datum:	AHD	Operator:	N/A

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HA		N	Not Encountered	D 0.00-0.10 m					ML	TOPSOIL: Clayey SILT trace sand: low plasticity, brown; sand fine grained; trace rootlets.				0.00: Topsoil
									SM	FILL: Silty SAND: fine to medium grained, grey.				0.10: Fill
				D 0.20-0.30 m		28.4	0.2		GM	FILL: Silty GRAVEL with sand: medium grained, sub-angular, brown; silt low plasticity; sand fine grained.				
														0.30: Top of Reln Drain
						28.2	0.4				D			
				D 0.50-0.70 m					SM	Silty SAND trace gravel: fine to medium grained, brown; silt low plasticity; gravel medium grained, angular.				0.50: Base of Reln Drain, Possibly Colluvium
						28.0	0.6							
						27.8	0.8							
										Hole Terminated at 0.90 m Target depth. Reln drain backfilled with bentonite plug and topped with Site won materials.				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

RD1 - 1 Depth Range: 0.00 m - 0.90 m

RD1 - 2 Depth Range: 0.00 m - 0.90 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Photo - RD1	DRAWN LL	DATE 21/03/2025
		CHECKED DP	DATE 21/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/1

PSM 3.02.2 LIB - MOD FOR 5665.GLB GrfcTbl DG PHOTO TEST PIT PHOTO 2 PER PAGE A4P PSM5665.GPJ <<DrawingFile>> 21/03/2025 17:16 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Borehole ID
RD2
Page 1 of 1

Geotechnical Log

Project No.: PSM5665

Client:	Mornington Peninsula Shire Council	Commenced:	20/03/2025
Project Name:	McCrae Landslide Geotechnical Investigation	Completed:	20/03/2025
Hole Location:	10-12 View Point Road Front Lawn	Logged By:	DP
Hole Position:	319534.8 m E 5753717.7 m N GDA2020 / MGA Zone 55	Checked By:	DP

Drill Model and Mounting:	Hand Auger	Inclination:	-90°	RL Surface:	28.80 m		
Hole Diameter:	100 mm	Bearing:	-	Datum:	AHD	Operator:	N/A

Drilling Information								Soil Description						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
HA		N	Not Encountered						ML	TOPSOIL: Clayey SILT trace sand: low plasticity, brown; sand fine grained; trace rootlets.				0.00: Topsoil
									SM	FILL: Silty SAND: fine to medium grained, grey; trace rootlets.				0.10: Fill
				D 0.20-0.30 m		28.6	0.2		GM	FILL: Silty GRAVEL with sand: medium grained, sub-angular, brown; silt low plasticity; sand fine grained.	D			0.30: Top of Reln Drain
						28.4	0.4							
				D 0.50-0.70 m					SW	SAND trace gravel: fine to medium grained, brown; gravel medium grained, angular.				0.50: Base of Reln Drain, Possibly Colluvium
						28.2	0.6							
						28.0	0.8			Hole Terminated at 0.70 m Target depth. Reln drain backfilled with bentonite plug and topped with Site won materials.				

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CS - Continuous sampling (DT22)
NDD - Non destructive drilling
CC - Concrete coring
HA - Hand Auger

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
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Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

PSM 3.02.2 LIB - MOD FOR 5665 GLB Log PSM AU NONCORE BH NZ AU PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:41 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

RD2 - 1 Depth Range: 0.00 m - 0.70 m

PSM	TITLE Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Photo - RD2	DRAWN LL	DATE 21/03/2025
		CHECKED DP	DATE 21/03/2025
		SCALE Not To Scale	A4
		PROJECT No PSM5665	FIGURE No 1/1

PSM 3.02.2 LIB - MOD FOR 5665.GLB GfeTbl DG PHOTO TEST PIT PHOTO 1 PER PAGE A4P PSM5665.GPJ <<DrawingFile>> 21/03/2025 17:22 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Appendix B
Point Load Strength Index Test Results

MSC.5007.0004.0175

Pells Sullivan Meynink

POINT LOAD STRENGTH INDEX TEST RESULTS

Job No. ***PSM5665*** **Sheet 1 of 1**

Project ***McCrae Landslide***

Test Method	*AS 4133.4.1-2007 Methods of testing rocks for engineering purposes - Determination of point load strength index*	Sampling Technique	*HQ3*	Sampling Date	*17-28/02/2025*
		Storage History	*Geelong office storage*	Testing Date	*3/03/2025*
Test Machine	*GSA 6510-0311*	Moisture Condition	*Natural*	Tested By	*LL*
Calibration Date	*11/9/2026*	Loading Rate	*< 30 seconds*		

Rock Type	Location	Depth	Diametral Tests					Axial Tests						AS 1726:2017 Strength Class
		(m)	D (mm)	L (mm)	P (kN)	$I_{s(50)}$ (MPa)	Failure Mode	W (mm)	D (mm)	P (kN)	I_s (MPa)	$I_{s(50)}$ (MPa)	Failure Mode	
Granite Corestone	***BH01***	***17.8-17.9***	*70*	*50*	*11.51*	***2.73***	*Through substance*	*-*	*-*	*#N/A*	*#N/A*	***#N/A***	*Through substance*	***H / #N/A***
Granite Corestone	***BH01***	***22.9-23.0***	*70*	*90*	*0.61*	***0.14***	*Bad break*	*-*	*-*	*#N/A*	*#N/A*	***#N/A***	*Bad break*	***L / #N/A***
Granite Corestone	***BH02***	***21.3-21.4***	*70*	*50*	*7.80*	***1.85***	*Through substance*	*-*	*-*	*#N/A*	*#N/A*	***#N/A***	*Through substance*	***H / #N/A***
XW Granite	***BH03***	***23.3-23.4***	*70*	*110*	*0.17*	***0.04***	*Through substance*	*70*	*60*	*0.2*	*0.03*	***0.04***	*Through substance*	***VL***
XW Granite	***BH03***	***15.5-15.6***	*70*	*100*	*0.16*	***0.04***	*Through substance*	*70*	*30*	*0.1*	*0.05*	***0.05***	*Through substance*	***VL***
XW Granite	***BH03***	***14.75-14.85***	*70*	*110*	*0.14*	***0.03***	*Through substance*	*70*	*60*	*0.1*	*0.02*	***0.03***	*Through substance*	***<VL***
XW Granite	***BH03***	***21.4-21.55***	*70*	*190*	*0.38*	***0.09***	*Through substance*	*70*	*70*	*0.3*	*0.04*	***0.06***	*Through substance*	***VL***
Granite Corestone	***BH04***	***15-15.1***	*55*	*100*	*0.49*	***0.17***	*Through substance*	*55*	*50*	*0.2*	*0.04*	***0.05***	*Through substance*	***VL / L***

By: ***LL*** **Checked:** ***JW*** **Date:** ***7/3/2025***

1. #N/A = axial test was not performed.
2. A conversion factor of 20 was adopted (UCS = 20 $I_{s(50)}$)

Appendix C
Piezometer Construction Records

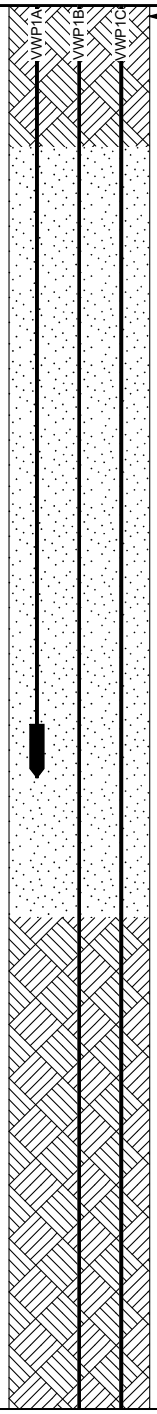
Hole ID	BH01

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH01 Log	SHEET	: 1 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319565.8 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753704.4 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 19/02/2025 - 20/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.57 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP1A	Vibrating Wire Piezometer		5.50 m 26.07 m	20/02/2025	
VWP1B	Vibrating Wire Piezometer		14.50 m 17.07 m	20/02/2025	
VWP1C	Vibrating Wire Piezometer		29.00 m 2.57 m	20/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CS	▽				FILL: Gravelly SAND: fine to coarse grained; gravel fine to medium grained.
					TOPSOIL: Sandy SILT: low plasticity, brown; sand fine grained.
			31		FILL: Silty SAND: fine to medium grained, low plasticity, grey.
		1			CLAY trace sand: low plasticity, brown; sand fine grained.
					No recovery.
			30		Silty SAND trace gravel: fine to coarse grained, brown; silt low plasticity; gravel fine to medium grained.
		2			
			29		Gravelly SAND: fine to coarse grained, brown; gravel fine grained.
					No recovery.
		3			Gravelly SAND: fine to coarse grained, brown; gravel fine grained.
					CLAY with sand: low plasticity, grey mottled orange; sand fine grained.
			28		SAND with gravel trace clay: fine to coarse grained, brown; gravel subangular, fine to coarse grained.
		4			Clayey SAND: fine to medium grained, brown; clay low plasticity.
			27		Silty SAND: fine grained, grey; silt low plasticity.
		5			
			26		Gravelly SAND: fine to coarse grained, grey; gravel fine to coarse grained.
		6			(RS/XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to medium grained; gravel medium grained.
			25		
		7			
			24		
		8			Varies from Sandy CLAY to Clayey SAND.
			23		
		9			
			22		



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

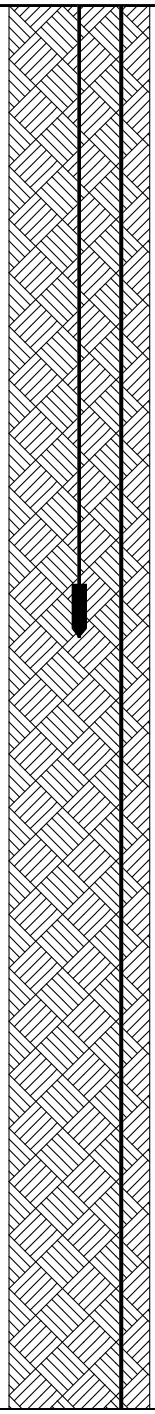
PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 09/04/2025 13:59 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

				Hole ID	**BH01**
CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH01 Log	SHEET	: 2 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319565.8 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753704.4 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 19/02/2025 - 20/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.57 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP1A	Vibrating Wire Piezometer		5.50 m 26.07 m	20/02/2025	
VWP1B	Vibrating Wire Piezometer		14.50 m 17.07 m	20/02/2025	
VWP1C	Vibrating Wire Piezometer		29.00 m 2.57 m	20/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CS					(RS/XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to medium grained; gravel medium grained.
			21		(RS/XW GRANITE) SAND trace gravel: fine to coarse grained, brown; gravel fine grained.
		11			(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine to medium grained.
			20		(XW GRANITE) Clayey SAND trace gravel: fine to coarse grained, grey mottled orange; clay low plasticity; gravel subangular, fine grained.
		12			
			19		
		13			(XW GRANITE) Gravelly SAND trace clay: medium to coarse grained, yellow brown; gravel fine to medium; clay low plasticity.
			18		(XW GRANITE) Clayey SAND: medium to coarse grained, grey mottled brown; clay low plasticity.
		14			Becomes gravelly; fine to medium gravels at 13.90 m.
HQ3	NOT ENCOUNTERED				NO CORE: 14.0 - 14.4 m
			17		(XW GRANITE) Sandy CLAY with gravel: low plasticity, grey mottled orange; sand medium to
		15			
			16		(XW GRANITE) Clayey SAND: fine to coarse grained, yellow mottled grey; clay low plasticity. MW granite inclusions at 15.3 - 15.5 m.
		16			Becomes brown at 15.7 m. coarse grained; gravel fine grained.
			15		(XW GRANITE) SAND with clay trace gravel: fine to
		17			NO CORE: 17.0 - 17.1 m
			14		(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, brown grey; clay low plasticity; gravel fine grained.
		18			(XW GRANITE) SAND with clay trace gravel: fine to
			13		(XW GRANITE) Sandy CLAY trace gravel: low coarse grained, brown grey; clay low plasticity; gravel fine grained.
		19			
			12		coarse grained, brown; clay low plasticity; gravel fine grained. (XW GRANITE) CLAY trace sand: low plasticity, grey; plasticity, grey; sand fine grained; gravel fine FELDSPAR inclusions at 17.25 m.



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

sand fine grained.

grained.

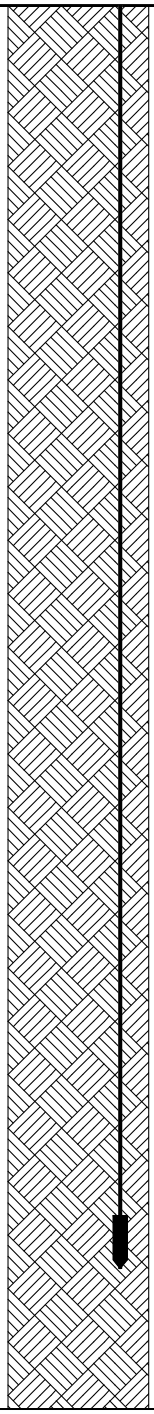
Hole ID **BH01**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH01 Log	SHEET	: 3 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319565.8 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753704.4 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 19/02/2025 - 20/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.57 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP1A	Vibrating Wire Piezometer		5.50 m 26.07 m	20/02/2025	
VWP1B	Vibrating Wire Piezometer		14.50 m 17.07 m	20/02/2025	
VWP1C	Vibrating Wire Piezometer		29.00 m 2.57 m	20/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
HQ3	NOT ENCOUNTERED				(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine to coarse grained. Coarse grained MW granite gravel clast at 20.15 m.
			11		
		21			(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, grey; clay low plasticity; gravel angular, fine grained.
			10		NO CORE: 21.5 - 22.6 m
		22			
			9		(XW GRANITE) Gravelly SAND with clay: fine to coarse grained, brown; gravel fine grained; clay low plasticity.
		23			NO CORE: 23.05 - 23.2 m
					(XW GRANITE) SAND: medium to coarse grained, brown.
			8		
		24			(XW GRANITE) Gravelly SAND trace clay: fine to coarse grained, grey brown; gravel subangular to angular, fine grained; clay low plasticity.
					(XW GRANITE) Clayey SAND: fine to medium grained, grey; clay low plasticity.
			7		NO CORE: 24.5 - 24.85 m
		25			(XW GRANITE) Gravelly SAND with clay: medium to coarse grained, brown; gravel fine grained; clay low plasticity.
			6		
		26			NO CORE: 26.0 - 26.05 m
					(XW GRANITE) CLAY with sand: low plasticity, grey; sand fine to medium grained.
			5		
		27			NO CORE: 27.0 - 28.3 m
			4		
		28			
					(XW GRANITE) SAND: fine to medium grained, brown.
			3		(XW GRANITE) Sandy CLAY: low plasticity, brown; sand fine to medium grained.
		29			(XW GRANITE) SAND with clay trace gravel: fine to medium grained, brown; clay low plasticity; gravel fine grained granite.
					NO CORE: 29.2 - 29.7 m
			2		
					(XW GRANITE) Sandy GRAVEL: fine grained, brown; sand fine to coarse grained granite.



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Hole ID **BH01**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH01 Log	SHEET	: 4 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319565.8 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753704.4 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 19/02/2025 - 20/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.57 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP1A	Vibrating Wire Piezometer		5.50 m 26.07 m	20/02/2025	
VWP1B	Vibrating Wire Piezometer		14.50 m 17.07 m	20/02/2025	
VWP1C	Vibrating Wire Piezometer		29.00 m 2.57 m	20/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
					(XW GRANITE) SAND: fine grained, brown.
					Hole Terminated at 30.00 m Target depth. Nested VWPs grouted and sand packed in place at various depths.
			1		
		31			
			0		
		32			
			-1		
		33			
			-2		
		34			
			-3		
		35			
			-4		
		36			
			-5		
		37			
			-6		
		38			
			-7		
		39			
			-8		

RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PIEZOMETER INSTALLATION - FIELD SHEET

Date 20/02/2025 Time 4:00pm

PSM staff LL/JW Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18169

Data logger model RST 5CH DT2055B Data logger serial number 19076

Instrument ID *(e.g. CSH-123-INC-1)* VWP1A

Borehole

Borehole ID BH01

Easting (m) 319565.8 Northing (m) 5753704.4

Collar RL (m AHD) 31.57 Drilled depth (m) 30 Dipped depth prior to install (m) 1.4

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
5.5	☒ Up ☐ Down	Colluvium/Fill

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
N/A		N/A		N/A	

Comments

Sand packed between 1m to 6.5m
Grouted with 25:1:0.3 mix between 0m to 1m

Zero reading *(prior to sand packing)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
11:50am 20/02/2025	8573.5	25.0	2.9	above ground
4:00pm 20/02/2025	8590.7	22.3	1.3	0.4m above dipped depth at 1.4m
4:00pm 20/02/2025	8519.0	22.4	8.9	1.0m below dipped depth at 1.4m
4:45pm 20/02/2025	8105.2	20.5	53.3	at installation depth of 5.5m
7:20am 21/02/2025	8503.1	18.1	10.9	at installation depth of 5.5m

First readings *(after sand packing)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1					
2					

PIEZOMETER INSTALLATION - FIELD SHEET

Date 20/02/2025 Time 4:00pm

PSM staff LL/JW Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18170

Data logger model RST 5CH DT2055B Data logger serial number 19076

Instrument ID *(e.g. CSH-123-INC-1)* VWP1B

Borehole

Borehole ID BH01

Easting (m) 319565.8 Northing (m) 5753704.4

Collar RL (m AHD) 31.57 Drilled depth (m) 30 Dipped depth prior to install (m) 1.4

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
14.5	☒ Up ☐ Down	XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 50 Batch 2: 20	kg	Batch 1: 110 Batch 2: 50	L	Batch 1: 12 Batch 2: 1.5	kg

Comments

Batch 1: filled between ~12m to 30m
Batch 2: filled between ~6.5m to 12m

Sand packed between 1m to 6.5m
Grouted with 25:1:0.3 mix between 0m to 1m

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
12:10pm 20/02/2025	8496.9	25.1	2.4	above ground
4:00pm 20/02/2025	8505.5	22.0	1.8	0.4m above dipped depth at 1.4m
4:00pm 20/02/2025	8438.3	22.2	9.2	1.0m below dipped depth at 1.4m
4:45pm 20/02/2025	7227.6	19.4	143.1	at installation depth of 14.5m

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	7:20am 21/02/2025	8511.8	17.8	1.5	Grout at 12m before batch 2 placed
2					
3					

PIEZOMETER INSTALLATION - FIELD SHEET

Date 20/02/2025 Time 4:00pm

PSM staff LL/JW Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18180

Data logger model RST 5CH DT2055B Data logger serial number 19076

Instrument ID *(e.g. CSH-123-INC-1)* VWP1C

Borehole

Borehole ID BH01

Easting (m) 319565.8 Northing (m) 5753704.4

Collar RL (m AHD) 31.57 Drilled depth (m) 30 Dipped depth prior to install (m) 1.4

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
29	☒ Up ☐ Down	XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 50 Batch 2: 20	kg	Batch 1: 110 Batch 2: 50	L	Batch 1: 12 Batch 2: 1.5	kg

Comments

Batch 1: filled between ~12m to 30m
Batch 2: filled between ~6.5m to 12m

Sand packed between 1m to 6.5m
Grouted with 25:1:0.3 mix between 0m to 1m

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
12:15pm 20/02/2025	8990.3	23.0	2.0	above ground
4:00pm 20/02/2025	8987.9	21.3	2.3	0.4m above dipped depth at 1.4m
4:00pm 20/02/2025	8933.1	21.6	8.3	1.0m below dipped depth at 1.4m
4:45pm 20/02/2025	8105.2	20.5	99.1	at installation depth of 29m

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	7:20am 21/02/2025	8586.4	18.9	46.5	Grout at 12m before batch 2 placed
2					
3					

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

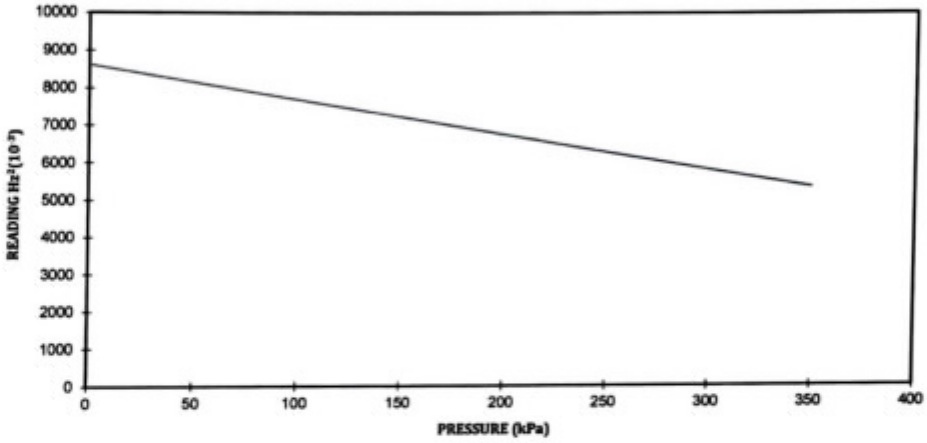
SERIAL : S18169

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 1

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8599	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.10700	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.6	°C		
THERMAL COEFFICIENT :	-0.07005	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

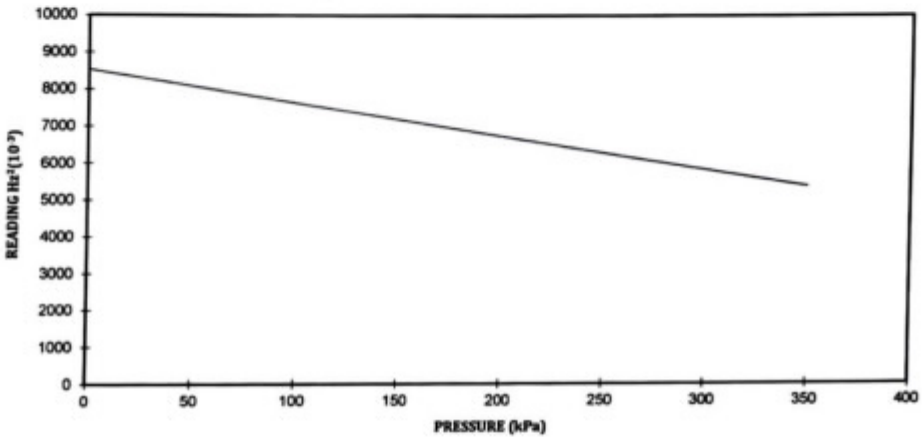
SERIAL : S18170

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 2

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8517	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.11040	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.5	°C		
THERMAL COEFFICIENT :	-0.09148	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

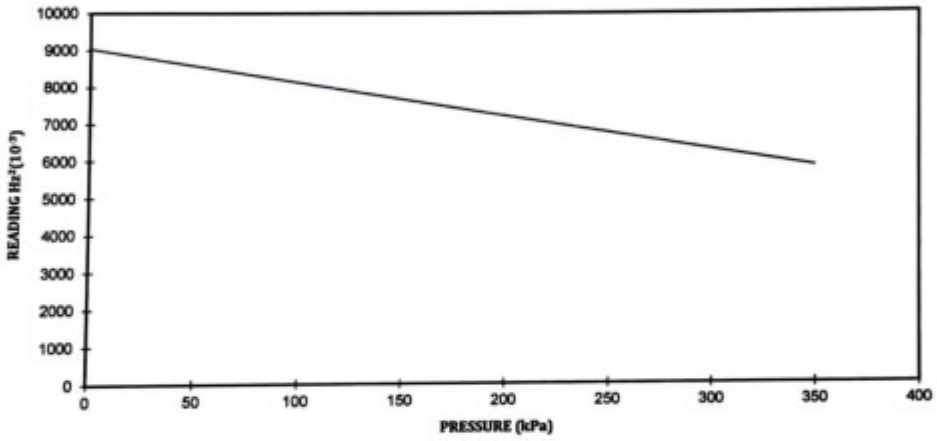
SERIAL : S18180

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 12

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	9006	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.10960	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.6	°C		
THERMAL COEFFICIENT :	-0.05550	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

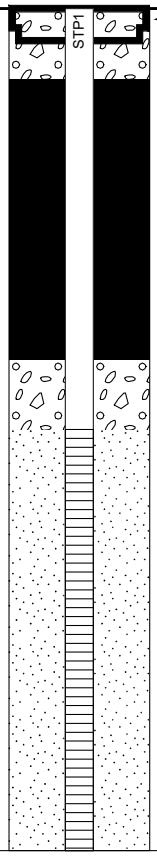
www.hmagrp.com Email: geotechnical@hmagrp.com Tel: +61 (0)3 8720 6700 Fax: +61 (0)3 8720 6799

		Hole ID	**BH01A**
CLIENT : Mornington Peninsula Shire Council	POSITION : Refer to BH01A Log	SHEET : 1 OF 1	
CONTRACTOR : SW Drilling	EASTING : 319565.7 m	STATUS :	
PROJECT : McCrae Landslide	NORTHING : 5753703.3 m	LOGGED BY : LL	
LOCATION : McCrae, VIC	COORD. SYS. : GDA2020 / MGA Zone 55	DRILL DATE : 25/02/2025	
PROJECT No. : PSM5665	GROUND RL : 31.69 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP1	Standpipe		6.00 m 25.69 m	25/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
AD/V	NOT ENCOUNTERED	1, 2, 3, 4, 5, 6, 7, 8, 9	31, 30, 29, 28, 27, 26, 25, 24, 23, 22		Refer to BH01 for Lithology.
					Hole Terminated at 6.00 m Target depth. Standpipe Installed, and sand, gravel and bentonite packed in place.



RIG : Geoprobe 7822 DT	CHECKED BY : TN	REMARK	
INCLINATION : -90°	CHECKED DATE : 27/03/2025		
AZIMUTH : -	APPROVED BY : DP		
HOLE DIA. : 150 mm	APPROVED DATE : 27/03/2025		

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

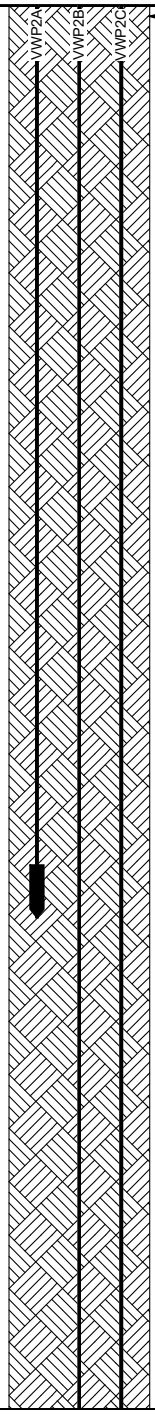
Hole ID	BH02

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH02 Log	SHEET	: 1 OF 3
CONTRACTOR	: SW Drilling	EASTING	: 319562.3 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753681.9 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 20/02/2025 - 21/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.87 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP2A	Vibrating Wire Piezometer		6.50 m 25.37 m	24/02/2025	
VWP2B	Vibrating Wire Piezometer		14.50 m 17.37 m	24/02/2025	
VWP2C	Vibrating Wire Piezometer		28.50 m 3.37 m	24/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CS	NOT ENCOUNTERED				TOPSOIL: Sandy SILT: low plasticity, brown; sand fine. FILL: Silty SAND: fine grained, grey; silt low plasticity.
		1	31		
					No recovery.
		2	30		Clayey SAND trace gravel: fine to coarse grained, grey; clay low to medium plasticity; gravel subangular, fine to medium grained.
SPT					
		3	29		
AD/V					
SPT					
		4	28		
CS					Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine grained.
		5	27		
		6	26		(RS/XW GRANITE) Sandy CLAY: low to medium plasticity, mottled grey brown; sand fine to coarse grained.
					As above but no sand at 6.5 m.
		7	25		As above but with pale grey, fine grained sand at 7.1 m.
					(RS/XW GRANITE) Sandy CLAY: low plasticity, red
		8	24		
					(RS/XW GRANITE) CLAY trace sand: low
		9	23		
			22		



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 09/04/2025 14:00 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

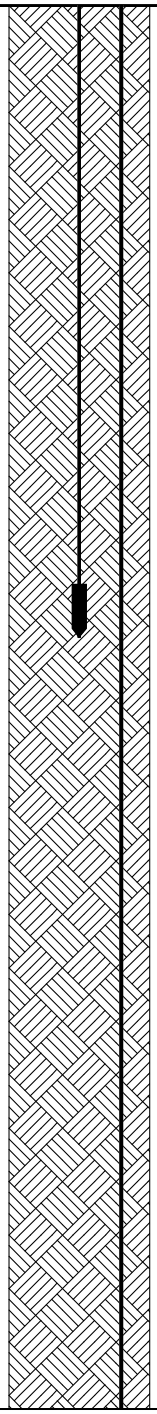
Hole ID **BH02**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH02 Log	SHEET	: 2 OF 3
CONTRACTOR	: SW Drilling	EASTING	: 319562.3 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753681.9 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 20/02/2025 - 21/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.87 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP2A	Vibrating Wire Piezometer		6.50 m 25.37 m	24/02/2025	
VWP2B	Vibrating Wire Piezometer		14.50 m 17.37 m	24/02/2025	
VWP2C	Vibrating Wire Piezometer		28.50 m 3.37 m	24/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CS	NOT ENCOUNTERED	11	21		(RS/XW GRANITE) CLAY trace sand trace gravel: low plasticity, brown; sand fine grained; gravel fine grained.
					No recovery.
		12	20		(XW GRANITE) Sandy CLAY: low plasticity, grey brown; sand fine grained.
		13	19		(XW GRANITE) Sandy CLAY trace gravel: low plasticity, brown; sand fine to coarse grained; gravel fine to medium grained. Gravels becomes angular, coarse grained at 12.15 m.
HQ3		14	18		(XW GRANITE) Sandy CLAY trace gravel trace cobbles: low plasticity, brown; sand fine to medium grained; gravel angular, fine to medium grained; cobbles granite, coarse grained, red brown, angular, high strength.
					(XW GRANITE) Gravelly SAND: medium to coarse grained, yellow brown; gravel fine to medium grained.
		15	17		(XW GRANITE) Clayey SAND: fine to coarse grained, brown; clay low plasticity.
					(XW GRANITE) Sandy CLAY: low plasticity, grey; sand angular, fine to coarse grained.
		16	16		NO CORE: 15.70 - 16.20 m
			15		(XW GRANITE) Clayey SAND with gravel: fine to medium grained, brown; clay low plasticity; gravel fine to medium grained.
		17			NO CORE: 17.0 - 18.20 m
		18	14		
					(XW GRANITE) CLAY: low plasticity, brown.
					(XW GRANITE) Sandy CLAY trace gravel: low plasticity, brown; sand fine to coarse grained; gravel fine to coarse grained, granite.
			13		NO CORE: 18.50 - 18.65 m
		19			(XW GRANITE) Sandy CLAY: low plasticity, grey brown; sand fine to medium grained.
					(XW GRANITE) SAND trace gravel: fine to coarse grained, grey brown; gravel fine grained.
			12		



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

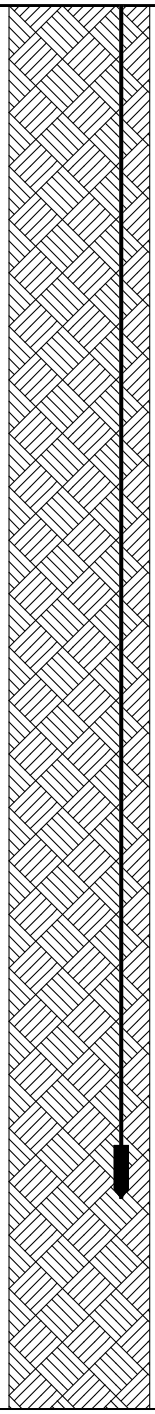
Hole ID **BH02**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH02 Log	SHEET	: 3 OF 3
CONTRACTOR	: SW Drilling	EASTING	: 319562.3 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753681.9 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 20/02/2025 - 21/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 31.87 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP2A	Vibrating Wire Piezometer		6.50 m 25.37 m	24/02/2025	
VWP2B	Vibrating Wire Piezometer		14.50 m 17.37 m	24/02/2025	
VWP2C	Vibrating Wire Piezometer		28.50 m 3.37 m	24/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
HQ3	NOT ENCOUNTERED				NO CORE: 20.00 - 21.15 m
		21	11		
					(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine to medium grained, granite source.
		22	10		(XW GRANITE) Clayey SAND with gravel: fine to coarse grained, grey brown; clay low plasticity; gravel fine to medium grained.
		23	9		
		24	8		(XW GRANITE) Gravelly SAND with clay: medium to coarse grained, grey brown; gravel subangular to angular, fine to medium grained; clay low plasticity.
		25	7		Gravel 40mm diameter, angular, high strength. Becomes trace Clay at 24.5 m.
					(XW GRANITE) CLAY: low plasticity, mottled grey,
		26	6		(XW GRANITE) CLAY trace gravel trace sand: low
					brown and white.
			5		plasticity, grey; gravel fine to medium grained; sand
		27			(XW GRANITE) Sandy CLAY: low plasticity, grey;
					fine grained.
		28	4		NO CORE: 27.50 - 28.45 m
					sand fine to coarse grained.
			3		(XW GRANITE) Sandy CLAY with gravel trace cobbles:
		29			NO CORE: 29.00 - 29.37 m
			2		(XW GRANITE) Clayey SAND with gravel: medium to coarse grained, brown; clay low plasticity; gravel fine grained, cobbles isolated, angular, high strength, slightly weathered granite, 70mm diameter. Hole terminated at 30.00m Target depth. Nested VWPs grouted in place at various depths.



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PIEZOMETER INSTALLATION - FIELD SHEET

Date 24/02/2025 Time 6:00pm

PSM staff LL/SD Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18173

Data logger model RST 5CH DT2055B Data logger serial number 19070

Instrument ID *(e.g. CSH-123-INC-1)* VWP2A

Borehole

Borehole ID BH02

Easting (m) 319562.3 Northing (m) 5753681.9

Collar RL (m AHD) 31.87 Drilled depth (m) 30 Dipped depth prior to install (m) 2.4

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
6.5	☒ Up ☐ Down	Colluvium

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 8	kg	Batch 1: 18	L	Batch 1: 2	kg

Comments

Batch 1: filled between 0m to 9.2m

Zero reading *(prior to sand packing)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
6:00pm 24/02/2025	8680.7	33.9	4.7	above ground
7:00pm 24/02/2025	6307.8	20.9	271.9	at installation depth of 6.5m

First readings *(after sand packing)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1					
2					
3					

PIEZOMETER INSTALLATION - FIELD SHEET

Date 24/02/2025 Time 6:00pm

PSM staff LL/SD Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18172

Data logger model RST 5CH DT2055B Data logger serial number 19070

Instrument ID *(e.g. CSH-123-INC-1)* VWP2B

Borehole

Borehole ID BH02

Easting (m) 319562.3 Northing (m) 5753681.9

Collar RL (m AHD) 31.87 Drilled depth (m) 30 Dipped depth prior to install (m) 2.4

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
14.5	☒ Up ☐ Down	XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 45 Batch 2: 13 Batch 3: 8	kg	Batch 1: 120 Batch 2: 35 Batch 3: 18	L	Batch 1: 10 Batch 2: 4 Batch 3: 2	kg

Comments

Batch 1: filled between ~14m to 30m
Batch 2: filled between ~9.2m to 14m
Batch 3: filled between 0m to 9.2m

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
6:00pm 24/02/2025	9029.0	28.5	3.1	above ground

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	7:00pm 24/02/2025	8084.3	20.2	112.6	Grout at 14m before batch 2 placed
2					
3					

PIEZOMETER INSTALLATION - FIELD SHEET

Date 24/02/2025 Time 6:00pm

PSM staff LL/SD Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18178

Data logger model RST 5CH DT2055B Data logger serial number 19070

Instrument ID *(e.g. CSH-123-INC-1)* VWP2C

Borehole

Borehole ID BH02

Easting (m) 319562.3 Northing (m) 5753681.9

Collar RL (m AHD) 31.87 Drilled depth (m) 30 Dipped depth prior to install (m) 2.4

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
28.5	☒ Up ☐ Down	XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 45 Batch 2: 13 Batch 3: 8	kg	Batch 1: 120 Batch 2: 35 Batch 3: 18	L	Batch 1: 10 Batch 2: 4 Batch 3: 2	kg

Comments

Batch 1: filled between ~14m to 30m
Batch 2: filled between ~9.2m to 14m
Batch 3: filled between 0m to 9.2m

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
6:00pm 24/02/2025	8925.3	28.3	3.2	above ground

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	7:00pm 24/02/2025	8473.5	20.8	50.0	Grout at 14m before batch 2 placed
2					
3					

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

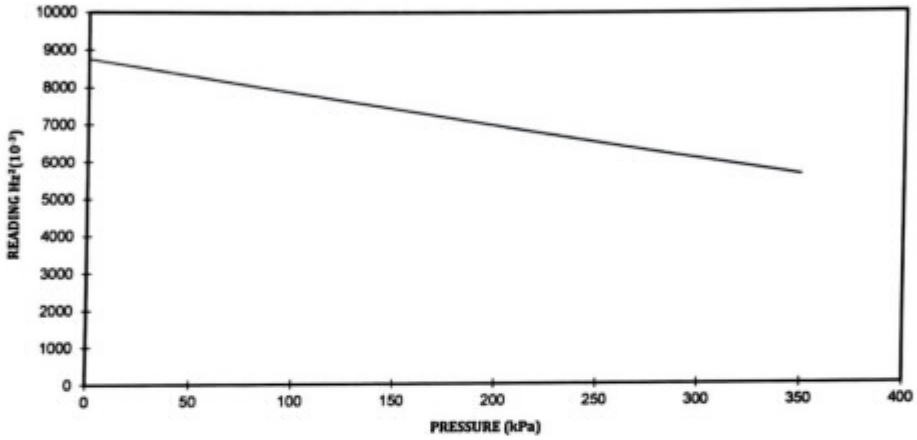
SERIAL : S18173

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 5

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8729	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.11200	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.5	°C		
THERMAL COEFFICIENT :	-0.11440	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :	-20°C to +80°C	

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

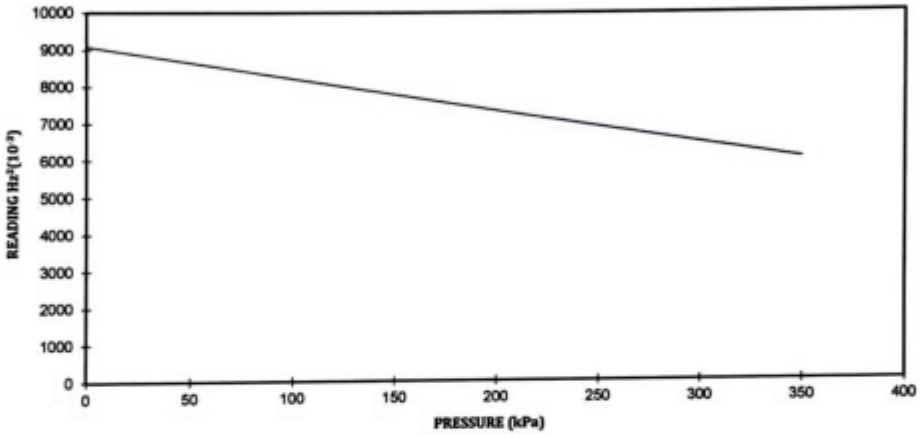
SERIAL : S18172

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 4

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	9057	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.11510	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.4	°C		
THERMAL COEFFICIENT :	-0.09475	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

Calibration Sheet

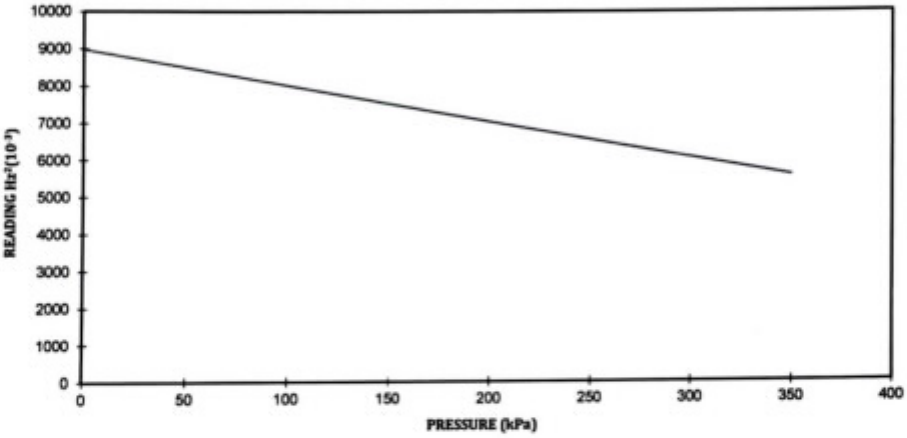
HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD **JOB No:** GS0001602

SERIAL : S18178 **DATE:** 13/02/2025

RATING : 350 kPa **SHEET:** 10

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8957	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.10250	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.5	°C		
THERMAL COEFFICIENT :	-0.05987	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

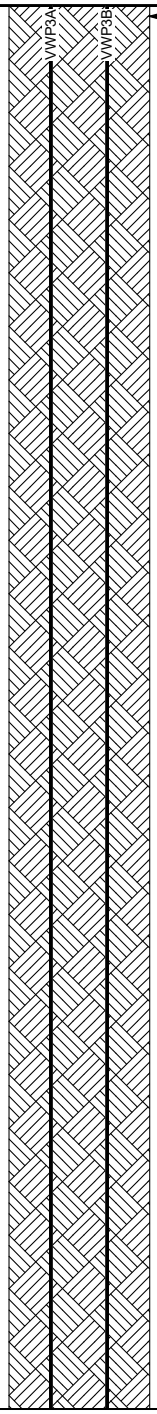
Hole ID	BH03

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH03 Log	SHEET	: 1 OF 3
CONTRACTOR	: SW Drilling	EASTING	: 319533.0 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753715.6 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 17/02/2025 - 18/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 28.62 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP3A	Vibrating Wire Piezometer		13.00 m 15.62 m	18/02/2025	
VWP3B	Vibrating Wire Piezometer		28.00 m 0.62 m	18/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CS					TOPSOIL: Sandy SILT: low plasticity, brown; sand fine grained.
			28		FILL: SAND with silt trace gravel: fine to medium grained, poorly graded, pale brown; gravel fine to medium grained, subangular gravel.
		1			No recovery.
			27		SAND with gravel trace silt: fine to medium grained, poorly graded, pale brown; gravel fine to coarse grained, subangular gravel.
		2			SAND trace silt: fine to coarse grained, well graded, yellow brown; silt low plasticity.
	▽		26		No recovery.
		3			Silty SAND trace gravel: fine to coarse grained, well graded, yellow brown; silt low plasticity; gravel fine grained. Becomes dark brown with granite gravels at 3 m.
			25		Becomes yellow brown at 3.5 m.
		4			
			24		(RS/XW GRANITE) Clayey SAND: fine to coarse grained, well graded, sub-angular to angular, mottled brown and pale brown; clay low plasticity.
		5			No recovery.
			23		(RS/XW GRANITE) Clayey SAND: fine to coarse grained, well graded, mottled brown and pale brown; clay low plasticity.
		6			(RS/XW GRANITE) SAND trace clay: medium to coarse grained, well graded, sub-angular, grey brown; clay low plasticity.
			22		Becomes fine to medium grained sand at 6.5 m.
		7			
			21		(XW GRANITE) Sandy CLAY: low plasticity, grey brown; sand fine to coarse grained.
		8			
HQ3			20		NO CORE: 8.4 - 10.0 m
		9			
			19		



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 09/04/2025 14:00 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

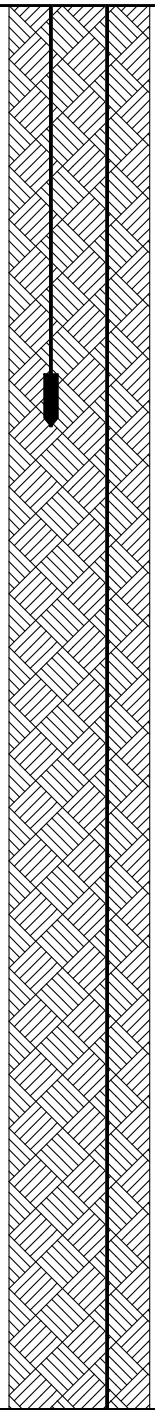
Hole ID **BH03**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH03 Log	SHEET	: 2 OF 3
CONTRACTOR	: SW Drilling	EASTING	: 319533.0 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753715.6 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 17/02/2025 - 18/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 28.62 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP3A	Vibrating Wire Piezometer		13.00 m 15.62 m	18/02/2025	
VWP3B	Vibrating Wire Piezometer		28.00 m 0.62 m	18/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CS	NOT ENCOUNTERED		18		(XW GRANITE) SAND with clay: fine to coarse grained, grey; clay low plasticity.
CS		11			(XW GRANITE) Sandy CLAY trace gravel: medium plasticity, dark grey; sand fine to coarse grained; gravel fine grained, subangular gravel.
CS			17		(XW GRANITE) SAND trace clay trace gravel: fine to coarse grained, brown mottled orange; clay low plasticity; gravel fine grained, subangular gravel.
HQ3		12			NO CORE: 12.00 - 13.8 m
HQ3			16		
HQ3		13			
SPT			15		
HQ3		14			(XW GRANITE) Sandy CLAY trace gravel: low to medium plasticity, grey brown to brown; sand fine to coarse grained; no structure; gravel fine grained.
HQ3			14		
HQ3		15			
HQ3			13		(XW GRANITE) SAND trace clay: fine to coarse grained, yellow brown; clay low plasticity.
HQ3		16			
HQ3			12		(XW GRANITE) Gravelly Sandy CLAY: low plasticity, grey; sand fine to coarse grained; gravel fine to medium grained subangular.
HQ3		17			(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, brown; clay low plasticity; gravel fine grained, subangular gravel.
HQ3			11		NO CORE: 17.45 - 19.0 m
HQ3		18			
HQ3			10		
HQ3		19			(XW GRANITE) SAND trace gravel: medium to coarse grained, brown; gravel fine grained, subangular gravel.
HQ3					(XW GRANITE) Sandy CLAY: low plasticity, brown; sand fine grained.
HQ3			9		NO CORE: 19.50 - 20.15 m



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

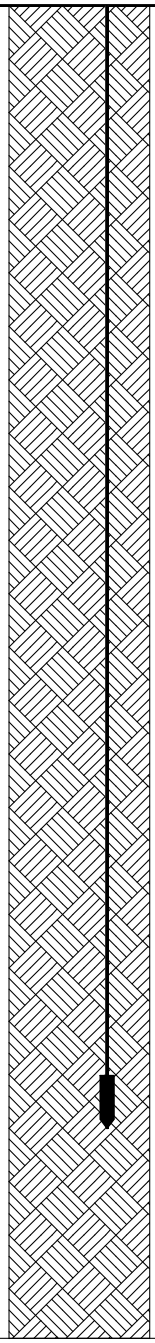
Hole ID **BH03**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH03 Log	SHEET	: 3 OF 3
CONTRACTOR	: SW Drilling	EASTING	: 319533.0 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753715.6 m	LOGGED BY	: JW/LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 17/02/2025 - 18/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 28.62 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP3A	Vibrating Wire Piezometer		13.00 m 15.62 m	18/02/2025	
VWP3B	Vibrating Wire Piezometer		28.00 m 0.62 m	18/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
HQ3	NOT ENCOUNTERED		8		(XW GRANITE) Sandy CLAY: low plasticity, brown; sand fine grained.
		21	7		(XW GRANITE) Sandy CLAY trace gravel: low to medium plasticity, grey; sand fine to coarse grained; gravel fine grained, subangular gravel.
		22			NO CORE: 22.00 - 22.65 m
		23	6		(XW GRANITE) Clayey SAND trace gravel: fine to coarse grained, grey; clay low to medium plasticity; gravel fine grained, subangular gravel.
		24	5		
			4		(XW GRANITE) Silty SAND: fine grained, brown; silt low plasticity.
					(XW GRANITE) SAND with clay trace gravel: fine to coarse grained, grey; clay low plasticity; gravel fine grained, subangular gravel.
		25			NO CORE: 25.00 - 25.30 m
		26	3		(XW GRANITE) Sandy CLAY: low plasticity, grey; sand fine grained.
			2		NO CORE: 26.50 - 26.95 m
		27	1		(XW GRANITE) Gravelly Sandy CLAY: low plasticity, grey; sand fine to coarse grained; gravel fine grained; no structure.
		28	0		(XW GRANITE) Gravelly SAND with clay: medium to coarse grained, grey; gravel fine grained, subangular gravel; clay low plasticity.
		29			
			-1		Hole Terminated at 29.50 m Target depth. Nested VWPs grouted in place at various depths.



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

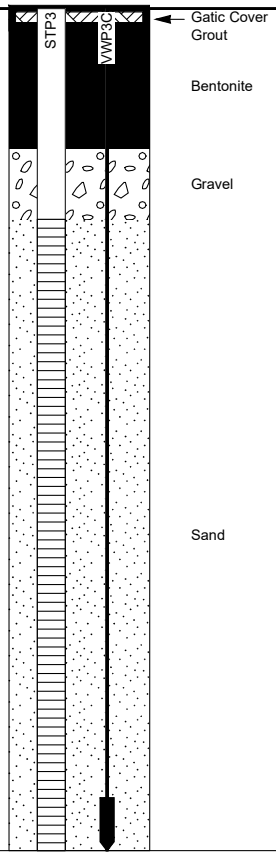
Hole ID	BH03A

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH03A Log	SHEET	: 1 OF 1
CONTRACTOR	: SW Drilling	EASTING	: 319533.7 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753716.7 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 25/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 28.70 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP3	Standpipe		6.00 m 22.70 m	25/02/2025	
VWP3C	Vibrating Wire Piezometer		6.00 m 22.70 m	25/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
AD/V	NOT ENCOUNTERED	1, 2, 3, 4, 5, 6, 7, 8, 9	28, 27, 26, 25, 24, 23, 22, 21, 20, 19		Refer to BH03 for Lithology.
					Hole Terminated at 6.00 m Target depth. Standpipe and VWP Installed, and sand, gravel and bentonite packed in place.



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: 150 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PIEZOMETER INSTALLATION - FIELD SHEET

Date 18/02/2025 Time 4:30pm

PSM staff LL/JW Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18171

Data logger model RST 5CH DT2055B Data logger serial number 19071

Instrument ID *(e.g. CSH-123-INC-1)* VWP3A

Borehole

Borehole ID BH03

Easting (m) 319533.0 Northing (m) 5753715.6

Collar RL (m AHD) 28.62 Drilled depth (m) 29.5 Dipped depth prior to install (m) 1

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
13	☒ Up ☐ Down	XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 30 Batch 2: 40	kg	Batch 1: 80 Batch 2: 80	L	Batch 1: 10 Batch 2: 5	kg

Comments

Batch 1: filled between ~5.5m to 29.5m
Batch 2: filled between 0m to 5.5m

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
2:45pm 18/02/2025	8630	18.0	1.2	above ground

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	7:20am 19/02/2025	7927.6	17.6	73.3	Grout at 5.5m before batch 2 placed
2	8:10am 19/02/2025	7707.4	17.6	95.9	Grout at 0m after batch 2 placed
3	3:00pm 19/02/2025	8210.4	17.4	44.3	

PIEZOMETER INSTALLATION - FIELD SHEET

Date 18/02/2025 Time 4:30pm

PSM staff LL/JW Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18179

Data logger model RST 5CH DT2055B Data logger serial number 19071

Instrument ID *(e.g. CSH-123-INC-1)* VWP3B

Borehole

Borehole ID BH03

Easting (m) 319533.0 Northing (m) 5753715.6

Collar RL (m AHD) 28.62 Drilled depth (m) 29.5 Dipped depth prior to install (m) 1

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
28	☒ Up ☐ Down	XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 30 Batch 2: 40	kg	Batch 1: 80 Batch 2: 80	L	Batch 1: 10 Batch 2: 5	kg

Comments

Batch 1: filled between ~5.5m to 29.5m
Batch 2: filled between 0m to 5.5m

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
2:45pm 18/02/2025	8964.0	19.2	2.1	above ground
4:40pm 18/02/2025	6420.3	18.4	285.6	at installation depth of 28m

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	7:20am 19/02/2025	8541.5	17.8	49.4	Grout at 5.5m before batch 2 placed
2	8:10am 19/02/2025	8541.4	17.8	49.4	Grout at 0m after batch 2 placed
3	3:00pm 19/02/2025	8566.4	17.6	46.6	

PIEZOMETER INSTALLATION - FIELD SHEET

Date 25/02/2025 Time 9:30am

PSM staff LL Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18177

Data logger model RST 5CH DT2055B Data logger serial number 19071

Instrument ID *(e.g. CSH-123-INC-1)* VWP3C

Borehole

Borehole ID BH03A

Easting (m) 319533.7 Northing (m) 5753716.7

Collar RL (m AHD) 28.7 Drilled depth (m) 6 Dipped depth prior to install (m) N/E

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
6	☒ Up ☐ Down	Residual/XW Granite

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
N/A		N/A		N/A	

Comments

Piezometer installed on outer circumference of Standpipe STP3A in BH03A. Sand packed between 1.5m to 6m, gravel packed between 1m to 1.5m and bentonite sealed to the surface. Capped with a gatic cover with some grout.

Zero reading *(prior to standpipe installation)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
2:00pm 25/02/2025	8989.1	20.1	2.6	above ground

First readings *(after standpipe installation)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1					
2					
3					

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

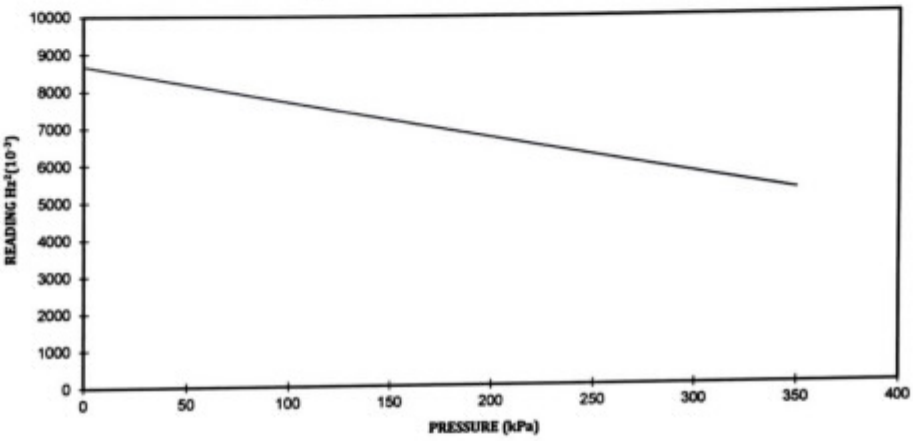
SERIAL : S18171

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 3

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8633	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.10260	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.4	°C		
THERMAL COEFFICIENT :	-0.09803	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

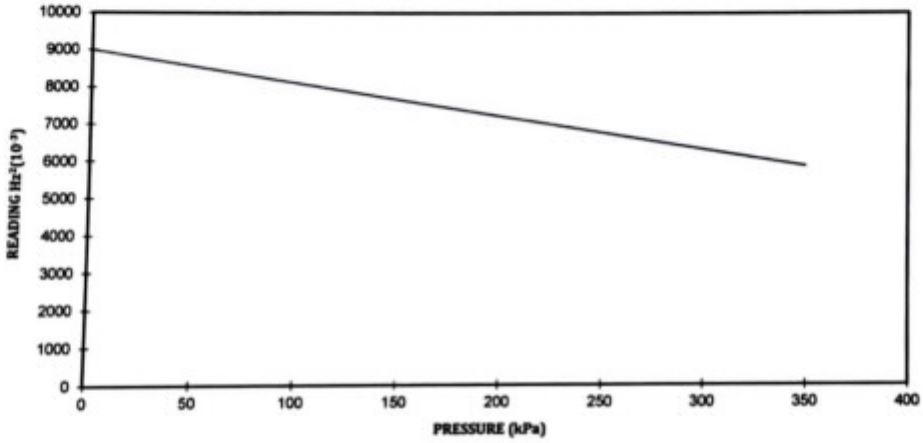
SERIAL : S18179

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 11

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8972	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.11140	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.4	°C		
THERMAL COEFFICIENT :	-0.14550	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :	-20°C to +80°C	

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

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Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

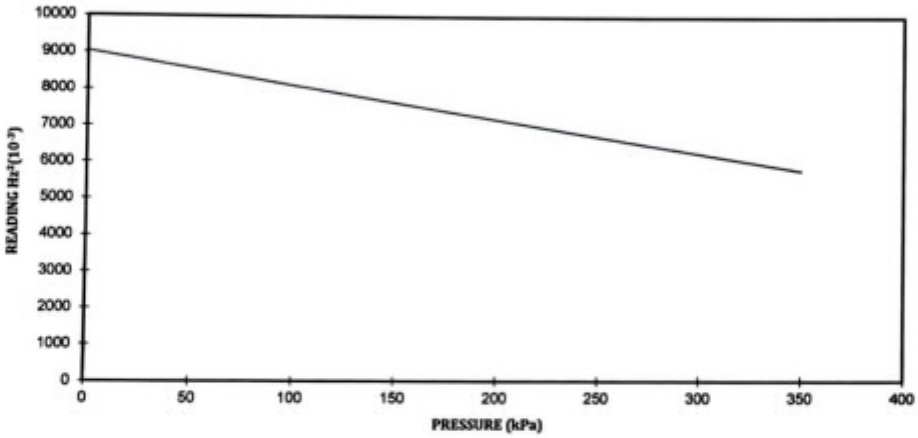
SERIAL : S18177

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 9

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	9009	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.10770	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.7	°C		
THERMAL COEFFICIENT :	-0.05703	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

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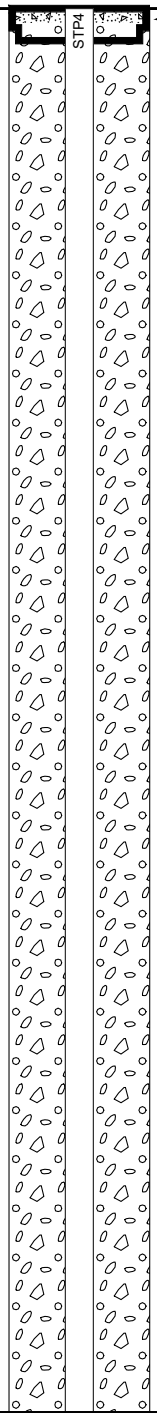
Hole ID	BH04

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH04 Log	SHEET	: 1 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319498.1 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753665.8 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 26/02/2025 - 27/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 26.82 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP4	Standpipe		29.70 m -2.88 m	27/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CC					Asphaltic Concrete: Black
					No recovery.
		1	26		SAND with silt trace gravel: fine grained, poorly graded, pale yellow; silt low plasticity; gravel fine grained, angular.
					No recovery.
		2	25		SAND trace gravel: fine to medium grained, yellow grey; gravel fine grained, angular.
		3	24		
					SILT: low plasticity, yellow grey.
		4	23		(RS) Sandy CLAY: low plasticity, mottled brown and grey; sand fine to medium grained.
CS	NOT ENCOUNTERED	5	22		
		6	21		(XW GRANITE) CLAY trace sand: low plasticity, grey
		7	20		
		8	19		
		9	18		
HQ3					NO CORE: 9.50 - 9.60 m
			17		(XW GRANITE) CLAY trace sand trace gravel: low



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025
AZIMUTH	: -	APPROVED BY	: DP
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025

REMARK

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Hole ID **BH04**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH04 Log	SHEET	: 2 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319498.1 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753665.8 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 26/02/2025 - 27/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 26.82 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP4	Standpipe		29.70 m -2.88 m	27/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description	Piezometer
HQ3	NOT ENCOUNTERED				fabric observed; gravel fine grained, angular. (XW GRANITE) CLAY trace sand trace gravel: low plasticity, grey mottled orange; sand fine grained; rock fabric observed; gravel fine grained, angular.	
					(XW GRANITE) SAND with gravel: fine to coarse grained, orange; gravel fine grained.	
			16		(XW GRANITE) CLAY: low plasticity, grey.	
		11			(XW GRANITE) Clayey SAND: fine to medium grained, grey yellow; clay low plasticity.	
			15		(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine grained.	
		12				
			14			
		13			(XW GRANITE) Gravelly SAND: fine to coarse grained, yellow brown; gravel fine to medium grained.	Bentonite
					(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey yellow; sand fine to coarse grained; gravel fine to coarse grained, red brown angular moderately weathered granite clasts.	
			13			
		14			NO CORE: 14.00 - 14.52 m	
						Gravel
			12		(XW GRANITE) Gravelly SAND trace clay: fine to coarse grained, yellow brown; gravel fine to coarse grained red brown high to very high strength moderately weathered; clay low plasticity.	14.70 m
		15				
					(XW GRANITE) CLAY trace gravel trace sand: low plasticity, red brown; gravel fine to medium grained; sand fine grained.	
			11			
		16			(XW GRANITE) Sandy GRAVEL trace clay: fine to medium grained, brown; sand fine to coarse grained; clay low plasticity.	
					NO CORE: 16.30 - 17.50 m	
			10			
		17				
					(XW GRANITE) Clayey SAND trace gravel: fine to medium grained, grey brown; clay low plasticity; gravel fine grained, angular.	
			9			
		18				
					NO CORE: 18.50 - 20.50 m	
			8			
		19				
			7			

RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

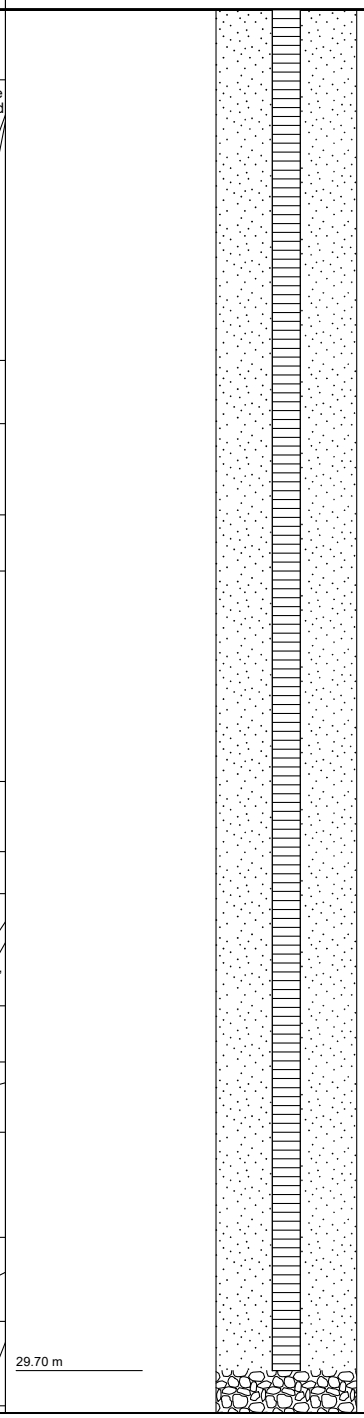
PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

				Hole ID	**BH04**
CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH04 Log	SHEET	: 3 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319498.1 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753665.8 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 26/02/2025 - 27/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 26.82 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP4	Standpipe		29.70 m -2.88 m	27/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
HQ3	NOT ENCOUNTERED				NO CORE: 18.50 - 20.50 m
			6		(XW GRANITE) SAND trace gravel: fine to coarse grained, grey; gravel occasional granite gravels red brown, very low to low strength, moderately weathered.
		21			NO CORE: 20.75 - 20.80 m
					(XW GRANITE) Sandy CLAY trace gravel: low plasticity, grey; sand fine to coarse grained; gravel fine to medium grained.
			5		
		22			
					NO CORE: 22.50 - 22.95 m
			4		
		23			(XW GRANITE) CLAY trace gravel trace sand: low plasticity, grey; gravel fine grained; sand coarse grained.
			3		(XW GRANITE) Gravelly SAND: coarse grained, grey; gravel fine grained.
		24			NO CORE: 24.00 - 25.50 m
			2		
		25			
			1		(XW GRANITE) SAND trace gravel trace clay: fine to coarse grained, brown; gravel (quartz) fine grained; clay low plasticity.
		26			NO CORE: 26.00 - 26.30 m
					(XW GRANITE) Gravelly CLAY with sand: low plasticity, brown; gravel fine grained; sand fine to coarse grained.
					NO CORE: 26.50 - 26.65 m
			0		(XW GRANITE) Sandy CLAY trace gravel: low plasticity, brown; sand fine grained; gravel (quartz) fine grained.
		27			
					(XW GRANITE) CLAY trace gravel: low plasticity, grey; gravel (quartz) fine grained, angular.
					NO CORE: 27.50 - 27.65 m
			-1		(XW GRANITE) CLAY trace gravel: low plasticity, grey; gravel (quartz) fine grained, angular.
		28			NO CORE: 28.00 - 28.75 m
			-2		(XW GRANITE) CLAY with sand: low plasticity, grey brown; sand fine to coarse grained.
		29			NO CORE: 29.00 - 29.35 m
					(XW GRANITE) CLAY with sand: low plasticity, grey brown; sand fine to coarse grained.
			-3		NO CORE: 29.50 - 29.95 m



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

Hole ID **BH04**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH04 Log	SHEET	: 4 OF 4
CONTRACTOR	: SW Drilling	EASTING	: 319498.1 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753665.8 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 26/02/2025 - 27/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 26.82 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP4	Standpipe		29.70 m -2.88 m	27/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
					(XW GRANITE) CLAY with sand: low plasticity, grey brown; sand fine to coarse grained.
					Hole Terminated at 30.00 m
					Target depth. Standpipe Installed, and sand, gravel and bentonite packed in place.
			-4		
		31			
			-5		
		32			
			-6		
		33			
			-7		
		34			
			-8		
		35			
			-9		
		36			
			-10		
		37			
			-11		
		38			
			-12		
		39			
			-13		

RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm, HQ3 - 96 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

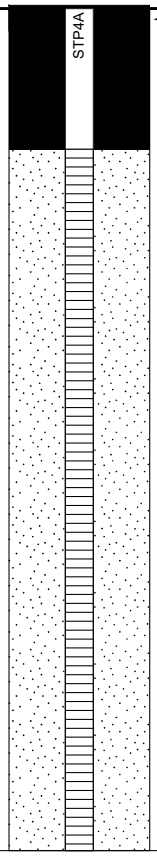
		Hole ID	**BH04A**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH04A Log	SHEET	: 1 OF 1
CONTRACTOR	: SW Drilling	EASTING	: 319499.2 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753666.1 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 27/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 26.86 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP4A	Standpipe Piezometer		6.00 m 20.86 m	27/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
AD/V	NOT ENCOUNTERED	1, 2, 3, 4, 5, 6, 7, 8, 9	26, 25, 24, 23, 22, 21, 20, 19, 18, 17		Refer to BH04 for Lithology.



Hole Terminated at 6.00 m
Target depth. Standpipe Installed, and sand and bentonite packed in place.

RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: 150 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

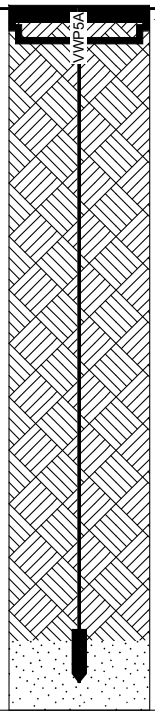
Hole ID	BH05

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to BH05 Log	SHEET	: 1 OF 1
CONTRACTOR	: SW Drilling	EASTING	: 319500.7 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753775.2 m	LOGGED BY	: LL
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 26/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 1.98 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP5A	Vibrating Wire Piezometer		4.80 m	-2.82 m	26/02/2025

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
CO					Concrete
					No recovery.
					Gravelly SAND: fine to medium grained, grey brown; gravel angular, fine grained.
		1	1		SAND: medium to coarse grained, pale yellow.
					No recovery.
	▽				SAND: fine to coarse grained, grey.
		2	0		
CS					No recovery.
					Clayey SAND trace gravel: fine to coarse grained, grey; gravel fine grained.
		3	-1		
					CLAY: low to medium plasticity, brown mottled grey.
		4	-2		SAND: fine to coarse grained, angular, grey.
					Clayey SAND: fine to medium grained, grey; clay low to medium plasticity.
		5	-3		(RS) CLAY trace sand: low plasticity, brown; sand fine grained.
		6	-4		Hole Terminated at 5.00 m Target depth. VWP grouted, and sand and bentonite packed in place.
		7	-5		
		8	-6		
		9	-7		



RIG	: Geoprobe 7822 DT	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: CS - 57 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 26/03/2025 23:29 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PIEZOMETER INSTALLATION - FIELD SHEET

Date 26/02/2025 Time 10:45am

PSM staff LL/SD Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18175

Data logger model N/A Data logger serial number N/A

Instrument ID *(e.g. CSH-123-INC-1)* VWP5A

Borehole

Borehole ID BH05

Easting (m) 319500.7 Northing (m) 5753775.2

Collar RL (m AHD) 1.98 Drilled depth (m) 5.0 Dipped depth prior to install (m) N/E

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
4.8	☒ Up ☐ Down	Aeolian/Marine

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
Batch 1: 10	kg	Batch 1: 26	L	Batch 1: 3	kg

Comments

Sand packed between 4.5m and 5.0m.
Fully grouted between 0m to 4.5m.

Bentonite seal at surface and capped with a gatic cover.

Zero reading *(prior to grouting)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
10:30am 26/02/2025	8770.5	24.2	2.0	above ground

First readings *(after grouting)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	11:15am 26/02/2025	8448.2	19.2	38.7	
2					
3					

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

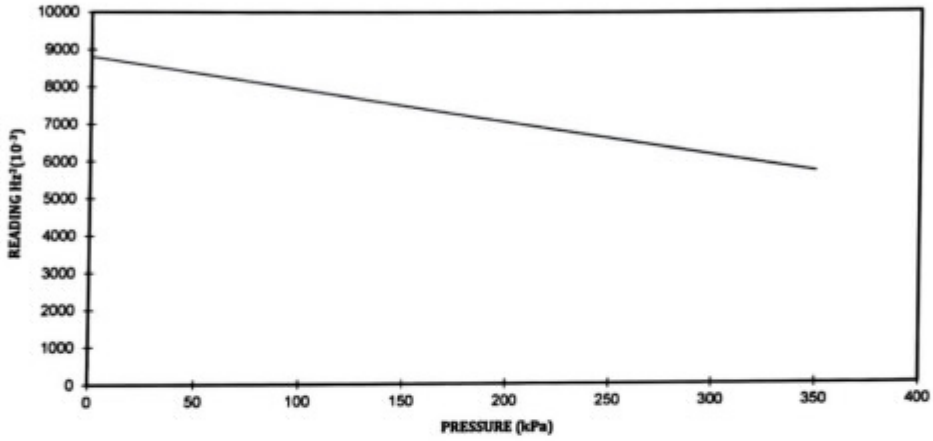
SERIAL : S18175

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 7

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8787	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.11330	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.4	°C		
THERMAL COEFFICIENT :	-0.04262	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

$$\textbf{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com **Email:** geotechnical@hmagrp.com **Tel:** +61 (0)3 8720 6700 **Fax:** +61 (0)3 8720 6799

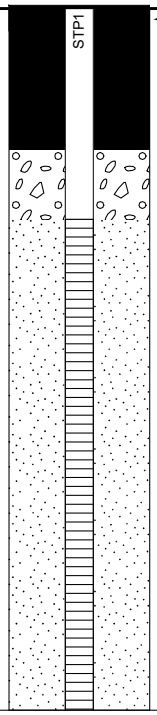
Hole ID **NDT01**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to NDT01 Log	SHEET	: 1 OF 1
CONTRACTOR	: SW Drilling	EASTING	: 319571.8 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753700.6 m	LOGGED BY	: JW
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 12/02/2025
PROJECT No.	: PSM5665	GROUND RL	: 32.34 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
STP1	Standpipe		5.00 m 27.34 m	25/02/2025	

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
NDD	NOT ENCOUNTERED				TOPSOIL: Sandy SILT: low plasticity, dark grey; sand fine grained.
			32		Insufficient information to provide a detailed material description, but inferred to be FILL sandy CLAY from observations of material near surface and video inspection.
		1			
			31		
		2			
			30		
		3			
			29		Insufficient information to provide a detailed material description, but inferred to be natural gravelly clayey SAND below the fill based on observed cuttings and video inspection.
		4			
AD/V			28		Hole Terminated at 5.00 m Target depth. Standpipe Installed, and sand, gravel and bentonite packed in place.
		5			
			27		
		6			
			26		
		7			
			25		
		8			
			24		
		9			
			23		



RIG	: Vacuum Truck	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: 400 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 09/04/2025 14:00 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

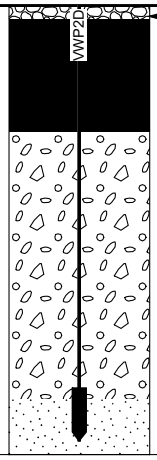
Hole ID **NDT02**

CLIENT	: Mornington Peninsula Shire Council	POSITION	: Refer to NDT02 Log	SHEET	: 1 OF 1
CONTRACTOR	: SW Drilling	EASTING	: 319575.4 m	STATUS	:
PROJECT	: McCrae Landslide	NORTHING	: 5753696.0 m	LOGGED BY	: SD
LOCATION	: McCrae, VIC	COORD. SYS.	: GDA2020 / MGA Zone 55	DRILL DATE	: 03/03/2025
PROJECT No.	: PSM5665	GROUND RL	: 32.73 m AHD		

PIEZOMETER CONSTRUCTION DETAILS

ID	Type	Stick Up & RL	Tip Depth & RL	Installation Date	Static Water Level
VWP2D	Vibrating Wire Piezometer		3.10 m	29.63 m	03/03/2025

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description
NDD	NOT ENCOUNTERED				TOPSOIL: Sandy SILT: low plasticity, dark grey; sand fine grained.
					Insufficient information to provide a detailed material description, but inferred to be FILL based on proximity to sewer trench.
		1	32		
		2	31		
		3	30		
		4	29		Hole Terminated at 3.20 m Target depth. VWP installed, and sand, gravel and bentonite packed in place.
		5	28		
		6	27		
		7	26		
		8	25		
		9	24		
			23		



RIG	: Vacuum Truck	CHECKED BY	: TN	REMARK
INCLINATION	: -90°	CHECKED DATE	: 27/03/2025	
AZIMUTH	: -	APPROVED BY	: DP	
HOLE DIA.	: 200 mm	APPROVED DATE	: 27/03/2025	

PSM 3.02.2 LIB - MOD FOR 5665.GLB Log MON PIEZOMETER INSTALLATION LOG PSM5665.GPJ <<DrawingFile>> 09/04/2025 14:00 10.03.00.09 Datgel Fence and Map Tool | Lib: PSM 3.02.1 2019-03-06 Prj: PSM 3.02.1 2019-03-06

PIEZOMETER INSTALLATION - FIELD SHEET

Date 3/03/2025 Time 1:00pm

PSM staff SD/DRP Drillers SW Drilling Others

Instrument

Piezometer model 350kPa HMA Model 1200 Piezometer serial number S18176

Data logger model RST 1CH DT2011B Data logger serial number DT28683

Instrument ID *(e.g. CSH-123-INC-1)* VWP2D

Borehole

Borehole ID NDT02

Easting (m) 319575.4 Northing (m) 5753696.0

Collar RL (m AHD) 32.73 Drilled depth (m) 3.2 Dipped depth prior to install (m) 1.8

Installation

Depth of instrument (m)	*Tip direction*	*Screened rock mass unit* (refer to borehole log)
3.1	☒ Up ☐ Down	Fill

Grout mix

Cement		*Water*		*Bentonite*	
Amount	*Unit*	*Amount*	*Unit*	*Amount*	*Unit*
N/A		N/A		N/A	

Comments

Sand screen between ~2.8m to 3.2m.
Gravel pack between 0.9m to 2.8m.

Bentonite plug to 50-100mm below surface and topped with topsoil.

Zero reading *(prior to VWP installation)*

Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1:30pm 3/03/2025	8913.9	24.8	3.2	above ground

First readings *(after VWP installation)*

#	Time	Reading ($kHz^2 \times 10^{-3}$)	Temperature (°C)	Pressure (kPa)	Remarks
1	1:50pm 3/03/2025	8734.5	21.1	25.1	
2					
3					

Calibration Sheet

HMA GEOTECHNICAL

CLIENT : PSM HOLDINGS AUSTRALIA PTY LTD

JOB No: GS0001602

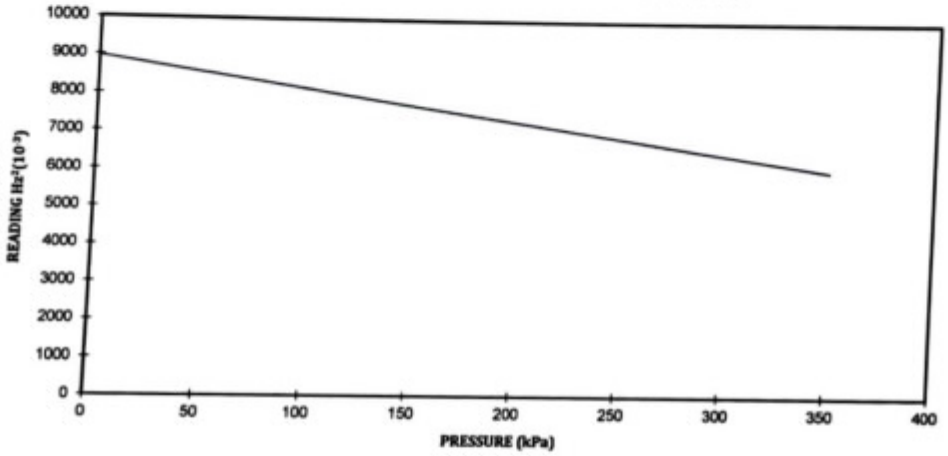
SERIAL : S18176

DATE: 13/02/2025

RATING : 350 kPa

SHEET: 8

Vibrating Wire Piezometer Calibration Results



FACTORY ZERO READING :	8938	$Hz^2(10^{-3})$		
PRESSURE COEFFICIENT :	0.11940	$kPa/Hz^2(10^{-3})$	----------	(C_P)
AMBIENT TEMPERATURE :	27.6	°C		
THERMAL COEFFICIENT :	-0.12890	kPa/°C	----------	(C_T)

SEE INSTRUCTION MANUAL FOR STANDARD TEMPERATURE/THERMISTOR DATA

MAXIMUM PRESSURE :	525	kPa
BAROMETRIC PRESSURE :	992	hPa
OPERATING TEMPERATURE RANGE :		-20°C to +80°C

For installation help, scan the QR code to view our manual.

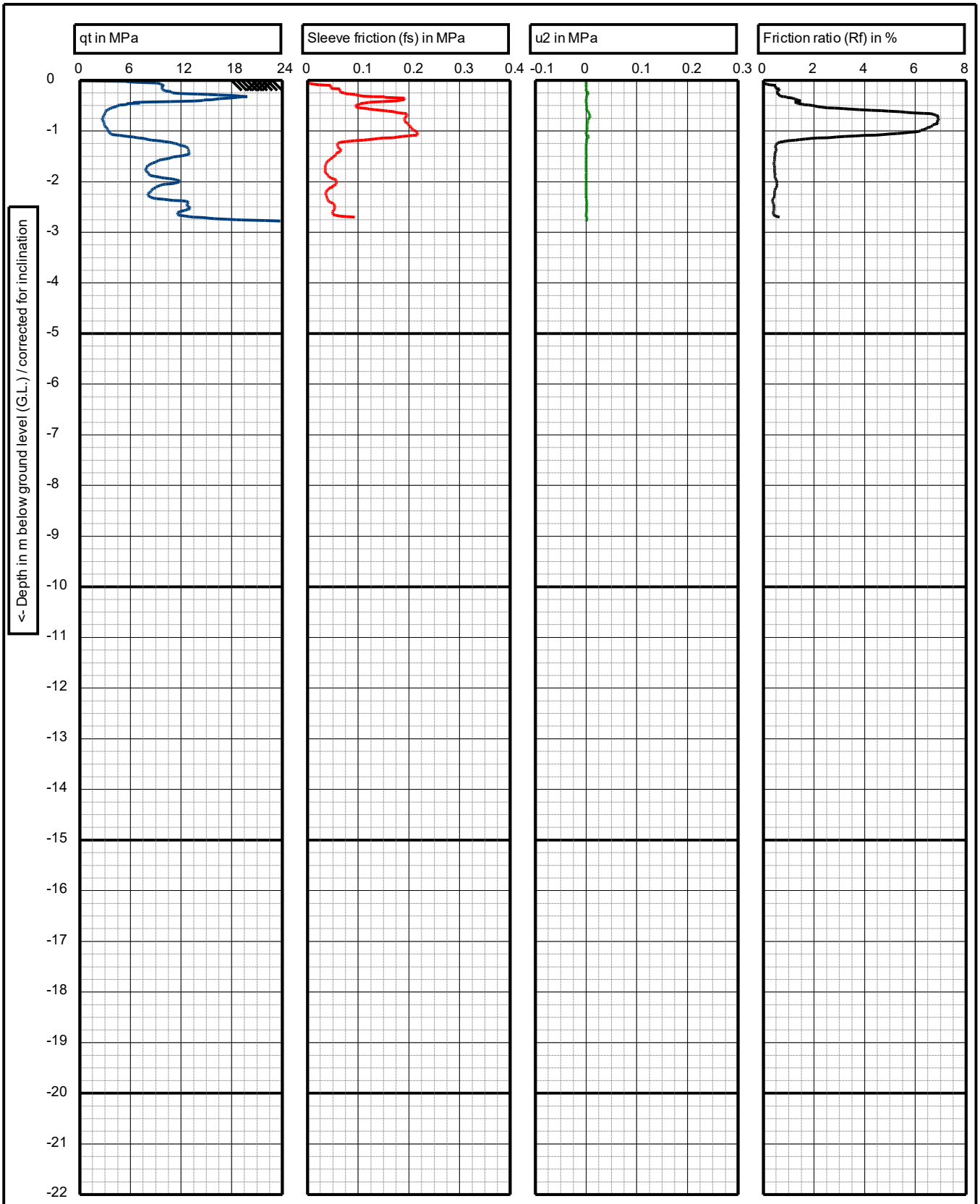
$$\textbf{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

(F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

www.hmagrp.com Email: geotechnical@hmagrp.com Tel: +61 (0)3 8720 6700 Fax: +61 (0)3 8720 6799

Appendix D
CPT Results

MSC.5007.0004.0220



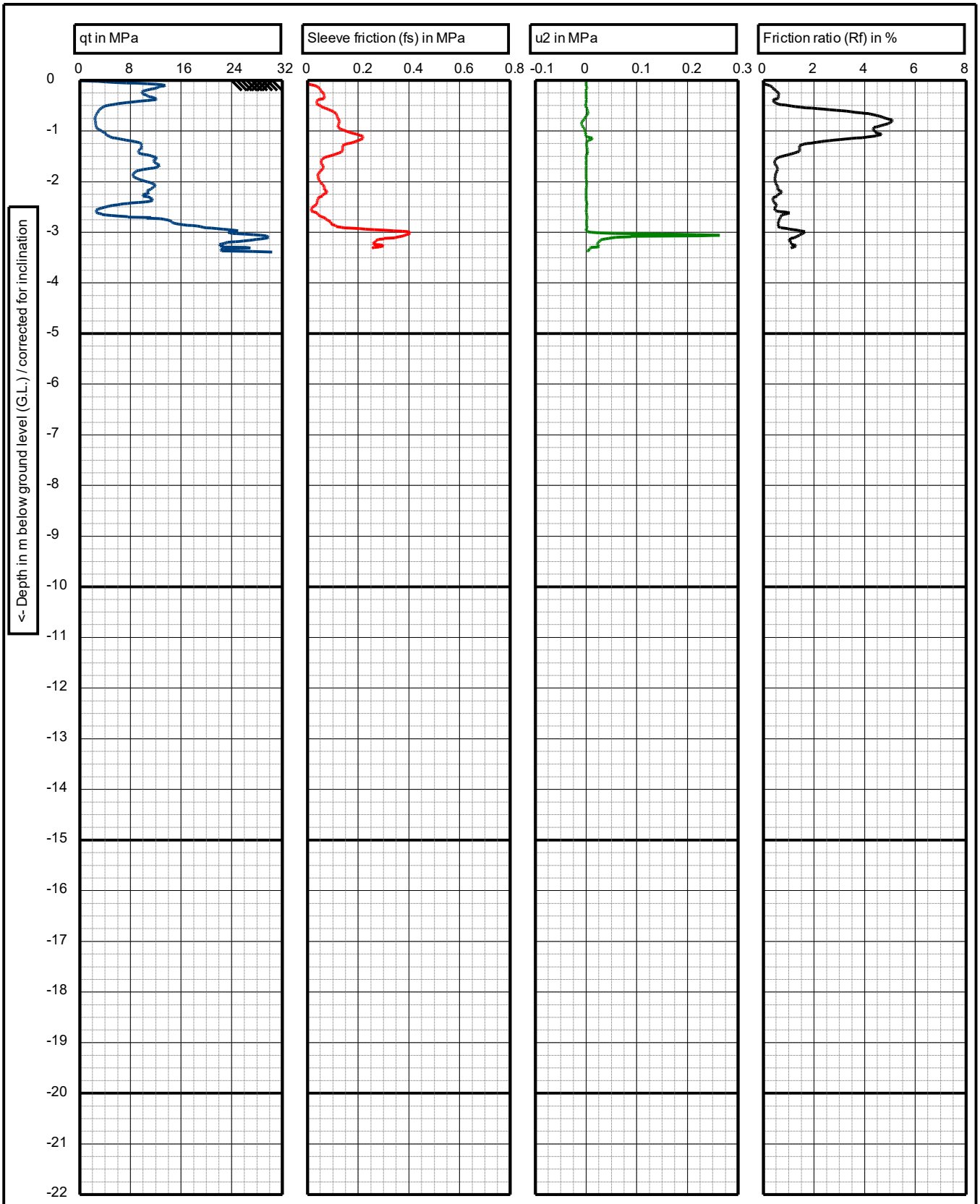
Refusal at 2.78 m qc > 25 MPa

BLACK INSITU TESTING	Client: PSM	Predrill:	0.00 m Predrilled
r u2 150 cm² 10 cm²	G.L.: 0.00 m	Date:	24/02/2025
Project: PSM5665		Cone no.:	C10CFIIP.C16325
Location: McCrae		Project no.:	K205
		CPT no.:	CPT-01 1/1

1.47

Processed by: ALB Checked by: MB

MSC.5007.0004.0221



Refusal at 3.39 m Max safe push

BLACK INSITU TESTING

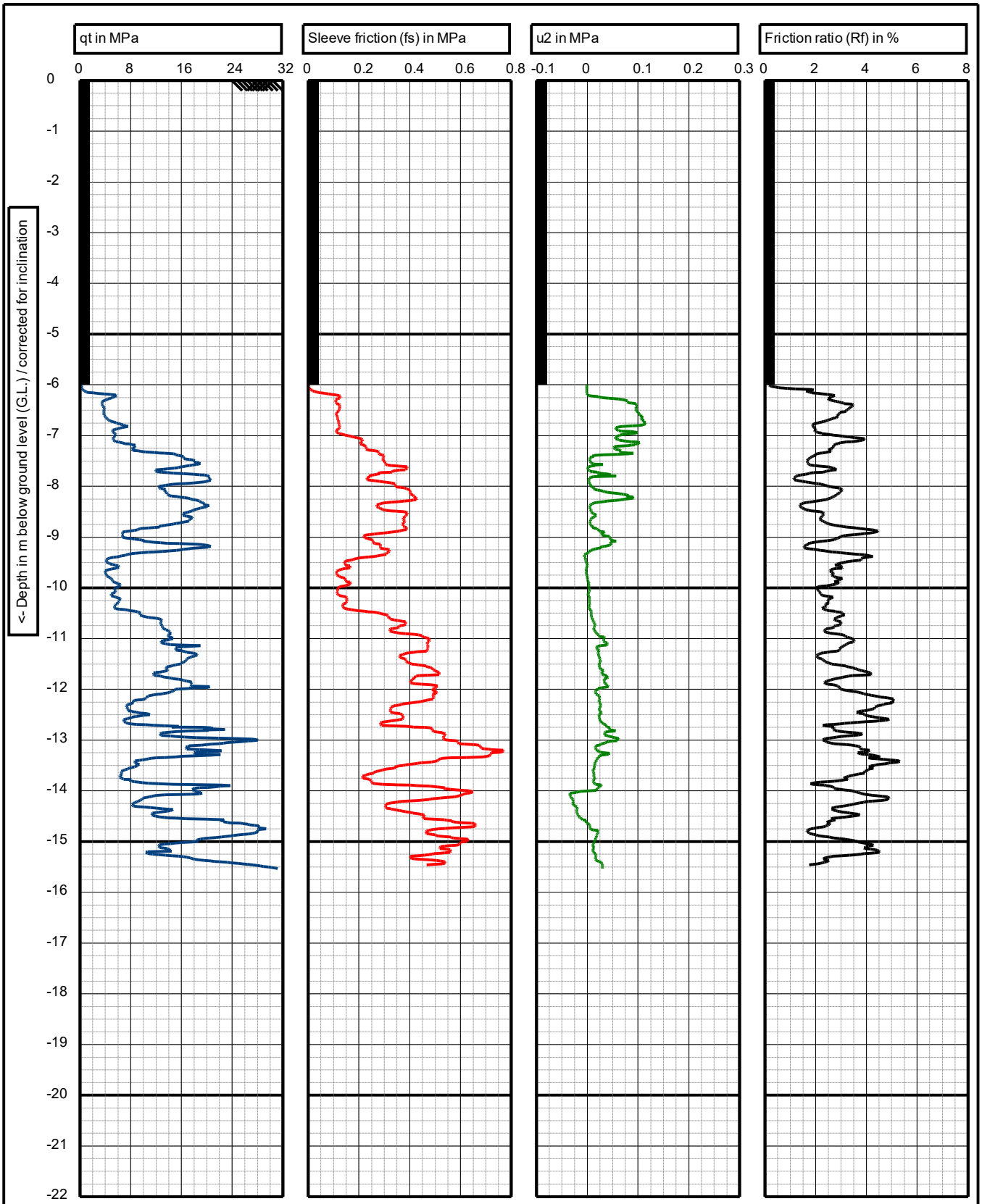
r u2 150 cm² 10 cm²

Client: PSM		Predrill:	0.00 m Predrilled
G.L.: 0.00 m		Date:	24/02/2025
Project: PSM5665		Cone no.:	C10CFIIP.C16325
Location: McCrae		Project no.:	L019
		CPT no.:	CPT-01A 1/1

1.47

Processed by: ALB Checked by: MB

MSC.5007.0004.0222



Refusal at 15.53 m Max safe push

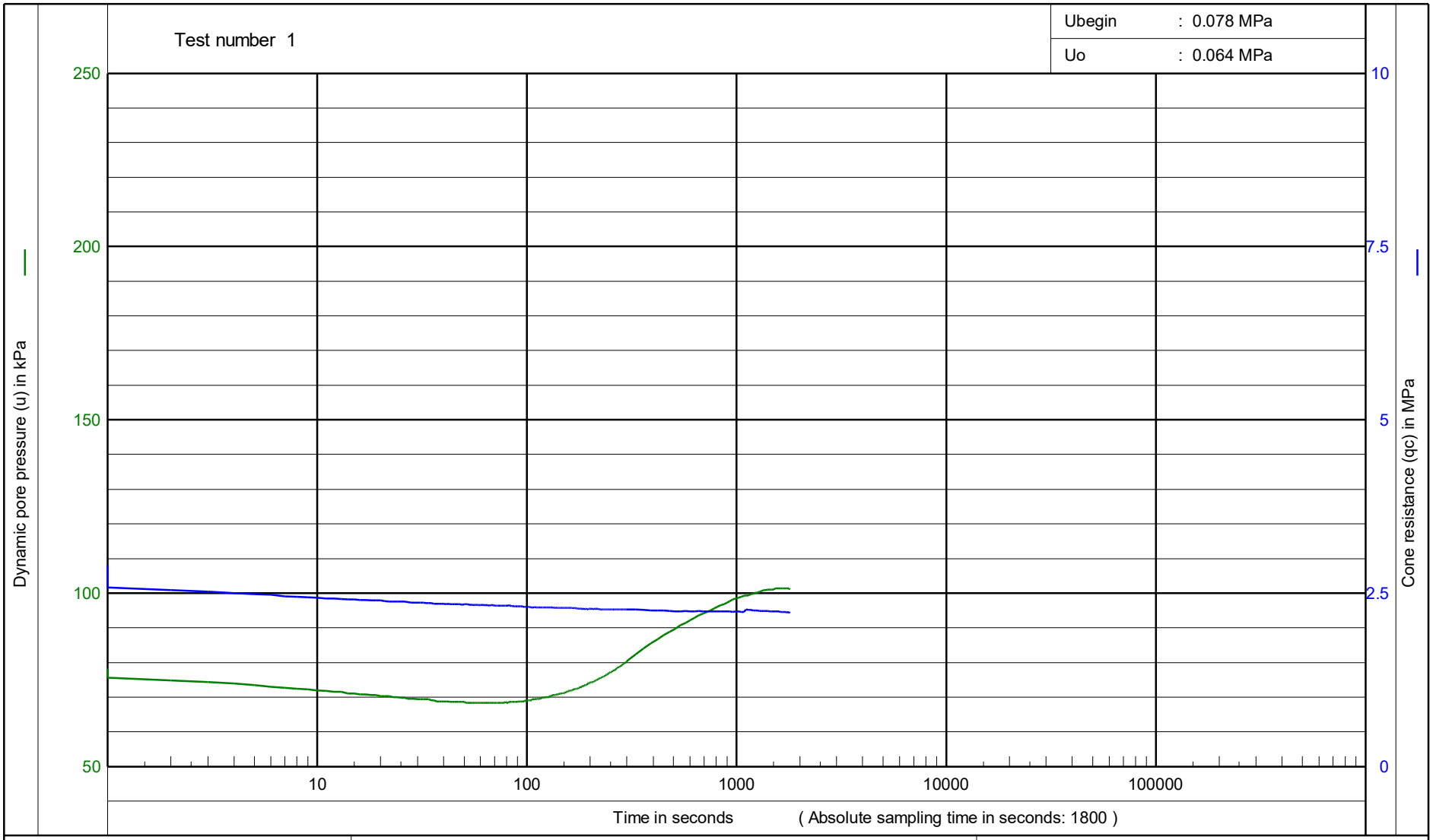
Hole to 13.30 m Dry

BLACK INSITU TESTING	r u2 225 cm² 15 cm²	Client: PSM	Predrill: **6.00 m Predrilled**
		G.L.: **0.00 m NAP**	Date: **25/02/2025**
	Project: PSM5655		Cone no.: **DC15CFIIP.C18609**
	Location: McCrae		Project no.: **K205**
			CPT no.: **CPT-01B** 1/1

1.47

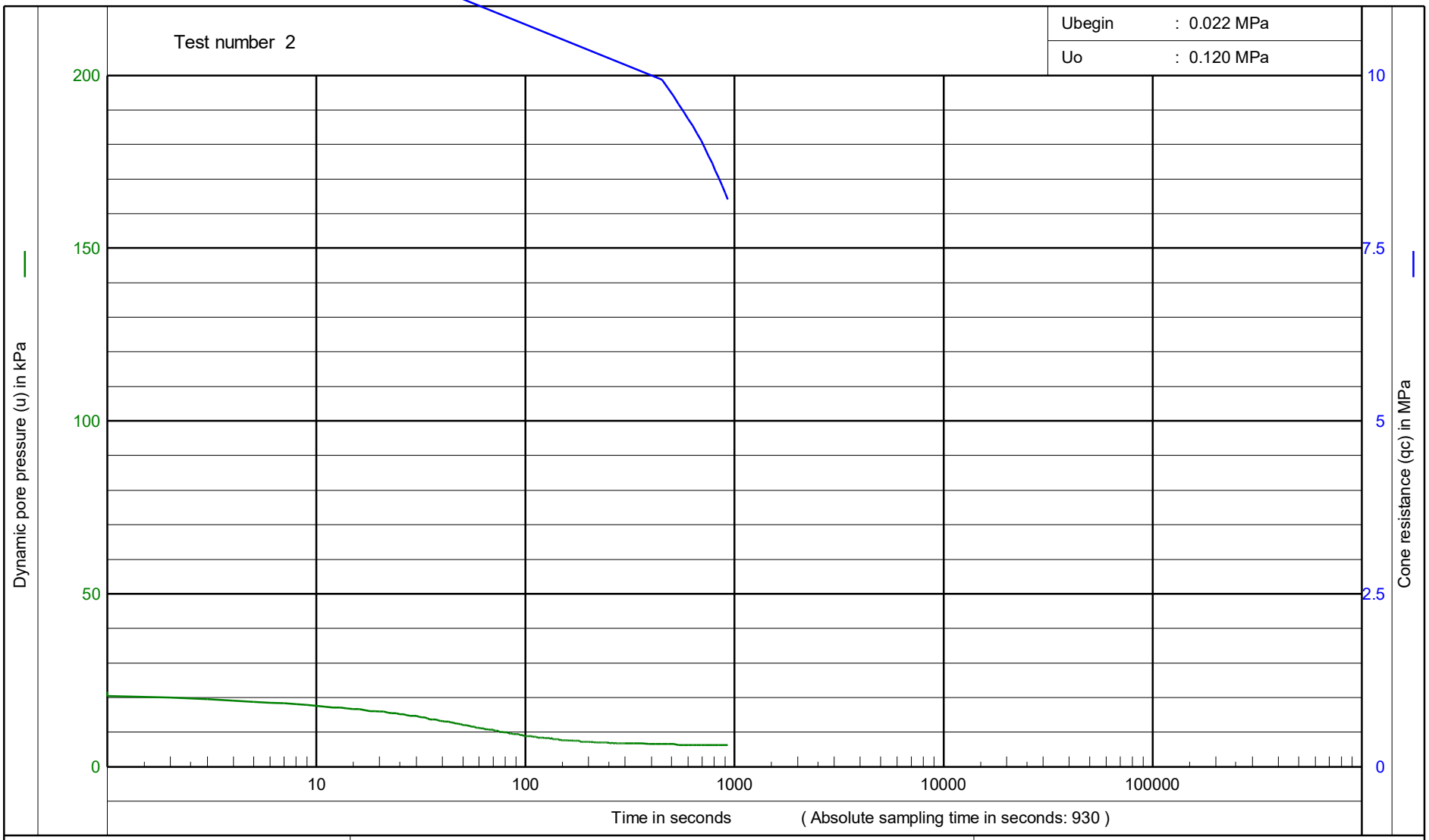
Processed by: NB Checked by: MB

MSC.5007.0004.0223



BLACK INSITU TESTING	Client: PSM	Date : 25/02/2025
	Project : PSM5655	Project no. : K205
	Location : McCrae	CPT no. : CPT-01B
		Test depth : 6.35 [m] - G.L.
		Water level : 0.00 [m] - G.L.

MSC.5007.0004.0224



BLACK INSITU TESTING

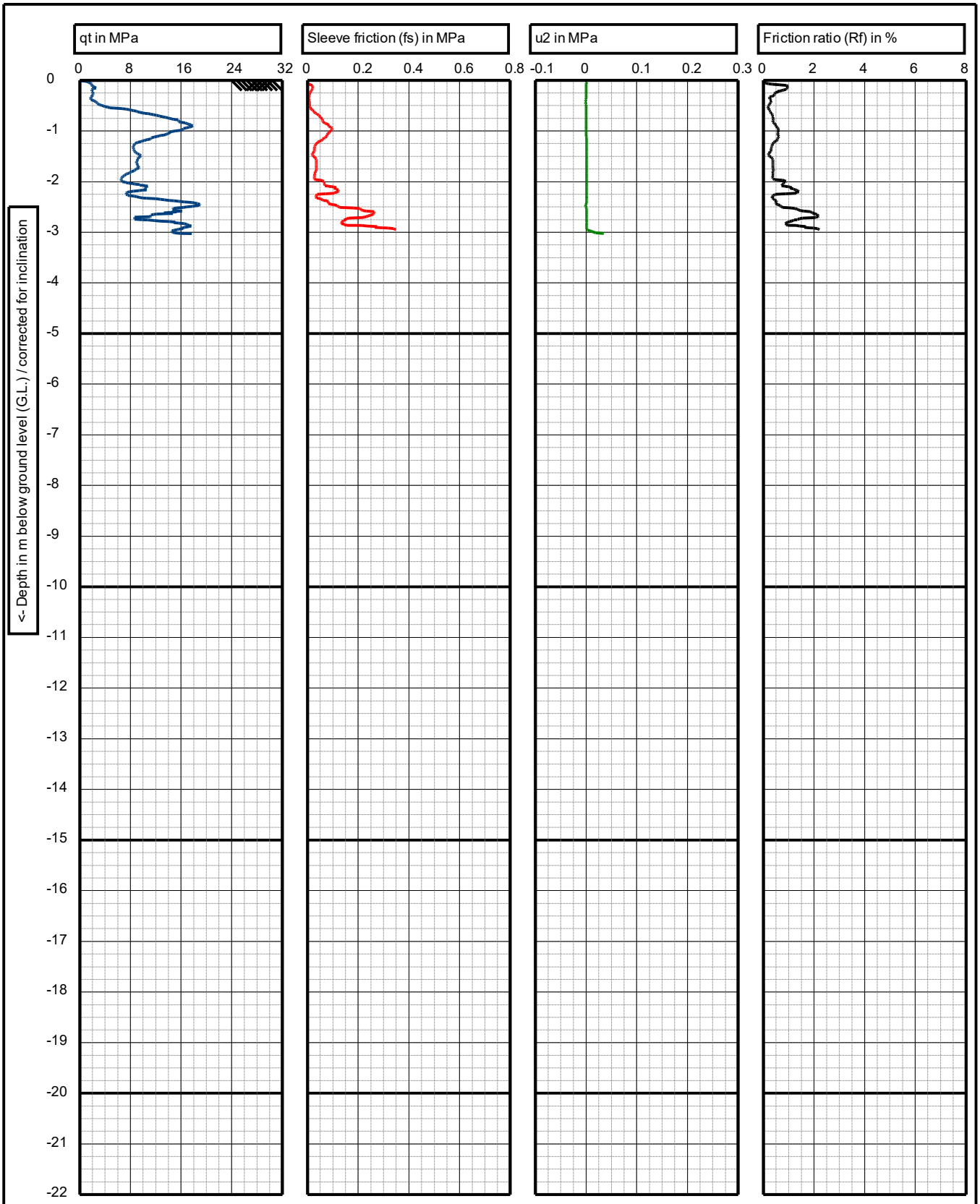
Client: PSM

Project : PSM5655

Location : McCrae

Date	: 25/02/2025	
Project no.	: K205	
CPT no.	: CPT-01B	
Test depth	: 12.00	[m] - G.L.
Water level	: 0.00	[m] - G.L.

MSC.5007.0004.0225



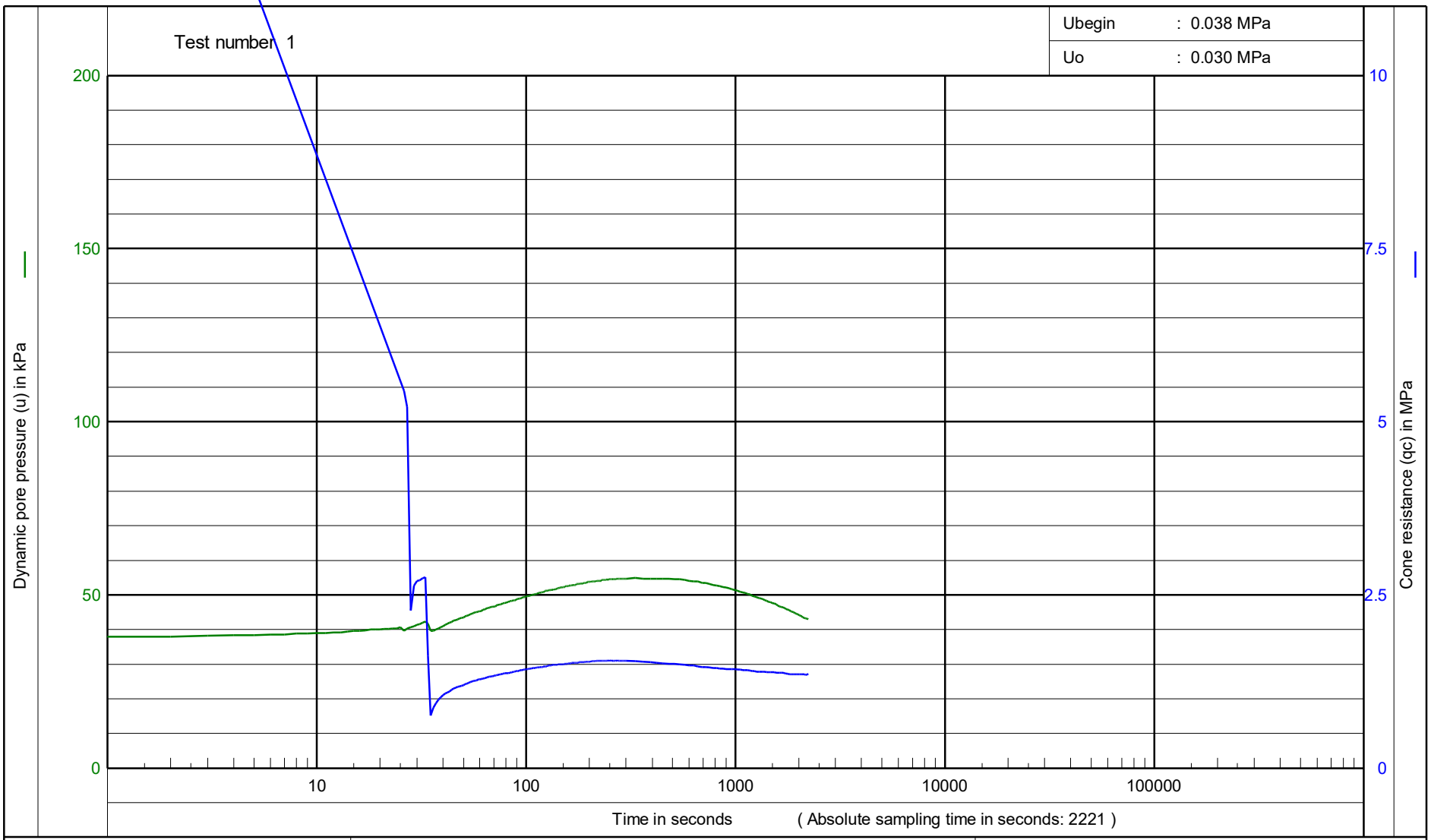
Refusal at 3.03 m Max safe push

r u2 L 150 cm² 10 cm²	Client: PSM	Predrill:	**0.00 m Predrilled**
	G.L.: **0.00 m**	Date:	**24/02/2025**
Project: PSM5665		Cone no.:	**C10CFIIP.C16325**
Location: McCrae		Project no.:	**L019**
		CPT no.:	**CPT-03** 1/1

1.47

Processed by: ALB Checked by: MB

MSC.5007.0004.0226



BLACK INSITU TESTING

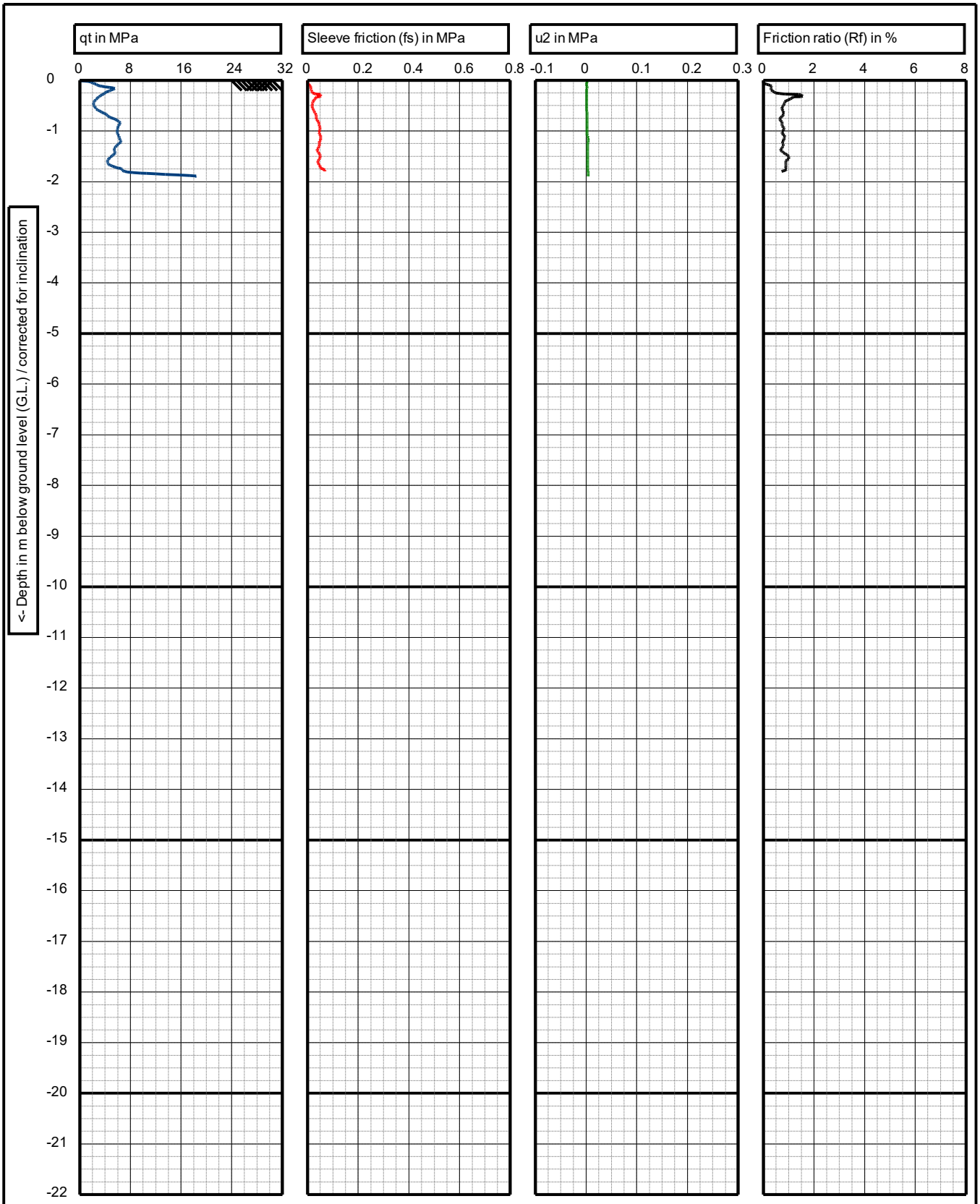
Client: PSM

Project : PSM5665

Location : McCrae

Date	: 24/02/2025	
Project no.	: L019	
CPT no.	: CPT-03	
Test depth	: 3.03	[m] - G.L.
Water level	: 0.00	[m] - G.L.

MSC.5007.0004.0227



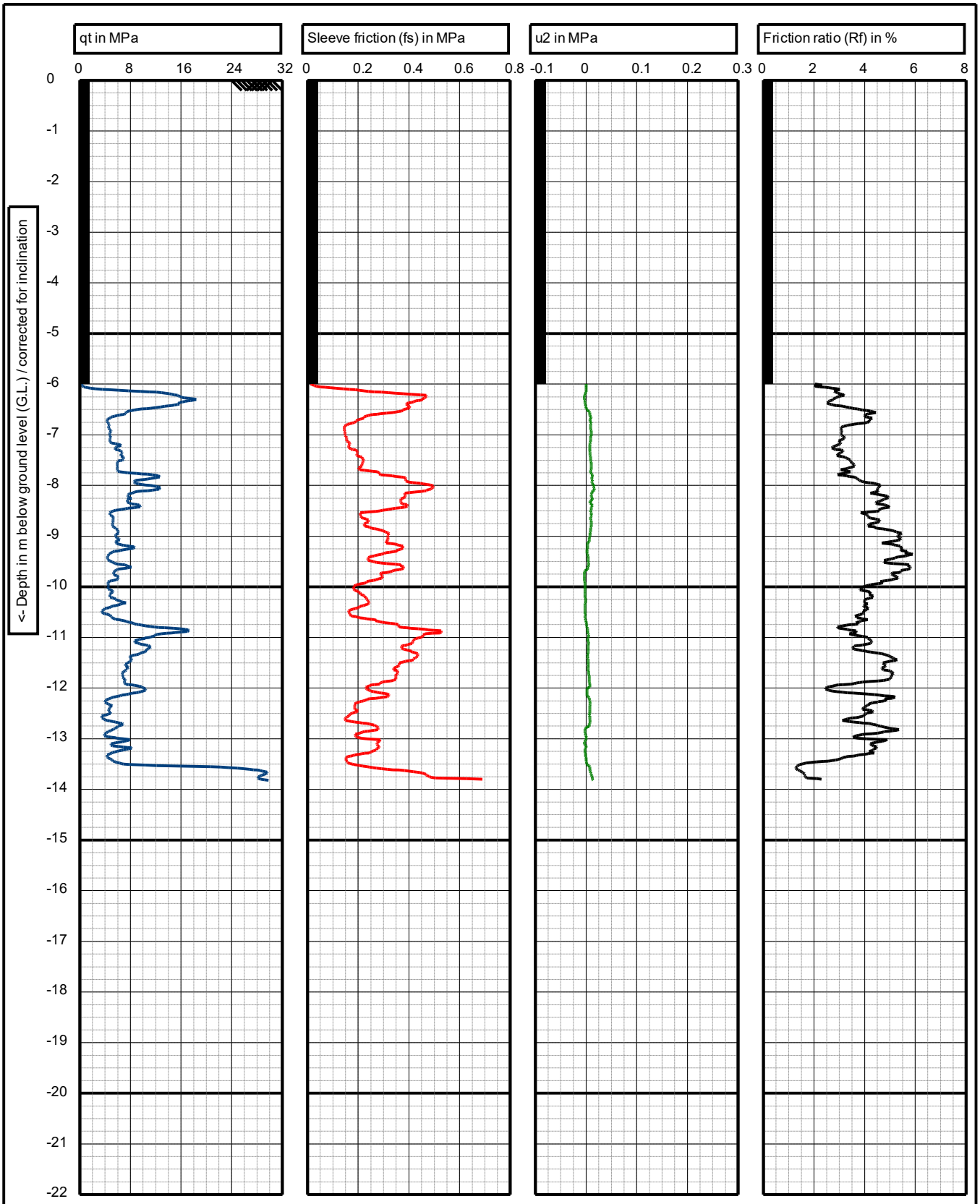
Refusal at 1.89 m qc > 20 MPa Inc

r u2 225 cm² 15 cm²	Client: PSM	Predrill:	**0.00 m Predrilled**
	G.L.: **0.00 m**	Date:	**25/02/2025**
Project: PSM5655		Cone no.:	**DC15CFIIP.C18609**
Location: McCrae		Project no.:	**K205**
		CPT no.:	**CPT-04** 1/1

1.47

Processed by: AB Checked by: MB

MSC.5007.0004.0228



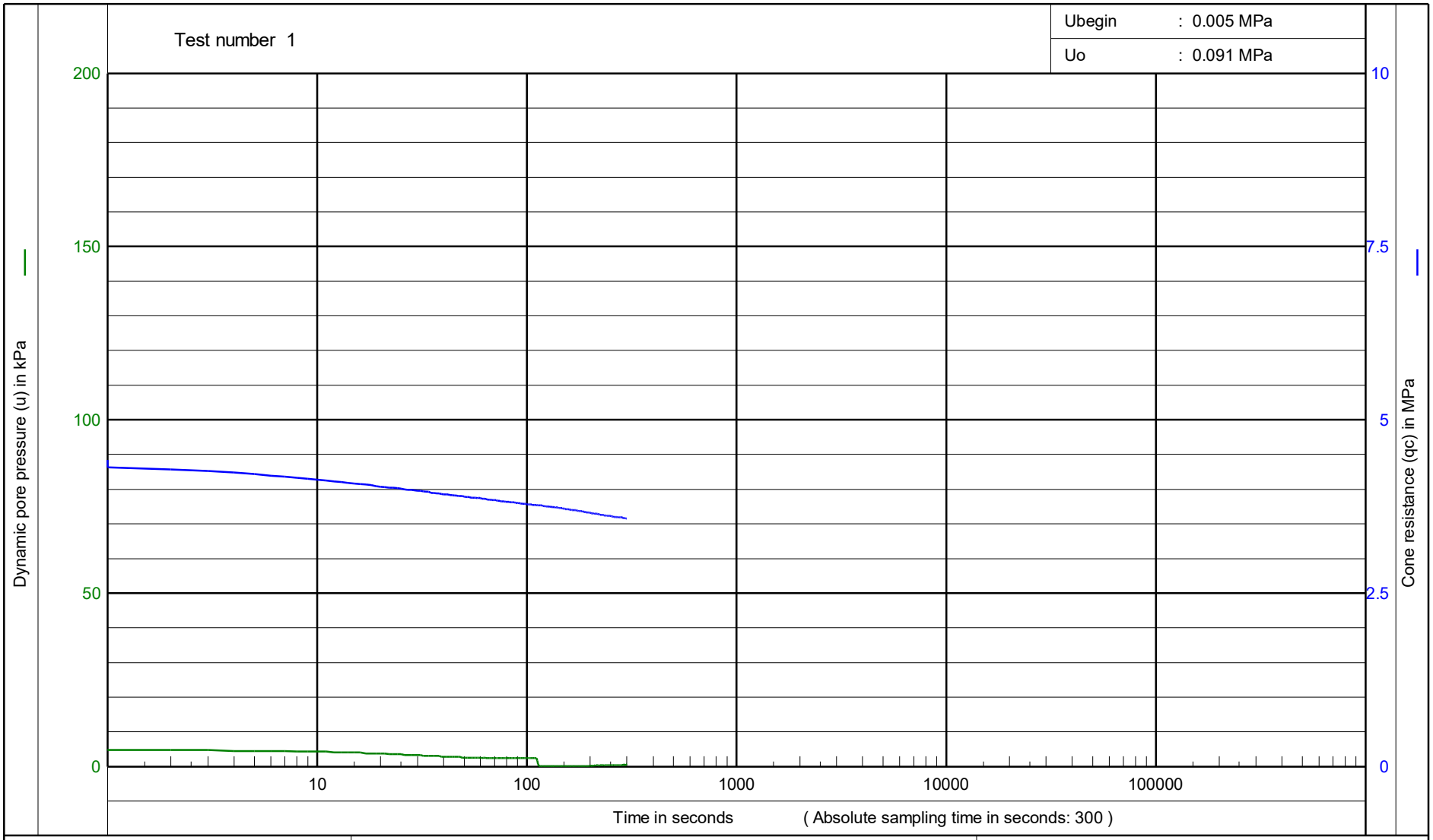
Refusal at 13.91 m qc > 45 MPa

BLACK INSITU TESTING	Client: PSM	Predrill:	6.00 m Predrilled
r u2 225 cm² 15 cm²	G.L.: 0.00 m	Date:	26/02/2025
Project: PSM5655		Cone no.:	DC15CFIIP.C18609
Location: McCrae		Project no.:	K205
		CPT no.:	CPT-04A 1/1

1.47

Processed by: ALB Checked by: MB

MSC.5007.0004.0229



BLACK INSITU TESTING

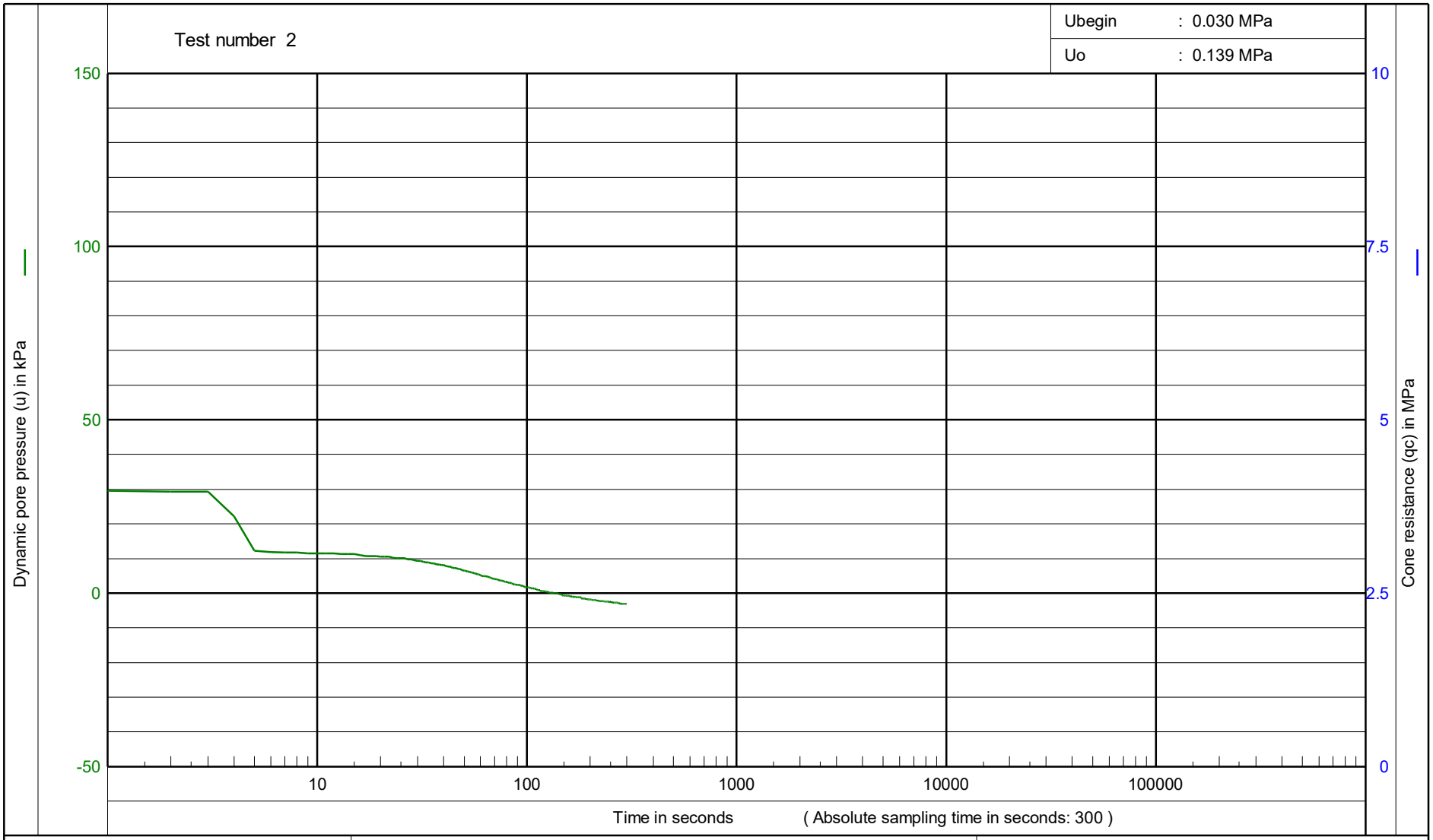
Client: PSM

Project : PSM5655

Location : McCrae

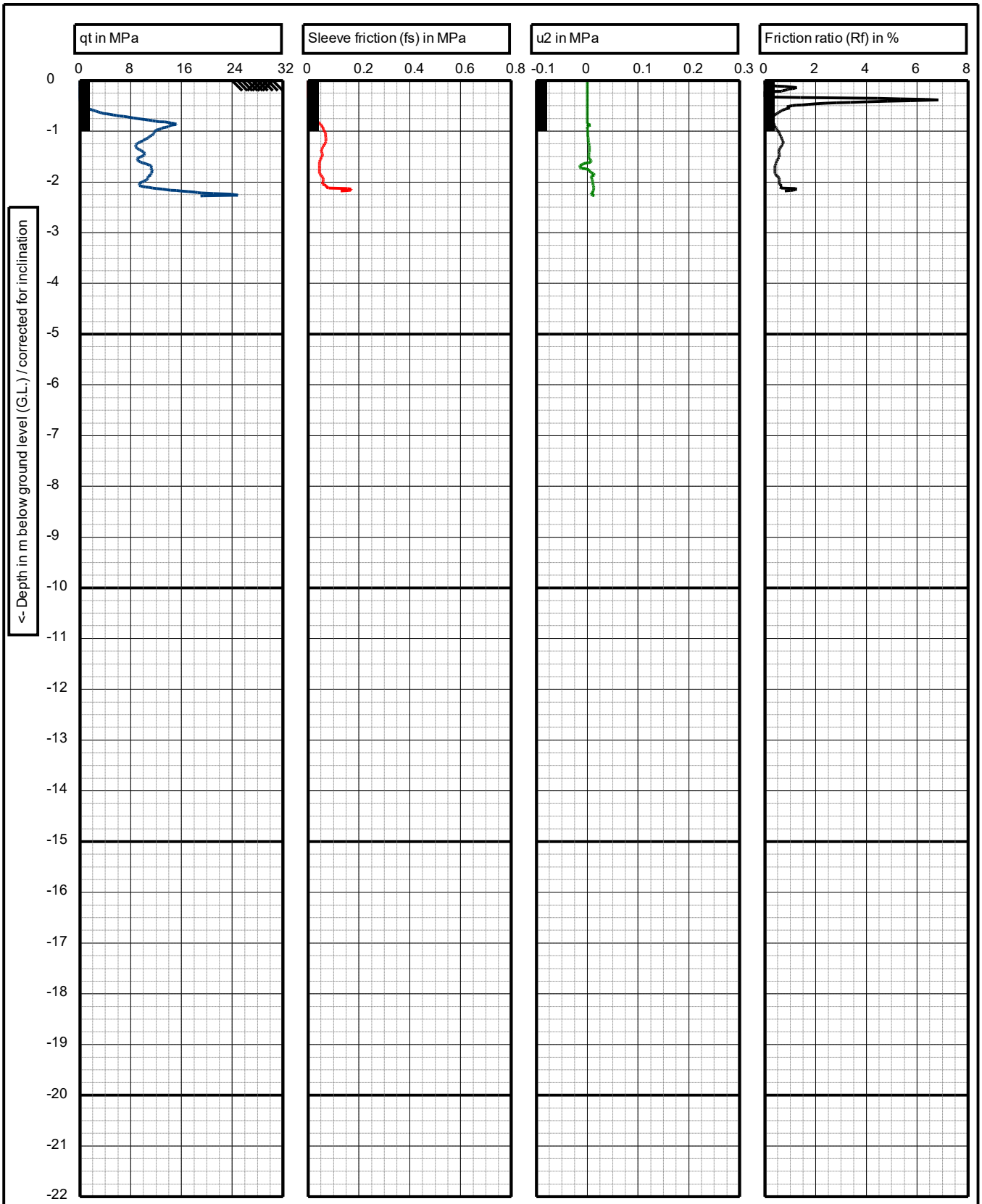
Date	:	26/02/2025
Project no.	:	K205
CPT no.	:	CPT-04A
Test depth	:	9.10 [m] - G.L.
Water level	:	0.00 [m] - G.L.

MSC.5007.0004.0230



BLACK INSITU TESTING	Client: PSM	Date : 26/02/2025
	Project : PSM5655	Project no. : K205
	Location : McCrae	CPT no. : CPT-04A
		Test depth : 13.90 [m] - G.L.
		Water level : 0.00 [m] - G.L.

MSC.5007.0004.0231



Refusal at 2.27 m Inclination

Hole to 0.84m Dry

BLACK INSITU TESTING

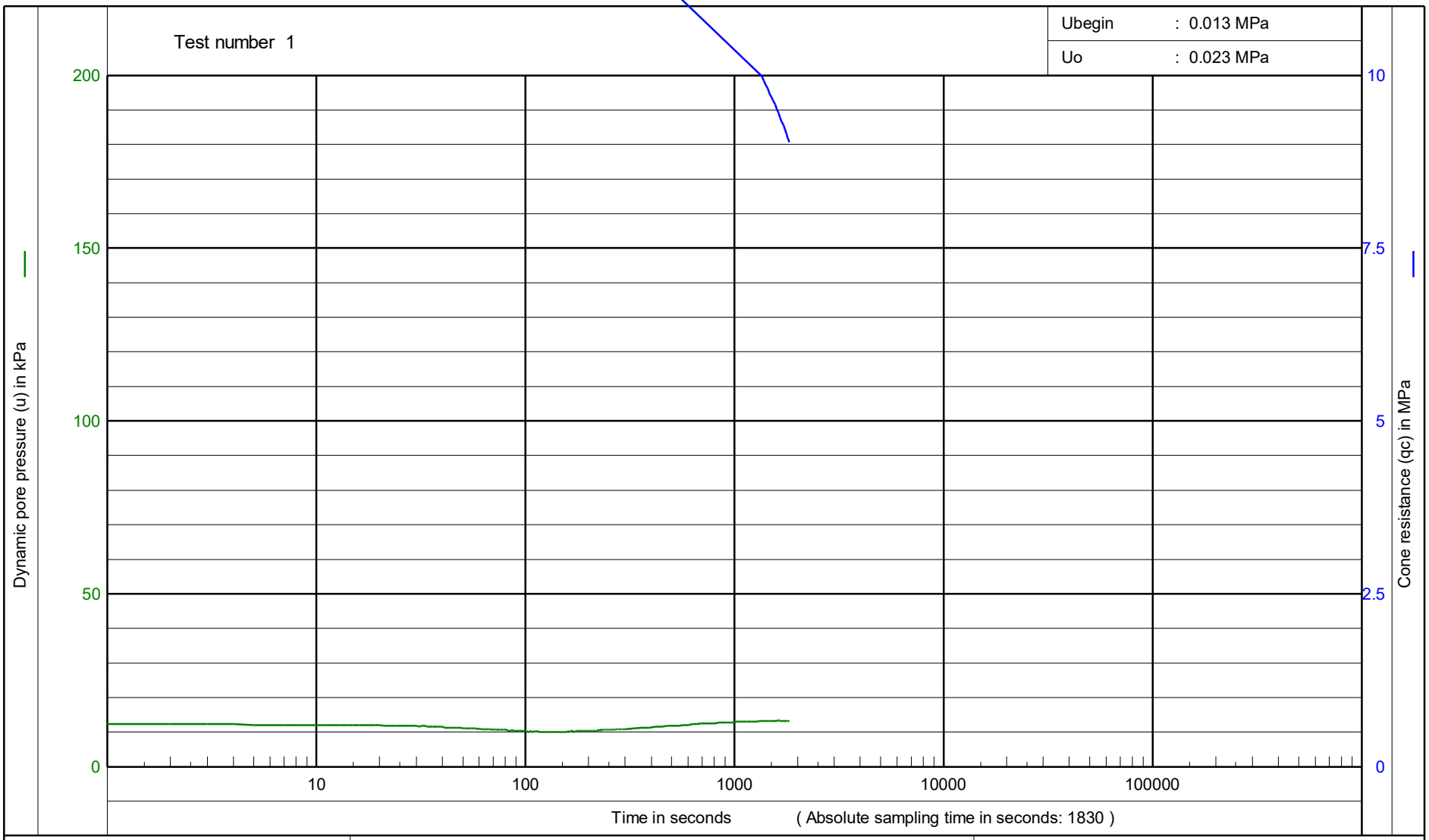
r u2
225 cm²
15 cm²

Client: PSM		Predrill:	**1.00 m Predrilled**
G.L.: **0.00 m**		Date:	**26/02/2025**
Project: PSM5655		Cone no.:	**DC15CFIIP.C18609**
Location: McCrae		Project no.:	**K205**
		CPT no.:	**CPT-05** 1/1

1.47

Processed by: ALB Checked by: MB

MSC.5007.0004.0232



BLACK INSITU TESTING

Client: PSM

Project : PSM5655

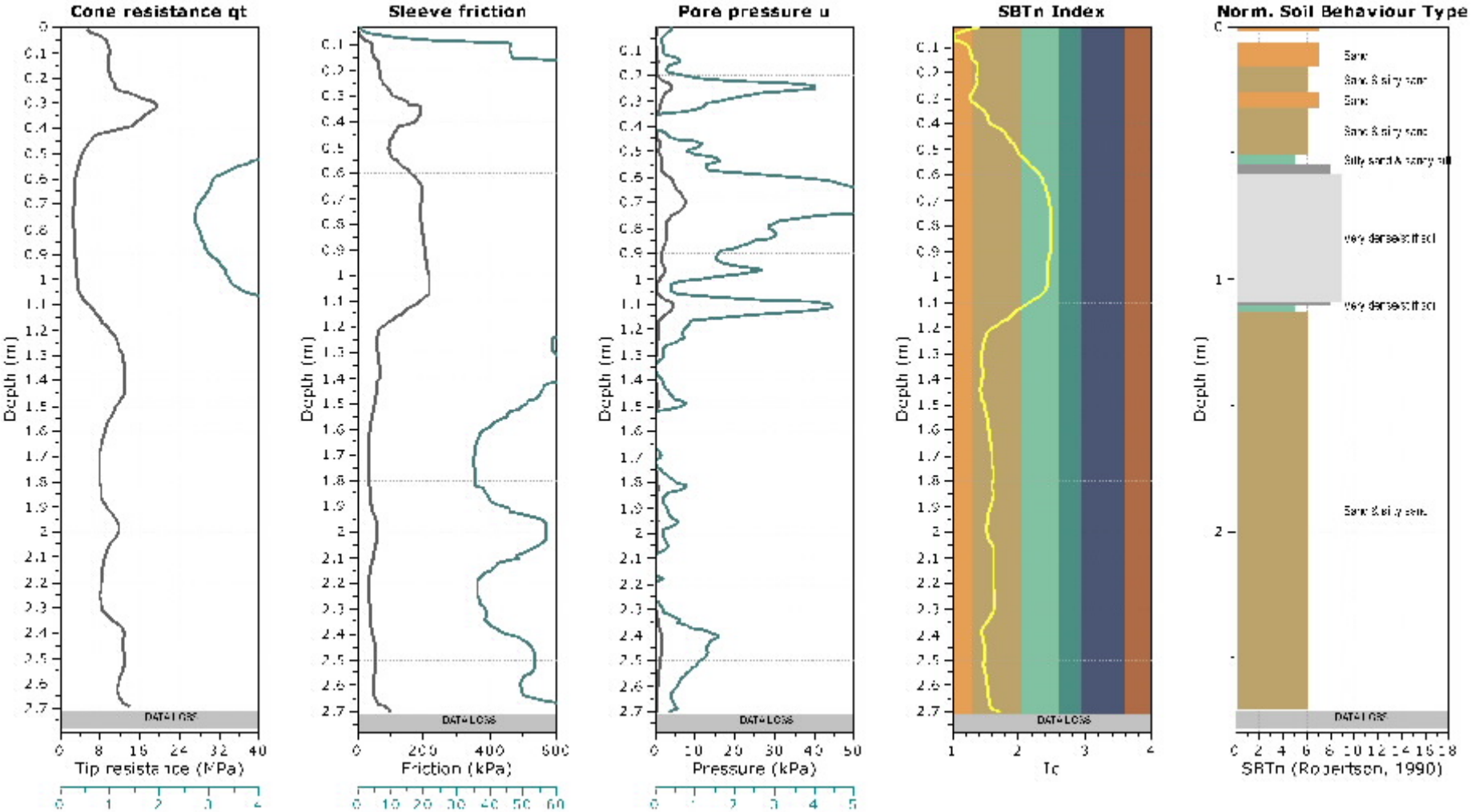
Location : McCrae

Date	: 26/02/2025	
Project no.	: K205	
CPT no.	: CPT-05	
Test depth	: 2.26	[m] - G.L.
Water level	: 0.00	[m] - G.L.

Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

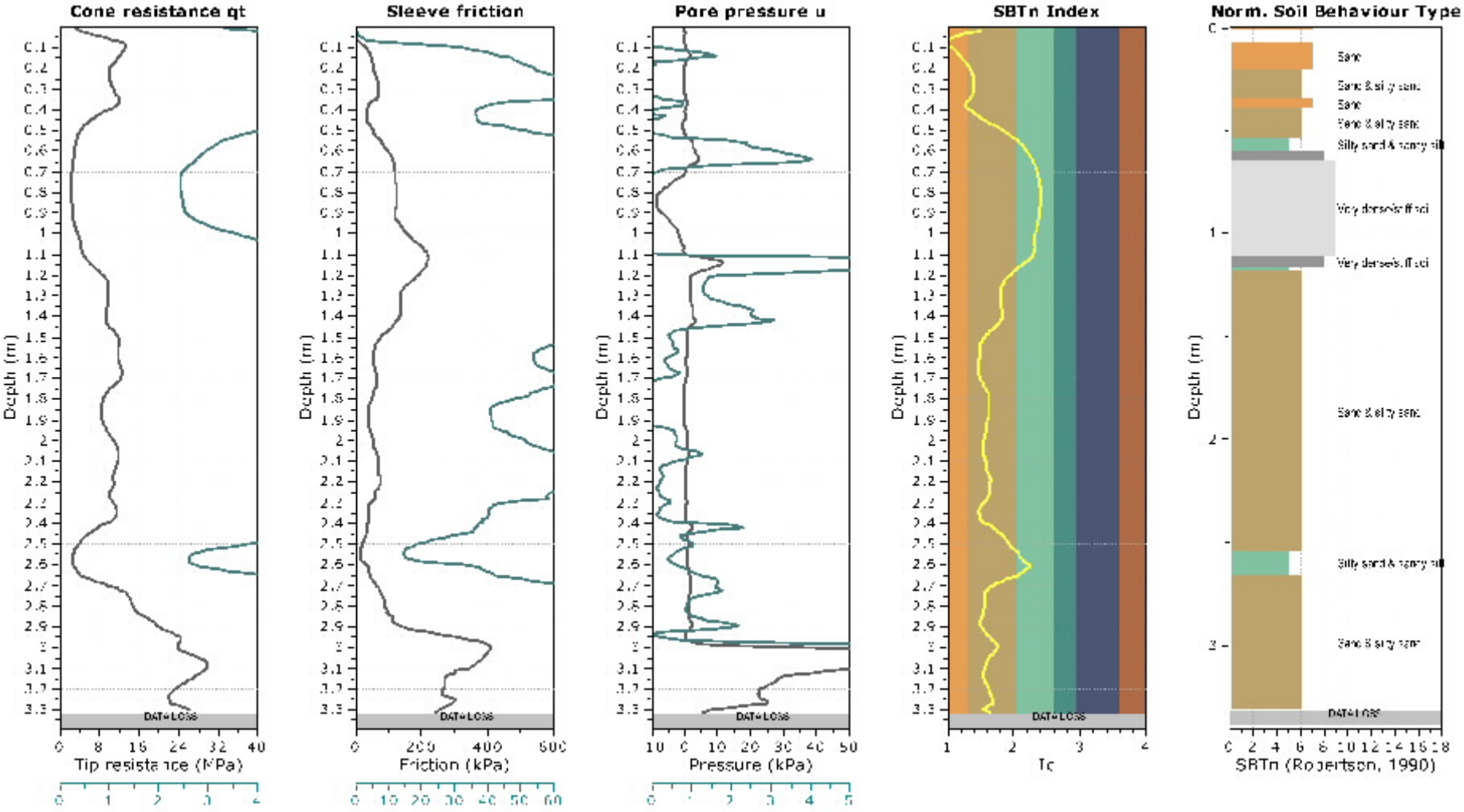
CPT: CPT-01
Total depth: 2.78 m, Date: 24/02/2025
Surface Elevation: 31.63 m
Coords: X:319564.80, Y:5753703.80
Cone Type: DC15FIIP
Cone Operator: Black Insitu



Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

CPT: CPT-01A
Total depth: 3.39 m, Date: 24/02/2025
Surface Elevation: 31.69 m
Coords: X:319565.00, Y:5753702.30
Cone Type: DC15CFIIP
Cone Operator: Black Insitu

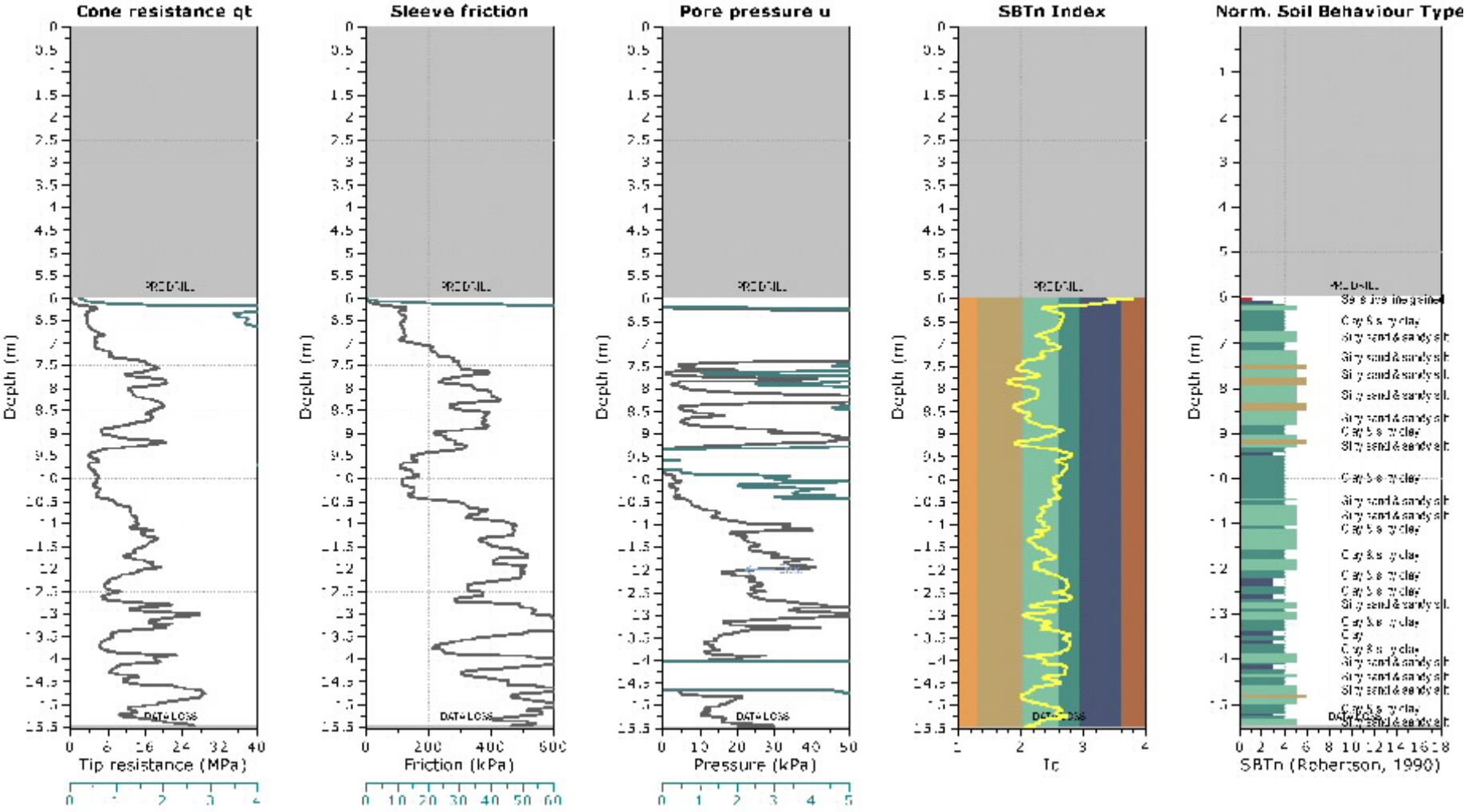


MSC.5007.0004.0235

Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

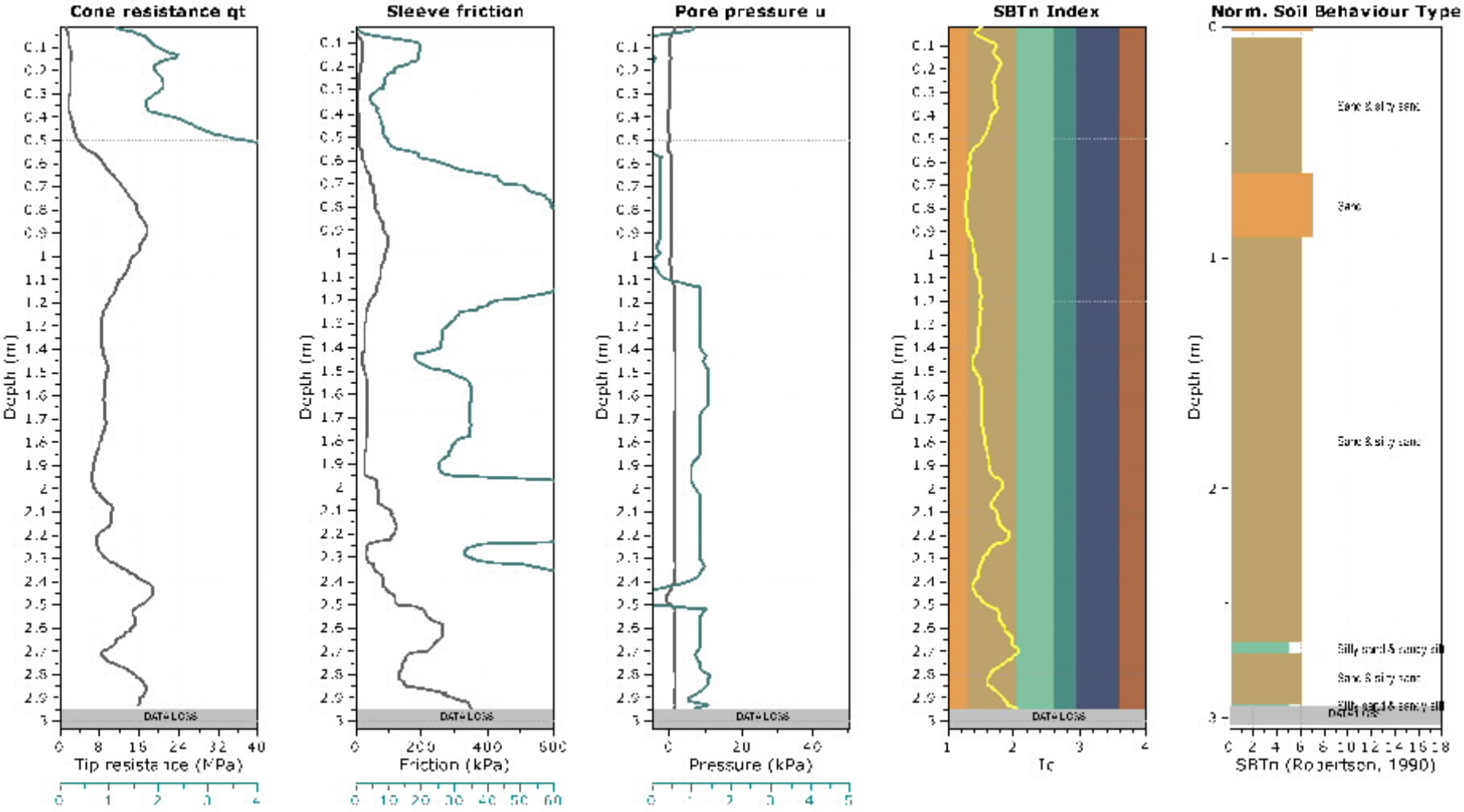
CPT: CPT-01B
Total depth: 15.53 m, Date: 25/02/2025
Surface Elevation: 31.70 m
Coords: X:319565.70, Y:5753702.10
Cone Type: DC15CFIIP
Cone Operator: Black Insitu



Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

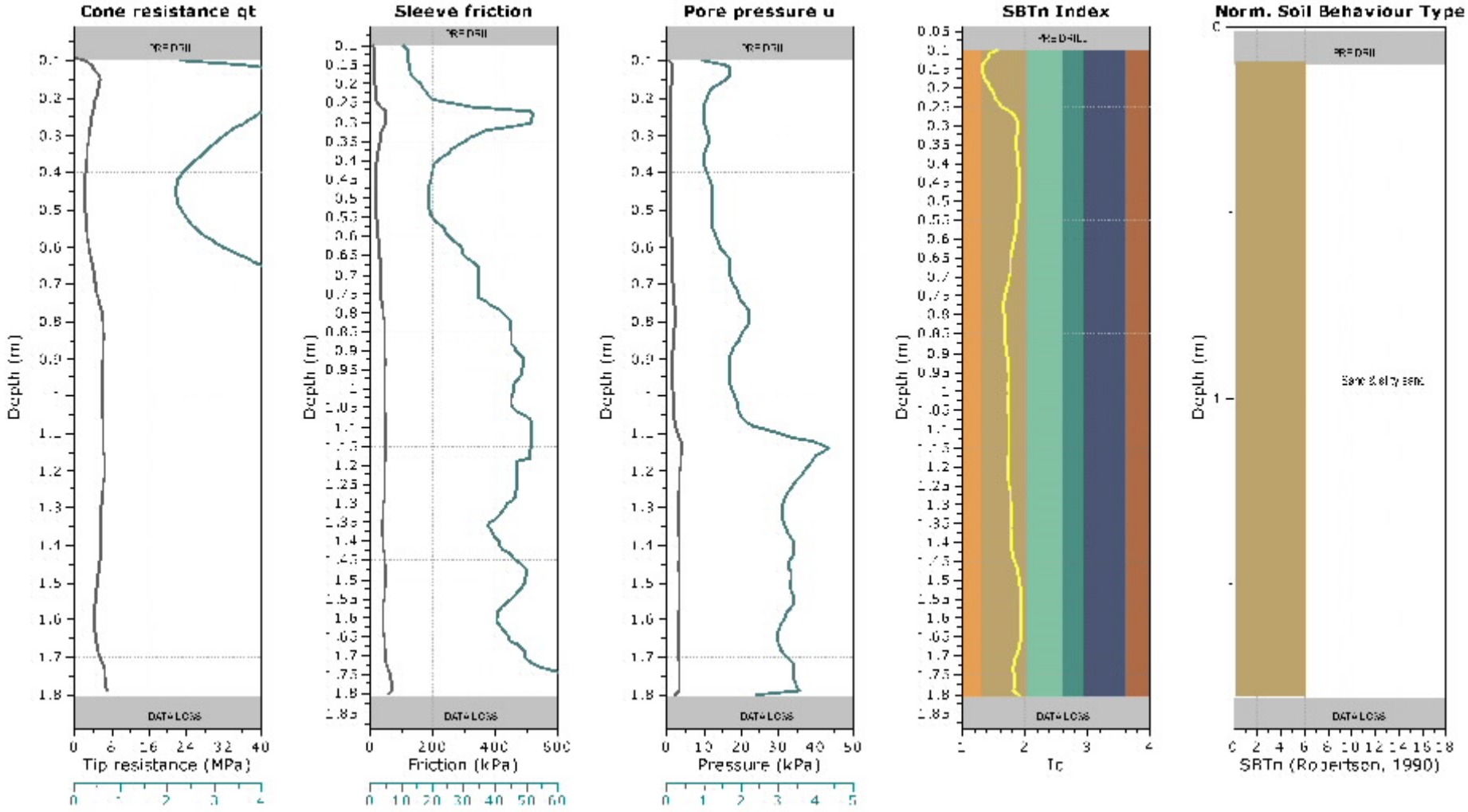
CPT: CPT-03
Total depth: 3.03 m, Date: 24/02/2025
Surface Elevation: 28.68 m
Coords: X:319533.30, Y:5753716.30
Cone Type: DC15CFIIP
Cone Operator: Black Insitu



Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

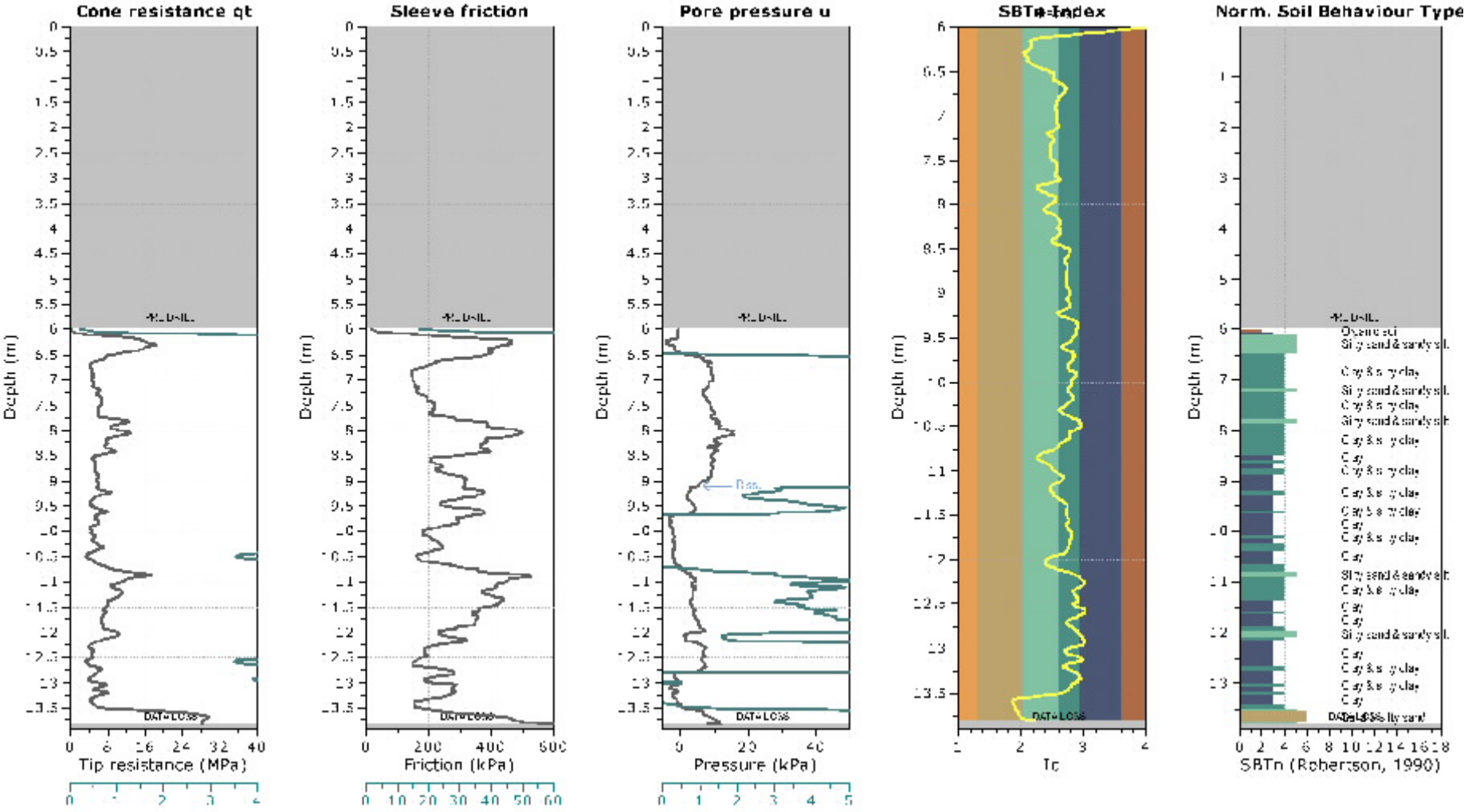
CPT: CPT-04
Total depth: 1.89 m, Date: 25/02/2025
Surface Elevation: 26.86 m
Coords: X:319499.20, Y:5753666.10
Cone Type: DC15CFIIP
Cone Operator: Black Insitu



Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

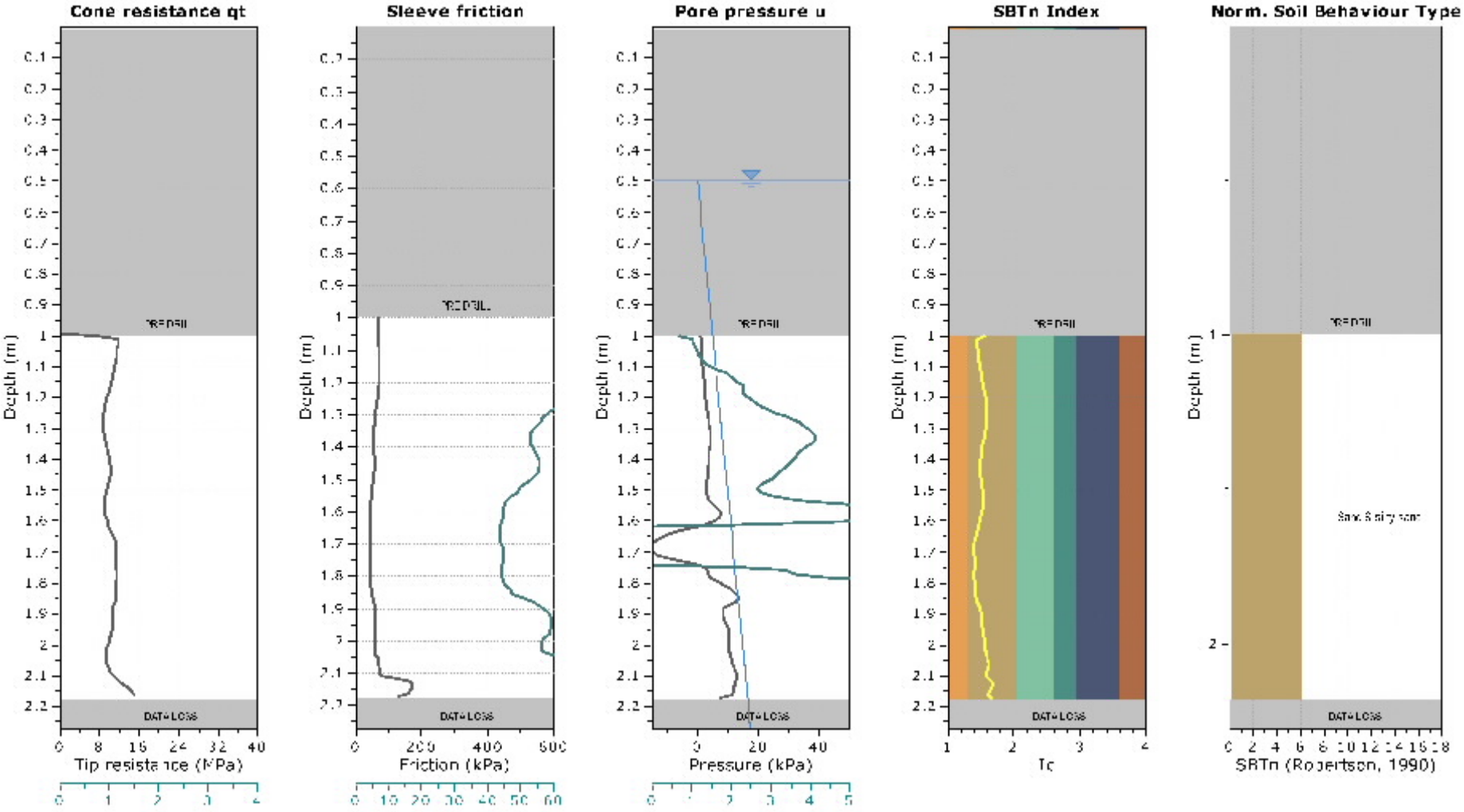
CPT: CPT-04A
Total depth: 13.90 m, Date: 26/02/2025
Surface Elevation: 26.86 m
Coords: X:319499.20, Y:5753666.10
Cone Type: DC15CFIIP
Cone Operator: Black Insitu



Pells Sullivan Meynink
Office 16
Level 4, 60 Moorabool Street Geelong VIC 3220
www.psm.com.au

Project: McCrae Landslide
Location: McCrae, VIC

CPT: CPT-05
Total depth: 2.27 m, Date: 26/02/2025
Surface Elevation: 1.91 m
Coords: X:319501.30, Y:5753776.90
Cone Type: DC15CFIIP
Cone Operator: Black Insitu



Appendix E
Laboratory Testing – Material Test Reports

Material Test Report

Ground Science South West
Geotechnical & Environmental Consultants

Ground Science South West Pty Ltd
8 Freedman Street North Geelong Vic 3215
Phone: (03) 5282 1566
Email: chrism@groundsciencesw.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

NATA
WORLD RECOGNISED ACCREDITATION

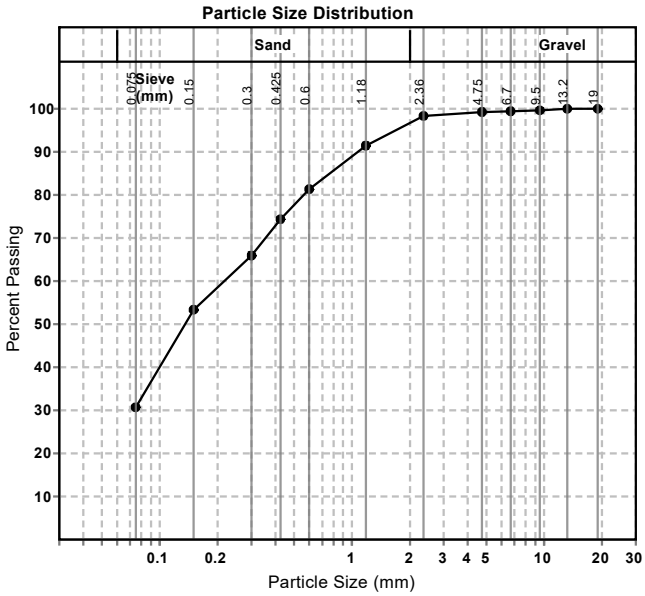
Approved Signatory: Brent Elliott
Laboratory Manager
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Sample Number: 2352-S1
Date Sampled: 24/01/2025
Dates Tested: 05/02/2025 - 14/02/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **RILL/Consolidated waste on slope, Depth: 0.00m**
Lot No: **Sample ID S1**
Material: clayey/silty SAND, trace gravel, pale grey, fine to coarse grained, low to medium plasticity, gravel 2%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
19 mm	**100**			0		
13.2 mm	**100**			0		
9.5 mm	**100**			0		
6.7 mm	**99**			0		
4.75 mm	**99**			0		
2.36 mm	**98**			1		
1.18 mm	**91**			7		
0.6 mm	**81**			10		
0.425 mm	**74**			7		
0.3 mm	**66**			8		
0.15 mm	**53**			13		
0.075 mm	**31**			23		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	8.9		



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Material Test Report

Ground Science South West
Geotechnical & Environmental Consultants

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Email: chrism@groundsciencesw.com.au

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NATA
WORLD RECOGNISED ACCREDITATION

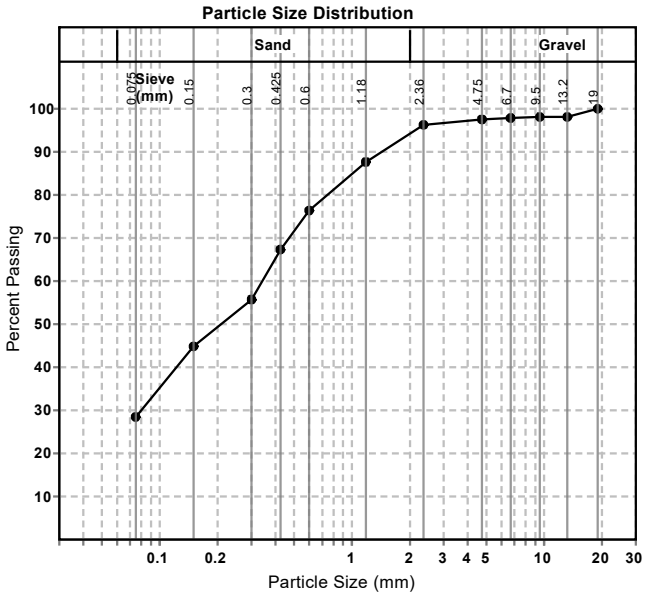
Approved Signatory: Brent Elliott
Laboratory Manager
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Sample Number: 2352-S2
Date Sampled: 24/01/2025
Dates Tested: 05/02/2025 - 13/02/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **On LHS/NE Slope, Depth: 0.00m**
Lot No: **Sample ID S2**
Material: clayey/silty SAND, trace gravel, pale grey and brown, fine to coarse grained, low to medium plasticity, gravel 4%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
19 mm	**100**			0		
13.2 mm	**98**			2		
9.5 mm	**98**			0		
6.7 mm	**98**			0		
4.75 mm	**98**			0		
2.36 mm	**96**			1		
1.18 mm	**88**			9		
0.6 mm	**76**			11		
0.425 mm	**67**			9		
0.3 mm	**56**			12		
0.15 mm	**45**			11		
0.075 mm	**28**			16		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	19.0		



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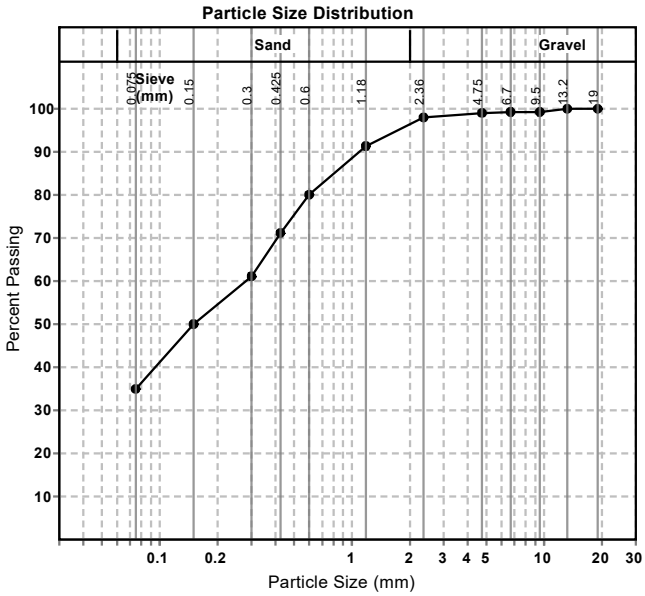
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Sample Number: 2352-S3
Date Sampled: 24/01/2025
Dates Tested: 05/02/2025 - 13/02/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **Lower flank of RILL on RHS/SW Slope, Depth: 0.00m**
Lot No: **Sample ID S3**
Material: clayey/silty SAND, trace gravel, pale grey, fine to coarse grained, low to medium plasticity, gravel 2%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
19 mm	**100**			0		
13.2 mm	**100**			0		
9.5 mm	**99**			1		
6.7 mm	**99**			0		
4.75 mm	**99**			0		
2.36 mm	**98**			1		
1.18 mm	**91**			7		
0.6 mm	**80**			11		
0.425 mm	**71**			9		
0.3 mm	**61**			10		
0.15 mm	**50**			11		
0.075 mm	**35**			15		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	15.9		



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Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

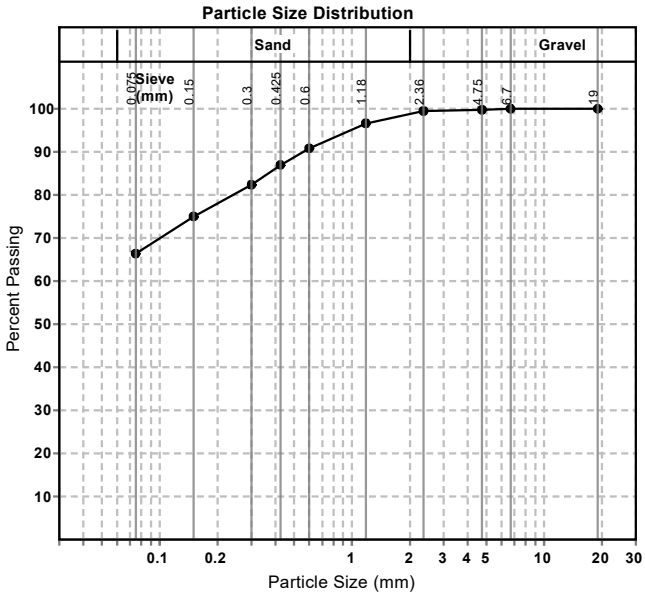
Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Sample Number: 2352-S4
Date Sampled: 24/01/2025
Dates Tested: 05/02/2025 - 13/02/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **Upper RHS/SW Slope, Gum Tree/Scarp, Depth: 0.00m**
Lot No: **Sample ID S4**
Material: CH - sandy CLAY, trace gravel, pale grey mottled brown, high plasticity, sand 33% fine to coarse grained, gravel 1%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
6.7 mm	**100**			0		
4.75 mm	**100**			0		
2.36 mm	**99**			0		
1.18 mm	**97**			3		
0.6 mm	**91**			6		
0.425 mm	**87**			4		
0.3 mm	**82**			5		
0.15 mm	**75**			7		
0.075 mm	**66**			9		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	34.0		

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	55		
Plastic Limit (%)	19		
Plasticity Index (%)	**36**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**12.0**		
Cracking Crumbling Curling	Curling		



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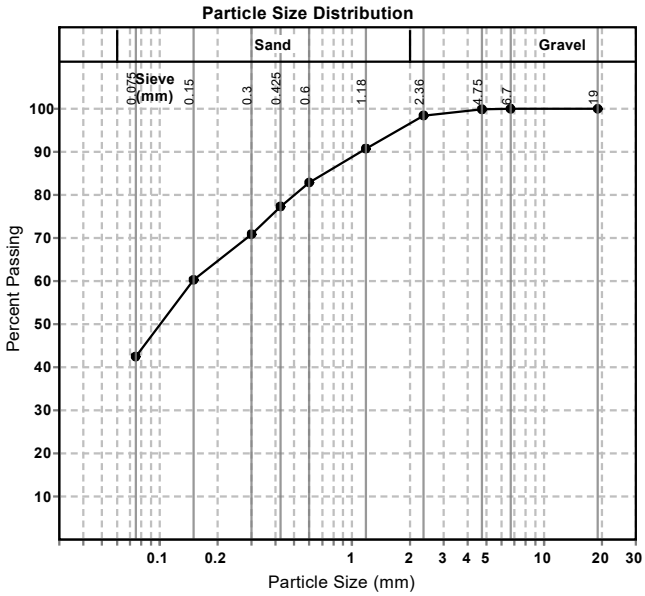
Laboratory Manager
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Sample Number: 2352-S5
Date Sampled: 24/01/2025
Dates Tested: 05/02/2025 - 14/02/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **S4 Upper, Depth: 0.00m**
Lot No: **Sample ID S5**
Material: sandy CLAY/SILT, trace gravel, pale grey, medium to high plasticity, sand 56% fine to coarse grained, gravel 2%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
6.7 mm	**100**			0		
4.75 mm	**100**			0		
2.36 mm	**98**			1		
1.18 mm	**91**			8		
0.6 mm	**83**			8		
0.425 mm	**77**			6		
0.3 mm	**71**			6		
0.15 mm	**60**			11		
0.075 mm	**42**			18		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	27.3		



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Laboratory Manager
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

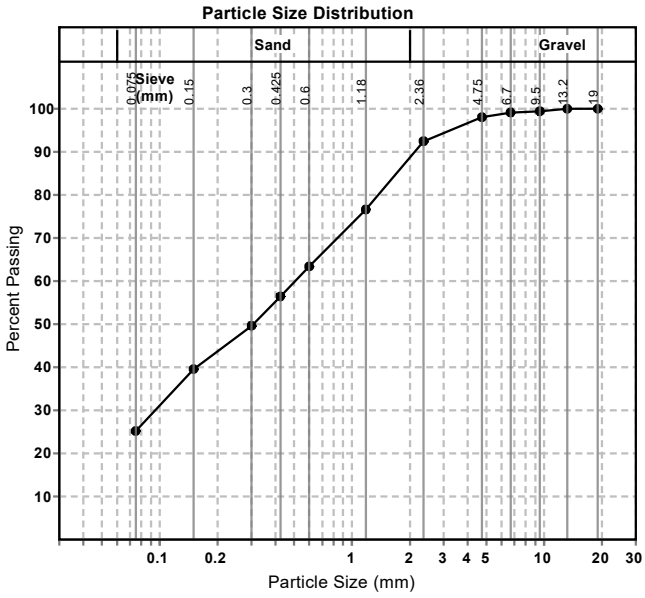
Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Sample Number: 2352-S6
Date Sampled: 24/01/2025
Dates Tested: 05/02/2025 - 14/02/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **SW Flank 2022 Air Dry, Depth: 0.00m**
Lot No: **Sample ID S6**
Material: SM - silty SAND, trace gravel, pale grey, fine to coarse grained, low plasticity, gravel 8%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
19 mm	**100**			0		
13.2 mm	**100**			0		
9.5 mm	**99**			1		
6.7 mm	**99**			0		
4.75 mm	**98**			1		
2.36 mm	**92**			6		
1.18 mm	**77**			16		
0.6 mm	**63**			13		
0.425 mm	**56**			7		
0.3 mm	**50**			7		
0.15 mm	**40**			10		
0.075 mm	**25**			14		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	0.7		

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	18		
Plastic Limit (%)	16		
Plasticity Index (%)	**2**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**1.0**		
Cracking Crumbling Curling	Cracking		



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Material Test Report

Report Number: **GSSW2352-1**
Issue Number: 1
Date Issued: 14/02/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: 10-12 POINT VIEW ROAD
Project Location: McCRAE
Client Reference: PSM5665
Work Request: 22410
Dates Tested: 05/02/2025 - 06/02/2025

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Moisture Content AS 1289 2.1.1

Sample Number	Sample Location	Moisture Content (%)	Min	Max	Material
2352-S1	RILL/Consolidated waste on slope, Depth: 0.00m	8.9 %	**	**	clayey/silty SAND, trace gravel, pale grey, fine to coarse grained, low to medium plasticity, gravel 2%.
2352-S2	On LHS/NE Slope, Depth: 0.00m	19.0 %	**	**	clayey/silty SAND, trace gravel, pale grey and brown, fine to coarse grained, low to medium plasticity, gravel 4%.
2352-S3	Lower flank of RILL on RHS/SW Slope, Depth: 0.00m	15.9 %	**	**	clayey/silty SAND, trace gravel, pale grey, fine to coarse grained, low to medium plasticity, gravel 2%.
2352-S4	Upper RHS/SW Slope, Gum Tree/Scarp, Depth: 0.00m	34.0 %	**	**	CH - sandy CLAY, trace gravel, pale grey mottled brown, high plasticity, sand 33% fine to coarse grained, gravel 1%.
2352-S5	S4 Upper, Depth: 0.00m	27.3 %	**	**	sandy CLAY/SILT, trace gravel, pale grey, medium to high plasticity, sand 56% fine to coarse grained, gravel 2%.
2352-S6	SW Flank 2022 Air Dry, Depth: 0.00m	0.7 %	**	**	SM - silty SAND, trace gravel, pale grey, fine to coarse grained, low plasticity, gravel 8%.

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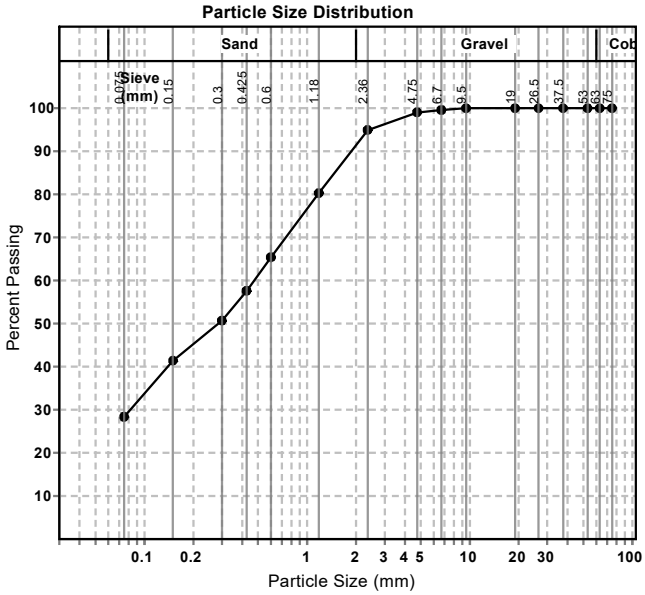
Approved Signatory: Brent Elliott
Laboratory Manager
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-2**
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S7
Date Sampled: 17/02/2025
Dates Tested: 11/03/2025 - 21/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH03, Depth: 2.70m - 4.00m**
Material: clayey/silty SAND, trace gravel, fine to coarse, low to medium plasticity, gravel 5%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
75 mm	**100**			0		
63 mm	**100**			0		
53 mm	**100**			0		
37.5 mm	**100**			0		
26.5 mm	**100**			0		
19 mm	**100**			0		
9.5 mm	**100**			0		
6.7 mm	**100**			0		
4.75 mm	**99**			1		
2.36 mm	**95**			4		
1.18 mm	**80**			15		
0.6 mm	**65**			15		
0.425 mm	**58**			8		
0.3 mm	**51**			7		
0.15 mm	**41**			9		
0.075 mm	**28**			13		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	4.7		



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Report Number: **GSSW2352-2**
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

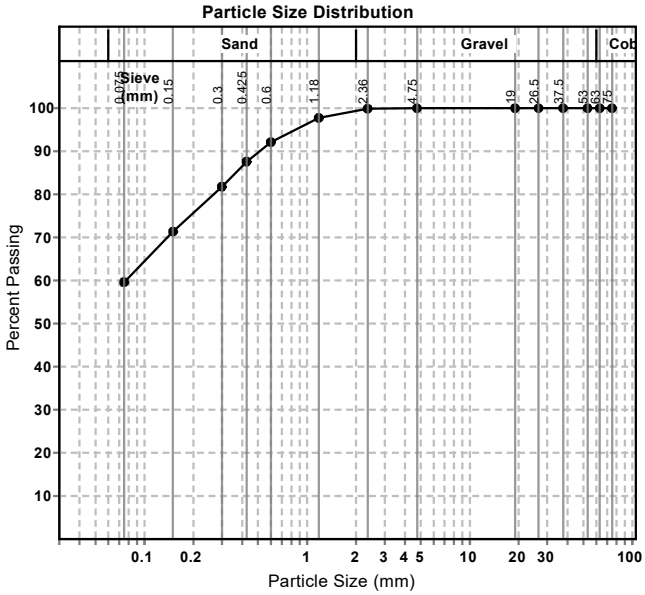
Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S8
Date Sampled: 17/02/2025
Dates Tested: 11/03/2025 - 24/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH03, Depth: 7.20m - 8.00m**
Material: CL - sandy CLAY, low plasticity, sand 40% fine to coarse grained.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
75 mm	**100**			0		
63 mm	**100**			0		
53 mm	**100**			0		
37.5 mm	**100**			0		
26.5 mm	**100**			0		
19 mm	**100**			0		
4.75 mm	**100**			0		
2.36 mm	**100**			0		
1.18 mm	**98**			2		
0.6 mm	**92**			6		
0.425 mm	**88**			5		
0.3 mm	**82**			6		
0.15 mm	**71**			10		
0.075 mm	**60**			12		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	9.3		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	27		
Plastic Limit (%)	12		
Plasticity Index (%)	**15**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**4.0**		
Cracking Crumbling Curling	Cracking		



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Report Number: **GSSW2352-2**
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

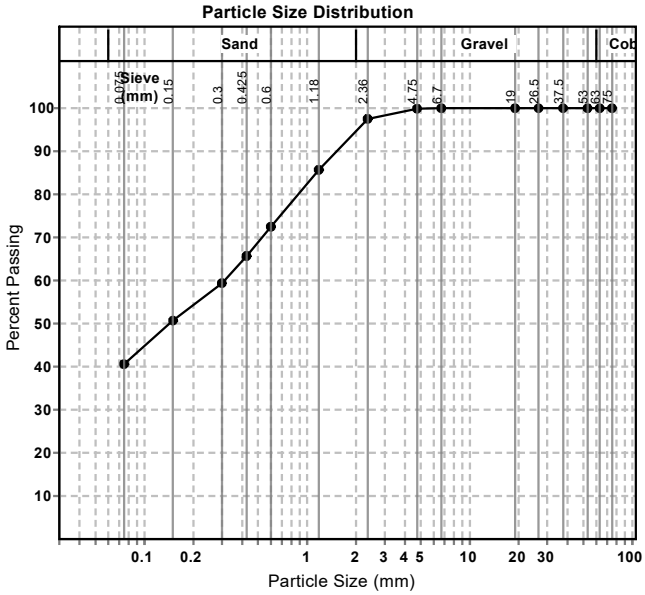
Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S9
Date Sampled: 17/02/2025
Dates Tested: 11/03/2025 - 25/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH03, Depth: 10.80m - 11.50m**
Material: CI - sandy CLAY, trace gravel, medium plasticity, sand 57% fine to coarse grained, gravel 2%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
6.7 mm	**100**			0		
4.75 mm	**100**			0		
2.36 mm	**98**			2		
1.18 mm	**86**			12		
0.6 mm	**72**			13		
0.425 mm	**66**			7		
0.3 mm	**59**			6		
0.15 mm	**51**			9		
0.075 mm	**41**			10		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	13.7		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	37		
Plastic Limit (%)	16		
Plasticity Index (%)	**21**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**7.0**		
Cracking Crumbling Curling	Curling		



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WORLD RECOGNISED ACCREDITATION

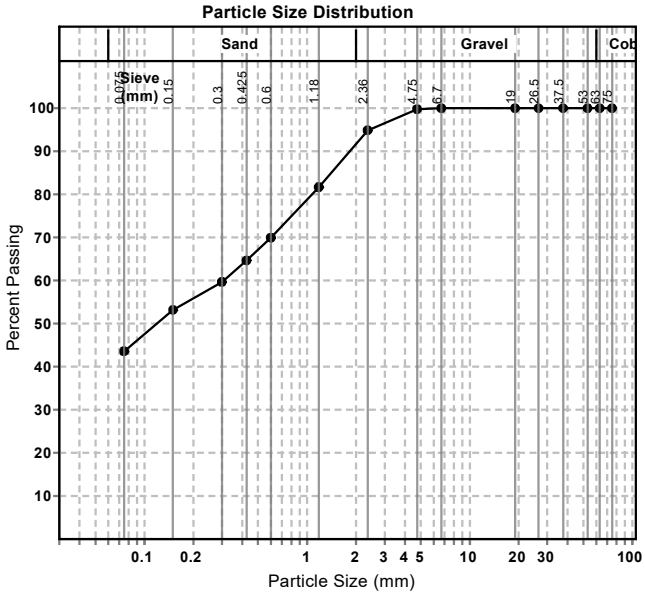
Approved Signatory: Brent Elliott
Laboratory Manager
NATA Accredited Laboratory Number: 20109

Report Number: **GSSW2352-2**
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S10
Date Sampled: 17/02/2025
Dates Tested: 11/03/2025 - 25/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH03, Depth: 14.75m - 14.85m**
Material: sandy CLAY/SILT, trace gravel, low to medium plasticity, sand 51% fine to coarse grained, gravel 5%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
6.7 mm	**100**			0		
4.75 mm	**100**			0		
2.36 mm	**95**			5		
1.18 mm	**82**			13		
0.6 mm	**70**			12		
0.425 mm	**65**			5		
0.3 mm	**60**			5		
0.15 mm	**53**			6		
0.075 mm	**44**			10		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	12.7		



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Material Test Report

Ground Science South West
Geotechnical & Environmental Consultants

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8 Freedman Street North Geelong Vic 3215
Phone: (03) 5282 1566
Email: chrism@groundsciencesw.com.au

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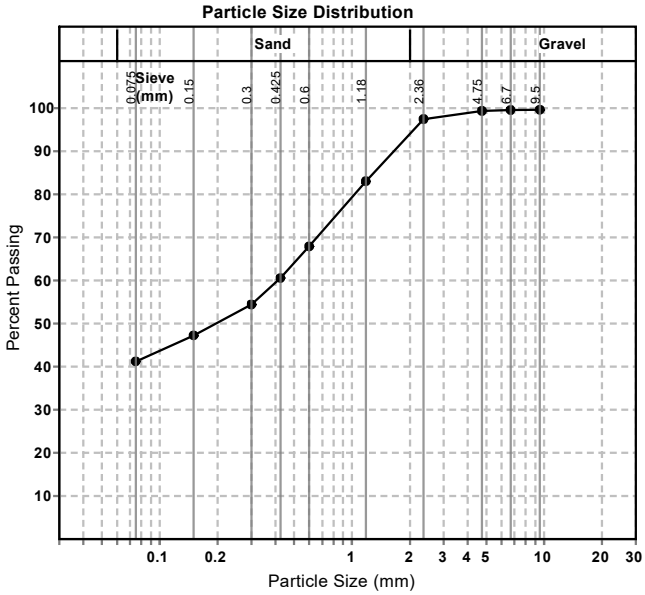
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S12
Date Sampled: 18/02/2025
Dates Tested: 11/03/2025 - 18/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH03, Depth: 21.40m - 21.55m**
Material: sandy CLAY/SILT, trace gravel, low to medium plasticity, sand 56% fine to coarse grained, gravel 3%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
9.5 mm	**100**			0		
6.7 mm	**100**			0		
4.75 mm	**99**			0		
2.36 mm	**97**			2		
1.18 mm	**83**			14		
0.6 mm	**68**			15		
0.425 mm	**61**			7		
0.3 mm	**54**			6		
0.15 mm	**47**			7		
0.075 mm	**41**			6		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	11.5		



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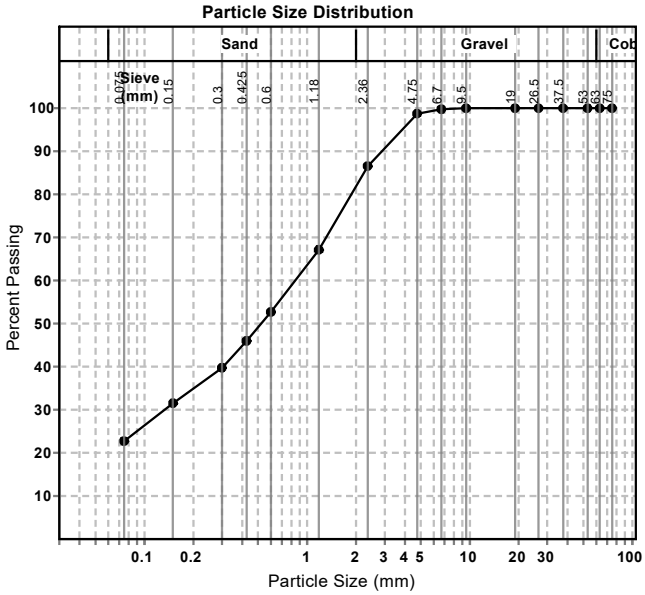
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S13
Date Sampled: 18/02/2025
Dates Tested: 11/03/2025 - 25/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH03, Depth: 23.30m - 23.40m**
Material: clayey/silty SAND, trace gravel, fine to coarse grained, low to medium plasticity, gravel 13% fine.

Particle Size Distribution (AS1141.11.1)						
Sample Washing	Sample was Washed					
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
9.5 mm	**100**			0		
6.7 mm	**100**			0		
4.75 mm	**99**			1		
2.36 mm	**87**			12		
1.18 mm	**67**			19		
0.6 mm	**53**			14		
0.425 mm	**46**			7		
0.3 mm	**40**			6		
0.15 mm	**31**			8		
0.075 mm	**23**			9		

Moisture Content (1289.2.1.1)		Min	Max
Moisture Content (%)	5.5		



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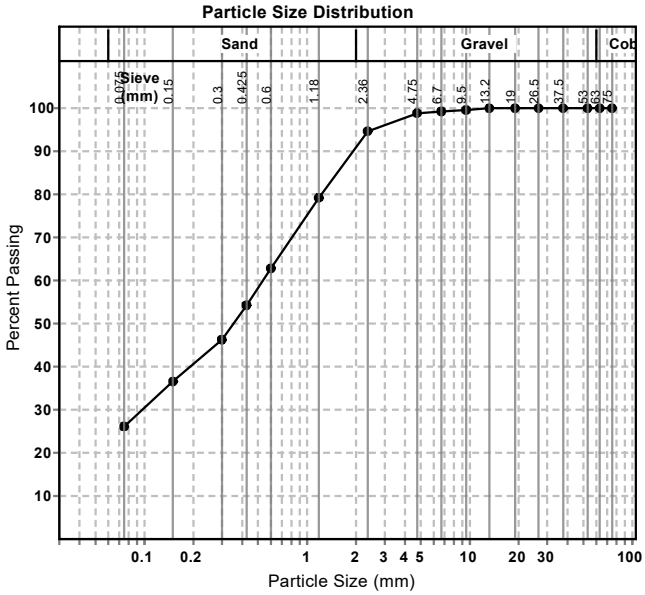
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S14
Date Sampled: 19/02/2025
Dates Tested: 11/03/2025 - 25/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH01, Depth: 1.40m - 2.30m**
Material: clayey/silty SAND, trace gravel, fine to coarse grained, low to medium plasticity, gravel 5%.

Particle Size Distribution (AS1141.11.1)						
Sample Washing	Sample was Washed					
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
13.2 mm	**100**			0		
9.5 mm	**100**			0		
6.7 mm	**99**			0		
4.75 mm	**99**			0		
2.36 mm	**95**			4		
1.18 mm	**79**			15		
0.6 mm	**63**			16		
0.425 mm	**54**			9		
0.3 mm	**46**			8		
0.15 mm	**37**			10		
0.075 mm	**26**			10		

Moisture Content (1289.2.1.1)		Min	Max
Moisture Content (%)	4.4		



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Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

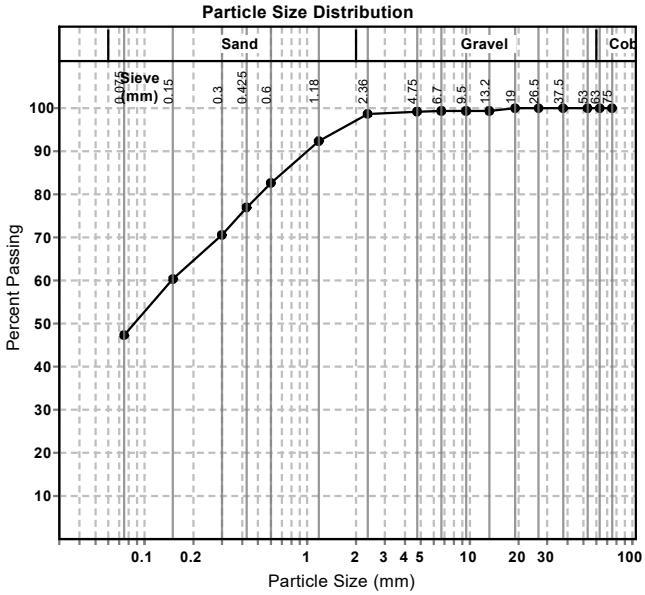
Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S15
Date Sampled: 19/02/2025
Dates Tested: 11/03/2025 - 24/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH01, Depth: 7.20m - 8.00m**
Material: CL - sandy CLAY, trace gravel, low plasticity, sand 52% fine to coarse grained, gravel 1%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
19 mm	**100**			0		
13.2 mm	**99**			1		
9.5 mm	**99**			0		
6.7 mm	**99**			0		
4.75 mm	**99**			0		
2.36 mm	**99**			1		
1.18 mm	**92**			6		
0.6 mm	**83**			10		
0.425 mm	**77**			6		
0.3 mm	**71**			6		
0.15 mm	**60**			10		
0.075 mm	**47**			13		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	11.3		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	32		
Plastic Limit (%)	12		
Plasticity Index (%)	**20**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**6.0**		
Cracking Crumbling Curling	Cracking		



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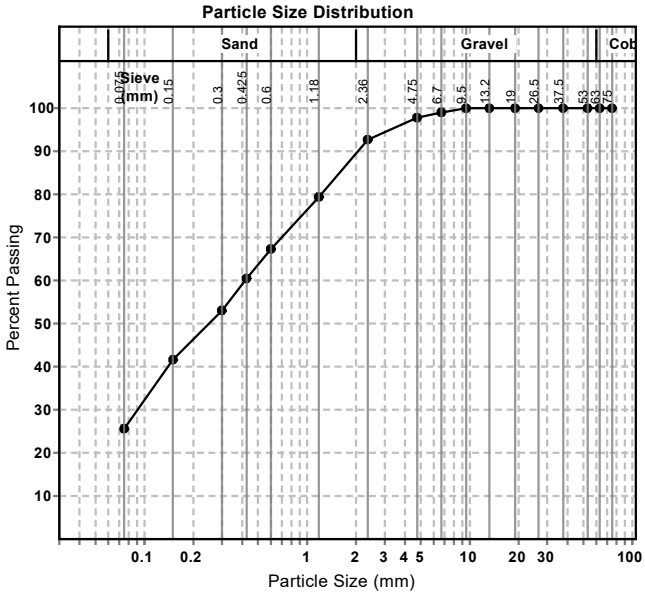
Report Number: **GSSW2352-2**
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S18
Date Sampled: 21/02/2025
Dates Tested: 11/03/2025 - 21/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH02, Depth: 1.60m - 2.60m**
Material: clayey/silty SAND, trace gravel, fine to coarse grained, low to medium plasticity, gravel 7%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
13.2 mm	**100**			0		
9.5 mm	**100**			0		
6.7 mm	**99**			1		
4.75 mm	**98**			1		
2.36 mm	**93**			5		
1.18 mm	**79**			13		
0.6 mm	**67**			12		
0.425 mm	**60**			7		
0.3 mm	**53**			7		
0.15 mm	**42**			11		
0.075 mm	**26**			16		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	1.4		



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Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

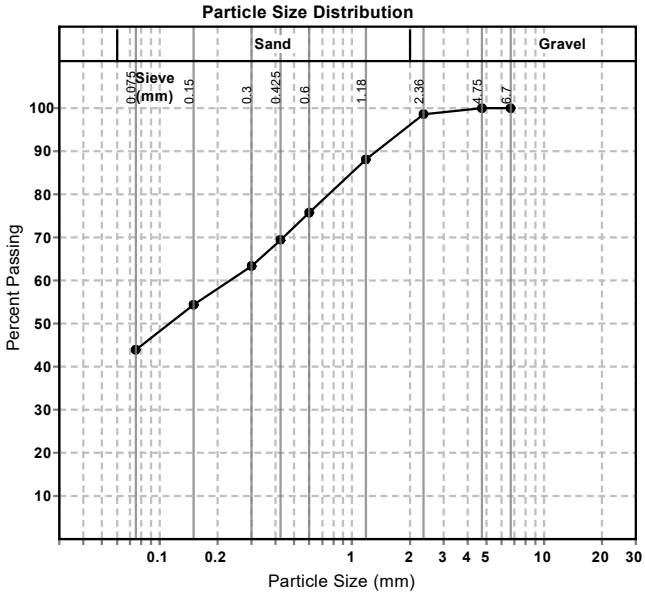
Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S19
Date Sampled: 21/02/2025
Dates Tested: 11/03/2025 - 24/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH02, Depth: 4.20m - 5.00m**
Material: CL - sandy CLAY, trace gravel, low plasticity, sand 55% fine to coarse grained, gravel 1%.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
6.7 mm	**100**			0		
4.75 mm	**100**			0		
2.36 mm	**99**			1		
1.18 mm	**88**			11		
0.6 mm	**76**			12		
0.425 mm	**69**			6		
0.3 mm	**63**			6		
0.15 mm	**54**			9		
0.075 mm	**44**			10		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	3.9		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	25		
Plastic Limit (%)	12		
Plasticity Index (%)	**13**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**4.5**		
Cracking Crumbling Curling	Cracking		



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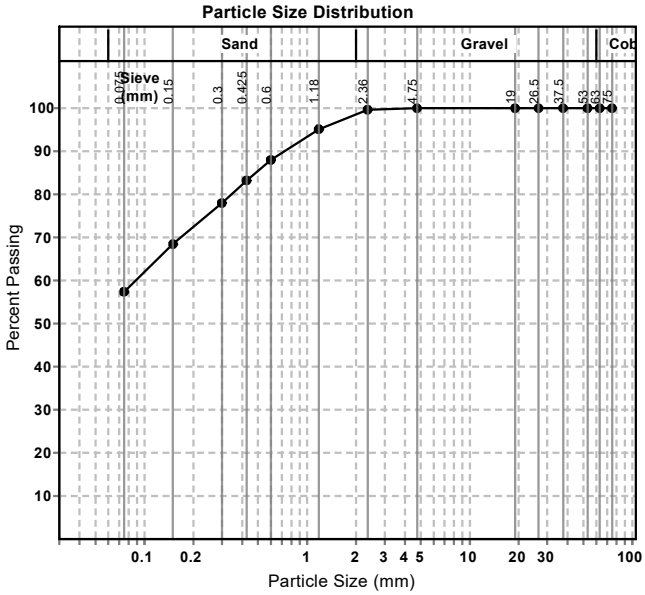
Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S20
Date Sampled: 21/02/2025
Dates Tested: 11/03/2025 - 24/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH02, Depth: 6.70m - 7.50m**
Material: CI - sandy CLAY, medium plasticity, sand 43% fine to coarse grained.

Particle Size Distribution (AS1289 3.6.1)						
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
4.75 mm	**100**			0		
2.36 mm	**100**			0		
1.18 mm	**95**			5		
0.6 mm	**88**			7		
0.425 mm	**83**			5		
0.3 mm	**78**			5		
0.15 mm	**68**			10		
0.075 mm	**57**			11		

Moisture Content (AS1289.2.1.1)		Min	Max
Moisture Content (%)	11.1		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	43		
Plastic Limit (%)	17		
Plasticity Index (%)	**26**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**9.0**		
Cracking Crumbling Curling	Curling		



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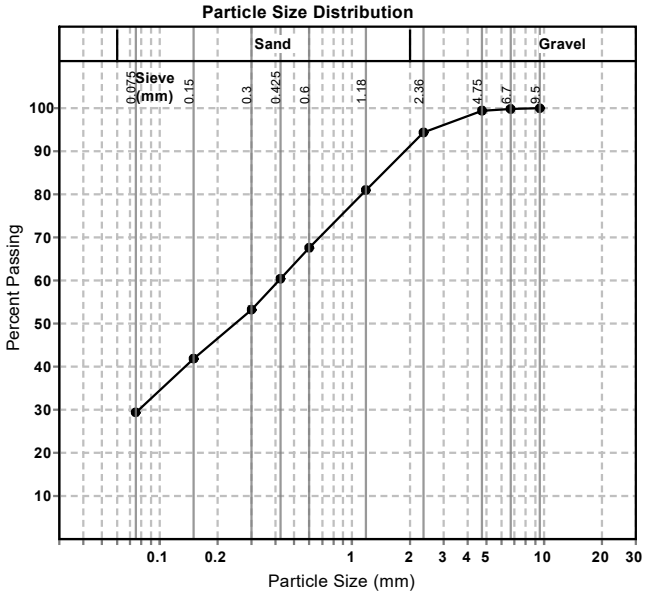
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S23
Date Sampled: 26/02/2025
Dates Tested: 11/03/2025 - 25/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH05, Depth: 2.60m - 3.60m**
Material: clayey/silty SAND, trace gravel, fine to coarse grained, low to medium plasticity, gravel 6%.

Particle Size Distribution (AS1141.11.1)						
Sample Washing	Sample was Washed					
Sieve	Passed %	Passing Limits		Retained %	Retained Limits	
9.5 mm	**100**			0		
6.7 mm	**100**			0		
4.75 mm	**99**			0		
2.36 mm	**94**			5		
1.18 mm	**81**			13		
0.6 mm	**68**			13		
0.425 mm	**60**			7		
0.3 mm	**53**			7		
0.15 mm	**42**			11		
0.075 mm	**29**			12		

Moisture Content (1289.2.1.1)		Min	Max
Moisture Content (%)	13.0		



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Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S24
Date Sampled: 26/02/2025
Dates Tested: 11/03/2025 - 24/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH04, Depth: 3.10m - 3.60m**
Material: SILT, low plasticity.

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	16		
Plastic Limit (%)	14		
Plasticity Index (%)	**2**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**1.0**		
Cracking Crumbling Curling	Cracking		

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Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Sample Number: 2352-S25
Date Sampled: 26/02/2025
Dates Tested: 11/03/2025 - 24/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received
Sample Location: **BH04, Depth: 5.00m - 5.80m**
Material: CLAY, low plasticity.

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	30		
Plastic Limit (%)	13		
Plasticity Index (%)	**17**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**5.5**		
Cracking Crumbling Curling	Cracking & Curling		

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Material Test Report

Report Number: **GSSW2352-2**
Issue Number: 1
Date Issued: 25/03/2025
Client: PELLS SULLIVAN MEYNINK (PSM)

Contact: Dane Pope
Project Number: GSSW2352
Project Name: McCRAE LANDSLIDE
Project Location: 10-12 POINT VIEW ROAD, McCRAE
Client Reference: PSM5665
Work Request: 22767
Dates Tested: 11/03/2025 - 12/03/2025
Sampling Method: Sampled by Client - Tested as Received
The results apply to the sample as received

Ground Science South West
Geotechnical & Environmental Consultants

Ground Science South West Pty Ltd
8 Freedman Street North Geelong Vic 3215
Phone: (03) 5282 1566
Email: chrism@groundsciencesw.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

NATA
WORLD RECOGNISED ACCREDITATION

Approved Signatory: Brent Elliott
Laboratory Manager
NATA Accredited Laboratory Number: 20109

Moisture Content AS 1289 2.1.1

Sample Number	Sample Location	Moisture Content (%)	Min	Max	Material
2352-S10	BH03, Depth: 14.75m - 14.85m	12.7 %	**	**	sandy CLAY/SILT, trace gravel, low to medium plasticity, sand 51% fine to coarse grained, gravel 5%.
2352-S11	BH03, Depth: 15.50m - 15.60m	5.9 %	**	**	**
2352-S12	BH03, Depth: 21.40m - 21.55m	11.5 %	**	**	sandy CLAY/SILT, trace gravel, low to medium plasticity, sand 56% fine to coarse grained, gravel 3%.
2352-S13	BH03, Depth: 23.30m - 23.40m	5.5 %	**	**	clayey/silty SAND, trace gravel, fine to coarse grained, low to medium plasticity, gravel 13% fine.
2352-S16	BH01, Depth: 17.80m - 17.90m	0.6 %	**	**	**
2352-S17	BH01, Depth: 22.90m - 23.00m	0.6 %	**	**	**
2352-S22	BH05, Depth: 1.60m - 2.30m	10.0 %	**	**	**
2352-S26	BH04, Depth: 15.00m - 15.10m	3.4 %	**	**	**

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Results relate only to the items tested/sampled.

Appendix F
Surface Water Testing – Detailed Laboratory Reports

MSC.5007.0004.0264

DRAFT

Legend
- Surface Water Sampling
- Cadastre
- Roads

JBS&G

Job No: 68664	
Client: PSM	
Version: DRAFT	Date: 24-Jan-2025
Drawn By: RT	Checked By: JH
Scale 1:2,000	

0 25 50
metres

Coord. Sys. GDA2020 MGA Zone 55

Point Nepean Rd
McCrae, Victoria

SURFACE WATER SAMPLING

FIGURE 2

File Name: C:\Users\rtandon\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\PSM\68664_McCrae\GIS\02_MapProjects\68664_SurfaceWaterSampling.aprx; Name:68664_01_Surface Water Sampling
Reference: www.nearmap.com - Imagery Date: 30/12/2024

MSC.5007.0004.0265

DRAFT

Chain of Custody

PROJECT NO.: 68664	LABORATORY BATCH NO.:
PROJECT NAME: Land Slide Water Testing	SAMPLERS: JH
DATE NEEDED BY: 72 HR	QC LEVEL: NEPM (2013)
PHONE: Melbourne 03 9642 0599	
SEND REPORT & INVOICE TO: (1) adminvic@jbsg.com.au; (2) jbsglabresults@jbsg.com.au ; (3) jphall@jbsg.com.au; (4) lbell@jbsg.com.au	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

#1179041
20/1/25

SAMPLE ID	MATRIX	DATE	TYPE & PRESERVATIVE	B11B Suite	M8 Suite	pH	Fluoride	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
SW01	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
SW02	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
SW03	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
SW04	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
SW05	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
DUP01	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
DUP02	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
DUP03	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x			
SPLIT01	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x	PLEASE FWD TO ENVIROLAB		
SPLIT02	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x	PLEASE FWD TO ENVIROLAB		
SPLIT03	Water	20/01/24	1 x green,1 x red,1 x purple	x	x	x	x	PLEASE FWD TO ENVIROLAB		

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: JH DATE: 20/01/2025 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; I = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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DRAFT

Outlook

Re: 68664 - Updated COC

From Karl Bulow <Karl.Bulow@eurofinsanz.com>
Date Mon 20/01/25 4:01 PM
To Jake P. Hall <jphall@jbsg.com.au>; Harry Bacalis <Harry.Bacalis@eurofinsanz.com>; SH_AU_CAU001_EnviroSampleVic <EnviroSampleVic@eurofinsanz.com>

Verified Sender: This email is from an internal and/or verified domain which passed security verifications. Remember to still be cautious with personal data and follow company policies.

Thanks Jake.

@SH_AU_CAU001_EnviroSampleVic - Please use this updated COC for report **68664 - 72 hour TAT.**

Kind Regards,

Karl Bulow
Analytical Services Manager SA

Eurofins | Environment Testing
6 Monterey Rd
Dandenong South, VIC, 3175

Mobile : 0477 574 867
Email : karl.bulow@eurofinsanz.com

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From: Jake P. Hall <jphall@jbsg.com.au>
Sent: Monday, January 20, 2025 3:58 PM
To: Karl Bulow <Karl.Bulow@eurofinsanz.com>; Harry Bacalis <Harry.Bacalis@eurofinsanz.com>
Cc: SH_AU_CAU001_EnviroSampleVic <EnviroSampleVic@eurofinsanz.com>
Subject: RE: 68664 - Updated COC

Unverified Sender: The sender of this email has not been verified. Review the content of the message carefully and verify the identity of the sender before acting on this email: replying, opening attachments or clicking links.

Hi Karl,

Please see attached.

Cheers,

Jake Hall | Senior Project Scientist | JBS&G
Wurundjeri Country | Level 19, 31 Queen Street, Melbourne, VIC

T: 03 9642 0599 | M: 0498 733 092 | E: jphall@jbsg.com.au | W: jbsg.com.au | L: LinkedIn

Exceptional Outcomes

From: Karl Bulow <Karl.Bulow@eurofinsanz.com>
Sent: Monday, 20 January 2025 3:45 PM
To: Jake P. Hall <jphall@jbsg.com.au>; Harry Bacalis <Harry.Bacalis@eurofinsanz.com>
Cc: SH_AU_CAU001_EnviroSampleVic <EnviroSampleVic@eurofinsanz.com>
Subject: Re: 68664 - Updated COC

[EXTERNAL EMAIL] Stop and think before opening attachments, clicking or responding.

Hi Jake,

If possible, would you be able to send an updated COC attachment that includes Fluoride added. Mainly so we can send that to enviro-lab as well so they don't miss it.

Kind Regards,

Karl Bulow
Analytical Services Manager SA

Eurofins | Environment Testing
6 Monterey Rd
Dandenong South, VIC, 3175

Mobile : 0477 574 867
Email : karl.bulow@eurofinsanz.com

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From: Jake P. Hall <jphall@jbsg.com.au>
Sent: Monday, January 20, 2025 3:40 PM
To: Harry Bacalis <Harry.Bacalis@eurofinsanz.com>
Cc: Karl Bulow <Karl.Bulow@eurofinsanz.com>
Subject: 68664 - Updated COC

Unverified Sender: The sender of this email has not been verified. Review the content of the message carefully and verify the identity of the sender before acting on this email: replying, opening attachments or clicking links.

Hi Harry,

Hope you are well.

I dropped off some samples today (around 2:00pm) that are on a 72hr TAT.

Can I please add **Fluoride** analysis to all samples (including those being forwarded onto Envirolab)

DRAFT

Chain of Custody

PROJECT NO (Esdat Ref.): 68664
PROJECT NAME: Land Slide Water Quality
DATE NEEDED BY: 72 Hr TAT
PHONE: Melbourne 03 9642 0599

LABORATORY BATCH NO.:
SAMPLERS: JH
QC LEVEL: NEPM (2013)

SEND REPORT & INVOICE TO: (1) adminvic@jbsg.com.au; (2) jbsglabresults@jbsg.com.au; (3) jphall@jbsg.com.au; (4) t.bell@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

*Cations / Anions #3 Alkali Metals (Na, K, Ca, Mg), NH3, NO3 (as N), Alkalinity (CO3, HCO3) (as CaCO3), Cl, SO4 (as SO4), EC, TDS

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	B11B Suite*	M8 Suite	pH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
SW01	Water	20/1/25		1x inorganic, 1x metal, 1x Nutrient		X	X	X			
SW02											
SW03											
SW04											
SW05											
DUP01											
DUP02											
DUP03											
SPLIT01											
SPLIT02											
SPLIT03											

PLEASE FWD TO ENVIROLAB

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 20/1/25 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

20/1/25 2:1 VE2227

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Chain of Custody

PROJECT NO (Esdat Ref.): 68664

PROJECT NAME: Land Slide Water Quality

DATE NEEDED BY: 72 Hr TAT

PHONE: Melbourne 03 9642 0599

LABORATORY BATCH NO.:

SAMPLERS: JH

QC LEVEL: NEPM (2013)

SEND REPORT & INVOICE TO: (1) adminvic@jbsg.com.au; (2) jbsglabresults@jbsg.com.au; (3) jphall@jbsg.com.au; (4) L.hall.....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

*Cations / Anions #3 Alkali Metals (Na, K, Ca, Mg), NH3, NO3 (as N), Alkalinity (CO3, HCO3) (as CaCO3), Cl, SO4 (as SO4), EC, TDS

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	B11B Suite*	M8 Suite	pH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
SW01	Water	20/1/25		1x inorganic, 1x metal, 1x Nutrient		X	X	X			
SW02											
SW03											
SW04											
SW05											
DUP01											
DUP02											
DUP03											
SPLIT01											
SPLIT02											
SPLIT03											

PLEASE FWD TO ENVIROLAB

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 20/1/25 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd ; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

20.1.25

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Chain of Custody

JBS&G

PROJECT NO.: 68664	LABORATORY BATCH NO.:
PROJECT NAME: Land Slide Water Testing	SAMPLERS: JH
DATE NEEDED BY: 72 HR	QC LEVEL: NEPM (2013)
PHONE: Melbourne 03 9642 0599	
SEND REPORT & INVOICE TO: (1) adminvic@jbsg.com.au; (2) jbsglabresults@jbsg.com.au ; (3) jphall@jbsg.com.au; (4) lbell@jbsg.com.au	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE		TYPE & PRESERVATIVE		B11B Suite	M8 Suite	pH	Fluoride													TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
SW01	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
SW02	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
SW03	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
SW04	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
SW05	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
DUP01	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
DUP02	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
DUP03	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x															
SPLIT01	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x				PLEASE FWD TO ENVIROLAB											
SPLIT02	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x				PLEASE FWD TO ENVIROLAB											
SPLIT03	Water	20/01/24		1 x green,1 x red,1 x purple		x	x	x	x				PLEASE FWD TO ENVIROLAB											

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: JH DATE: 20/01/2025 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

JBS & G Australia (VIC) P/L
PO Box 3166
Norwood
SA 5067

Attention: **Jake Hall**

Report **1179041-W**
Project name LAND SLIDE WATER TESTING
Project ID 68664
Received Date Jan 20, 2025

Client Sample ID			**SW01**	**SW02**	**SW03**	**SW04**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**M25-Ja0027677**	**M25-Ja0027678**	**M25-Ja0027679**	**M25-Ja0027680**
Date Sampled			**Jan 20, 2025**	**Jan 20, 2025**	**Jan 20, 2025**	**Jan 20, 2025**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.02	0.79	0.48	0.62
Chloride	1	mg/L	19	81	90	89
Conductivity (at 25 °C)	10	uS/cm	140	400	480	440
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	0.27	< 0.02	< 0.4	< 0.4
pH (at 25 °C)	0.1	pH Units	6.8	6.9	7.2	7.4
Sulphate (as SO4)	5	mg/L	< 5	19	27	20
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	100	1400	1400	1100
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	41	79	95	93
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium	0.5	mg/L	9.6	8.4	11	10
Magnesium	0.5	mg/L	1.6	7.7	8.2	7.6
Potassium	0.5	mg/L	1.2	2.5	3.3	2.8
Sodium	0.5	mg/L	11	55	64	57
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.004	0.006	0.006	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Zinc (filtered)	0.005	mg/L	0.008	< 0.005	< 0.005	< 0.005

MSC.5007.0004.0271

DRAFT

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Client Sample ID			SW05	DUP01	DUP02	DUP03
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M25-Ja0027681	M25-Ja0027682	M25-Ja0027683	M25-Ja0027684
Date Sampled			Jan 20, 2025	Jan 20, 2025	Jan 20, 2025	Jan 20, 2025
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.42	0.44	0.52	0.45
Chloride	1	mg/L	240	82	92	220
Conductivity (at 25 °C)	10	uS/cm	1200	420	480	1200
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	< 0.4	< 0.4	< 0.4	< 0.02
pH (at 25 °C)	0.1	pH Units	8.0	6.9	7.3	8.0
Sulphate (as SO4)	5	mg/L	100	18	26	100
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	640	2000	1800	1000
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	190	88	91	220
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium	0.5	mg/L	41	8.3	11	42
Magnesium	0.5	mg/L	21	7.8	8.1	21
Potassium	0.5	mg/L	14	2.6	3.4	14
Sodium	0.5	mg/L	160	56	63	150
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	0.007
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	0.002	0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	0.008	0.006	0.005	0.008
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.002	0.001	0.001	0.002
Zinc (filtered)	0.005	mg/L	0.009	< 0.005	< 0.005	0.008

DRAFT

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B11B			
Ammonia (as N)	Melbourne	Jan 21, 2025	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Chloride	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Conductivity (at 25 °C)	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-INO-4030 Conductivity			
Nitrate (as N)	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Sulphate (as SO4)	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
Alkalinity (speciated)	Melbourne	Jan 21, 2025	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Alkali Metals	Melbourne	Jan 21, 2025	180 Days
- Method: LTM-MET-3010 Alkali Metals Sulfur Silicon Phosphorus by ICP-AES			
Fluoride	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-INO-4270 Anions by Ion Chromatography			
pH (at 25 °C)	Melbourne	Jan 21, 2025	6 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Metals M8 filtered	Melbourne	Jan 21, 2025	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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web: www.eurofins.com.au
email: EnviroSales@eurofinsanz.com

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Company Name: JBS & G Australia (VIC) P/L
Address: PO Box 3166
Norwood
SA 5067

Project Name: LAND SLIDE WATER TESTING
Project ID: 68664

Order No.:
Report #: 1179041
Phone: 03 9642 0599
Fax:

Received: Jan 20, 2025 3:58 PM
Due: Jan 23, 2025
Priority: 3 Day
Contact Name: Jake Hall

Eurofins Analytical Services Manager : Harry Bacalis

Sample Detail						Fluoride	pH (at 25 °C)	Metals M8 filtered	Eurofins Suite B11B
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	SW01	Jan 20, 2025		Water	M25-Ja0027677	X	X	X	X
2	SW02	Jan 20, 2025		Water	M25-Ja0027678	X	X	X	X
3	SW03	Jan 20, 2025		Water	M25-Ja0027679	X	X	X	X
4	SW04	Jan 20, 2025		Water	M25-Ja0027680	X	X	X	X
5	SW05	Jan 20, 2025		Water	M25-Ja0027681	X	X	X	X
6	DUP01	Jan 20, 2025		Water	M25-Ja0027682	X	X	X	X
7	DUP02	Jan 20, 2025		Water	M25-Ja0027683	X	X	X	X
8	DUP03	Jan 20, 2025		Water	M25-Ja0027684	X	X	X	X
Test Counts						8	8	8	8

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 . They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise state d, all soil/sediment/solid results are reported on a dry weight basis .
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion .
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notifi cation of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qu alified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2 -chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ppm: parts per million
µg/L: micrograms per litre
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit
Colour: Pt-Co Units (CU)

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a s olid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de -ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining t o this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment ; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range , not as RPD

Surrogate Recoveries: Recoveries must lie between 20 -130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sam ple batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results , a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data ; thus, it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25 °C)	uS/cm	< 10			10	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Fluoride	mg/L	< 0.5			0.5	Pass	
Method Blank							
Fluoride	mg/L	< 0.5			0.5	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Chloride	%	108			70-130	Pass	
Conductivity (at 25 °C)	%	98			70-130	Pass	
Sulphate (as SO4)	%	113			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	101			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	94			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	98			80-120	Pass	
Magnesium	%	99			80-120	Pass	
Potassium	%	97			80-120	Pass	

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Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium			%	97			80-120	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic (filtered)			%	94			80-120	Pass	
Cadmium (filtered)			%	93			80-120	Pass	
Chromium (filtered)			%	96			80-120	Pass	
Copper (filtered)			%	94			80-120	Pass	
Lead (filtered)			%	89			80-120	Pass	
Mercury (filtered)			%	91			80-120	Pass	
Nickel (filtered)			%	95			80-120	Pass	
Zinc (filtered)			%	95			80-120	Pass	
LCS - % Recovery									
Fluoride			%	73			70-130	Pass	
LCS - % Recovery									
Fluoride			%	82			70-130	Pass	
LCS - % Recovery									
Ammonia (as N)			%	80			70-130	Pass	
LCS - % Recovery									
Alkali Metals									
Calcium			%	93			80-120	Pass	
Magnesium			%	93			80-120	Pass	
Potassium			%	90			80-120	Pass	
Sodium			%	92			80-120	Pass	
LCS - % Recovery									
Ammonia (as N)			%	97			70-130	Pass	
LCS - % Recovery									
Alkali Metals									
Calcium			%	101			80-120	Pass	
Magnesium			%	100			80-120	Pass	
Potassium			%	97			80-120	Pass	
Sodium			%	98			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
				Result 1					
Sulphate (as SO4)	M25-Ja0027677	CP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M25-Ja0027677	CP	%	95			75-125	Pass	
Cadmium (filtered)	M25-Ja0027677	CP	%	93			75-125	Pass	
Chromium (filtered)	M25-Ja0027677	CP	%	95			75-125	Pass	
Copper (filtered)	M25-Ja0027677	CP	%	94			75-125	Pass	
Lead (filtered)	M25-Ja0027677	CP	%	89			75-125	Pass	
Mercury (filtered)	M25-Ja0027677	CP	%	93			75-125	Pass	
Nickel (filtered)	M25-Ja0027677	CP	%	93			75-125	Pass	
Zinc (filtered)	M25-Ja0027677	CP	%	96			75-125	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M25-Ja0027678	CP	%	88			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M25-Ja0027678	CP	%	93			75-125	Pass	
Magnesium	M25-Ja0027678	CP	%	91			75-125	Pass	
Sodium	M25-Ja0027678	CP	%	88			75-125	Pass	
Spike - % Recovery									

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Ammonia (as N)	M25-Ja0027684	CP	%	74			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M25-Ja0025136	NCP	mg/L	5200	5200	<1	30%	Pass	
Conductivity (at 25 °C)	M25-Ja0024891	NCP	uS/cm	33	36	7.6	30%	Pass	
pH (at 25 °C)	M25-Ja0024891	NCP	pH Units	5.0	5.0	pass	30%	Pass	
Sulphate (as SO4)	M25-Ja0025136	NCP	mg/L	1200	1200	1.0	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	M25-Ja0027677	CP	mg/L	100	130	25	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	M25-Ja0027677	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M25-Ja0027677	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M25-Ja0027677	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M25-Ja0027677	CP	mg/L	0.004	0.005	3.0	30%	Pass	
Lead (filtered)	M25-Ja0027677	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	M25-Ja0027677	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M25-Ja0027677	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M25-Ja0027677	CP	mg/L	0.008	0.009	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Fluoride	M25-Ja0027678	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M25-Ja0027678	CP	mg/L	8.4	8.3	1.0	30%	Pass	
Magnesium	M25-Ja0027678	CP	mg/L	7.7	7.8	<1	30%	Pass	
Potassium	M25-Ja0027678	CP	mg/L	2.5	2.5	<1	30%	Pass	
Sodium	M25-Ja0027678	CP	mg/L	55	55	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Fluoride	M25-Ja0027680	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M25-Ja0027683	CP	mg/L	0.52	0.43	18	30%	Pass	

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Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Karl Bulow	Analytical Services Manager
Mary Makarios	Senior Analyst-Inorganic
Vivian Wang	Senior Analyst-Metal

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Project Number: 68664 Project Name: Land Slide Water Quality Testing , 599 Point Nepean Road , PSM

JBS&G

				Metals & Metalloids								Non-Metallic Inorganics			Major Cations		
				Arsenic (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Lead (filtered)	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	Ammonia as N	Fluoride	Nitrate (as N)	Calcium	Potassium	Magnesium
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L
EQL				0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.005	0.01	0.5	0.02	0.5	0.5	0.5
Location Code	**Field ID**	**Date**	**Lab Report Number**														
SW01	SW01	20 Jan 2025	1179041	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	<0.001	0.008	0.02	<0.5	0.27	9.6	1.2	1.6
SW02	SW02	20 Jan 2025	1179041	<0.001	<0.0002	<0.001	0.006	<0.001	<0.0001	0.001	<0.005	0.79	<0.5	<0.02	8.4	2.5	7.7
SW03	SW03	20 Jan 2025	1179041	<0.001	<0.0002	<0.001	0.006	<0.001	<0.0001	0.001	<0.005	0.48	<0.5	<0.4	11	3.3	8.2
SW04	SW04	20 Jan 2025	1179041	<0.001	<0.0002	<0.001	0.005	<0.001	<0.0001	0.001	<0.005	0.62	<0.5	<0.4	10	2.8	7.6
SW05	SW05	20 Jan 2025	1179041	0.007	<0.0002	0.002	0.008	<0.001	<0.0001	0.002	0.009	0.42	<0.5	<0.4	41	14	21

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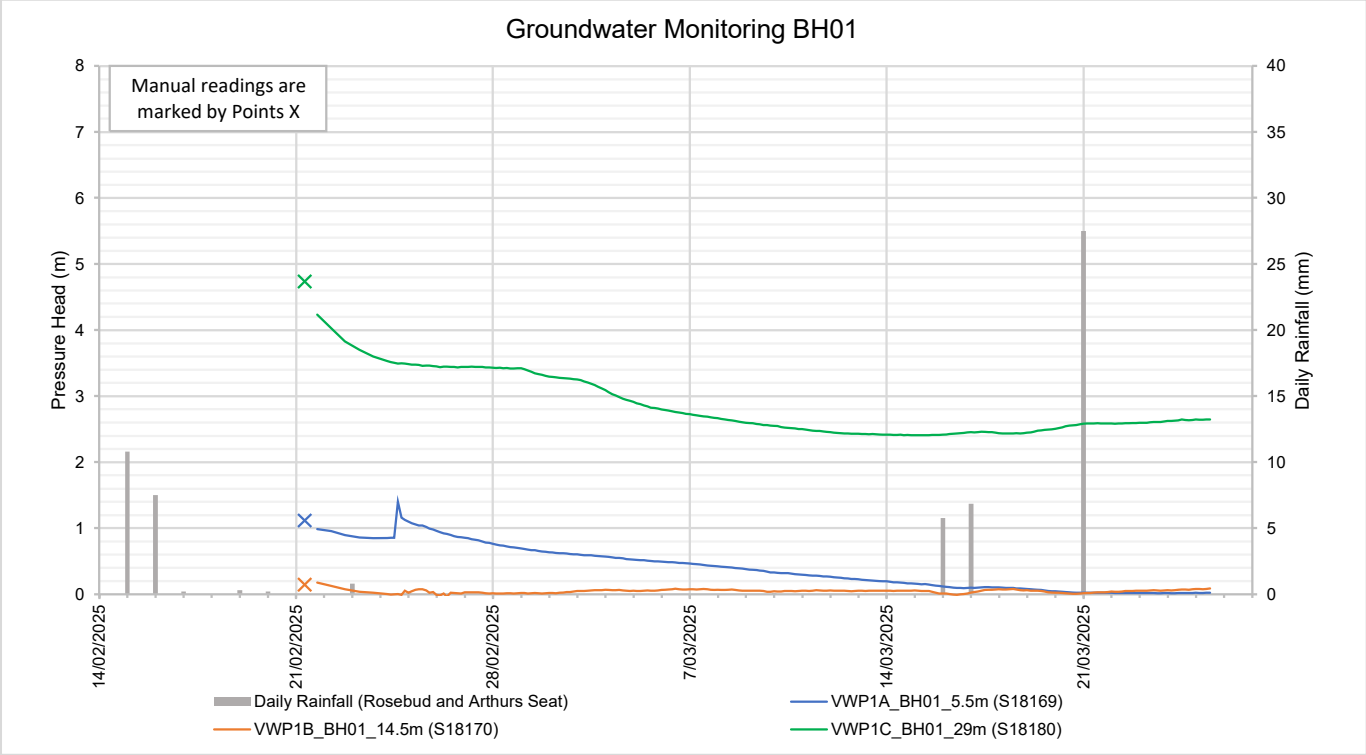
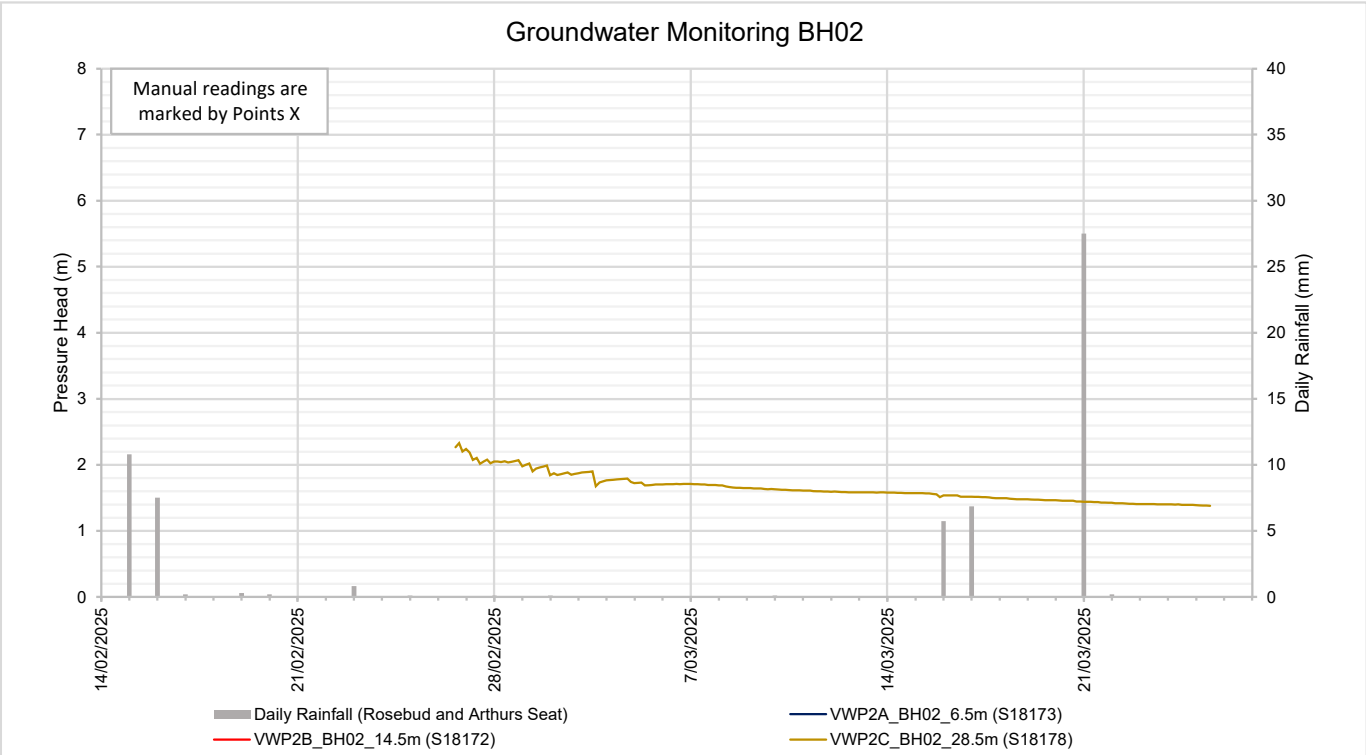
Project Number: 68664 Project Name: Land Slide Water Quality Testing , 599 Point Nepean Road , PSM

						Major Anions				Ionic Balance		Other
				Arsenic (filtered)	Sodium	Alkalinity (Carbonate as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Chloride	Sulphate	Electrical Conductivity (Lab)	pH (Lab)	TDS
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	pH Units	mg/L
EQL				0.001	0.5	10	20	1	5	10	0.1	10
Location Code	**Field ID**	**Date**	**Lab Report Number**									
SW01	SW01	20 Jan 2025	1179041	<0.001	11	<10	41	19	<5	140	6.8	100
SW02	SW02	20 Jan 2025	1179041	<0.001	55	<10	79	81	19	400	6.9	1,400
SW03	SW03	20 Jan 2025	1179041	<0.001	64	<10	95	90	27	480	7.2	1,400
SW04	SW04	20 Jan 2025	1179041	<0.001	57	<10	93	89	20	440	7.4	1,100
SW05	SW05	20 Jan 2025	1179041	0.007	160	<10	190	240	100	1,200	8.0	640

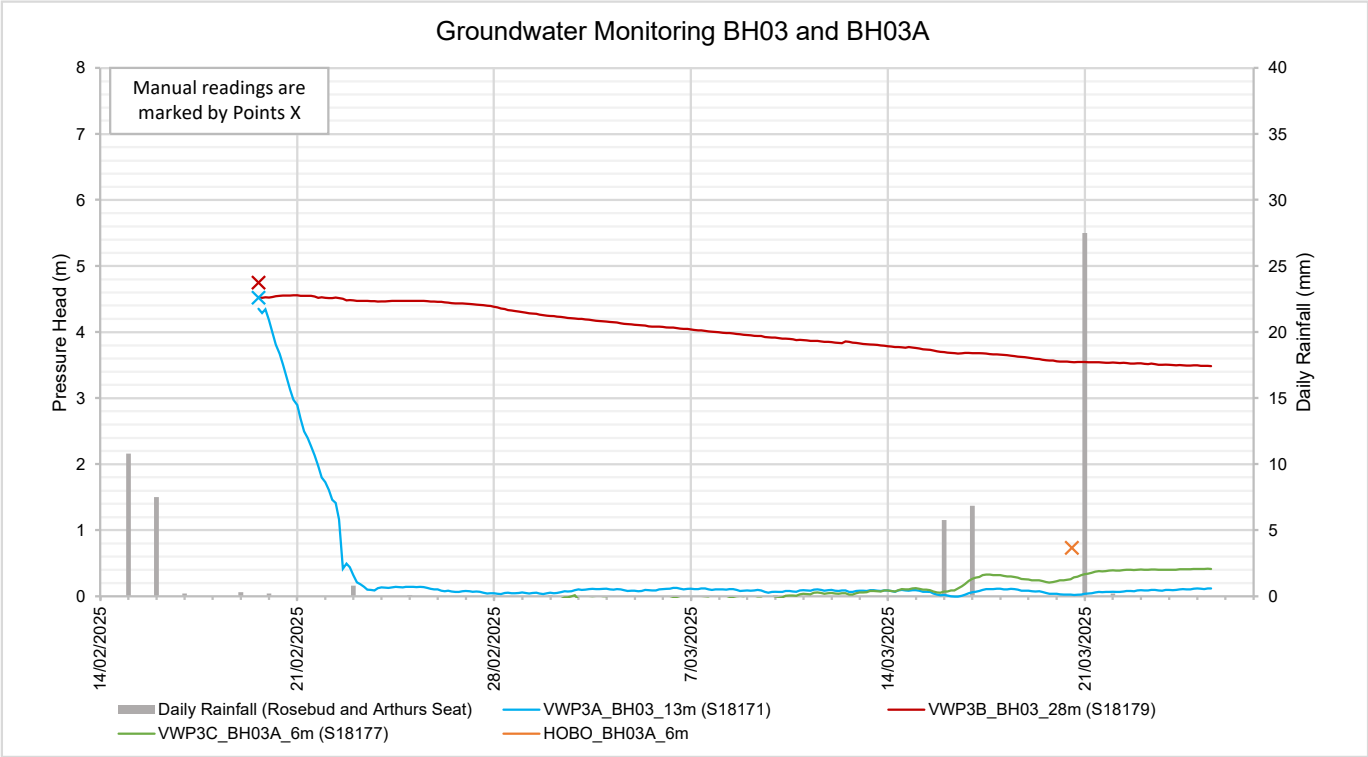
Appendix G
Piezometer Monitoring Results

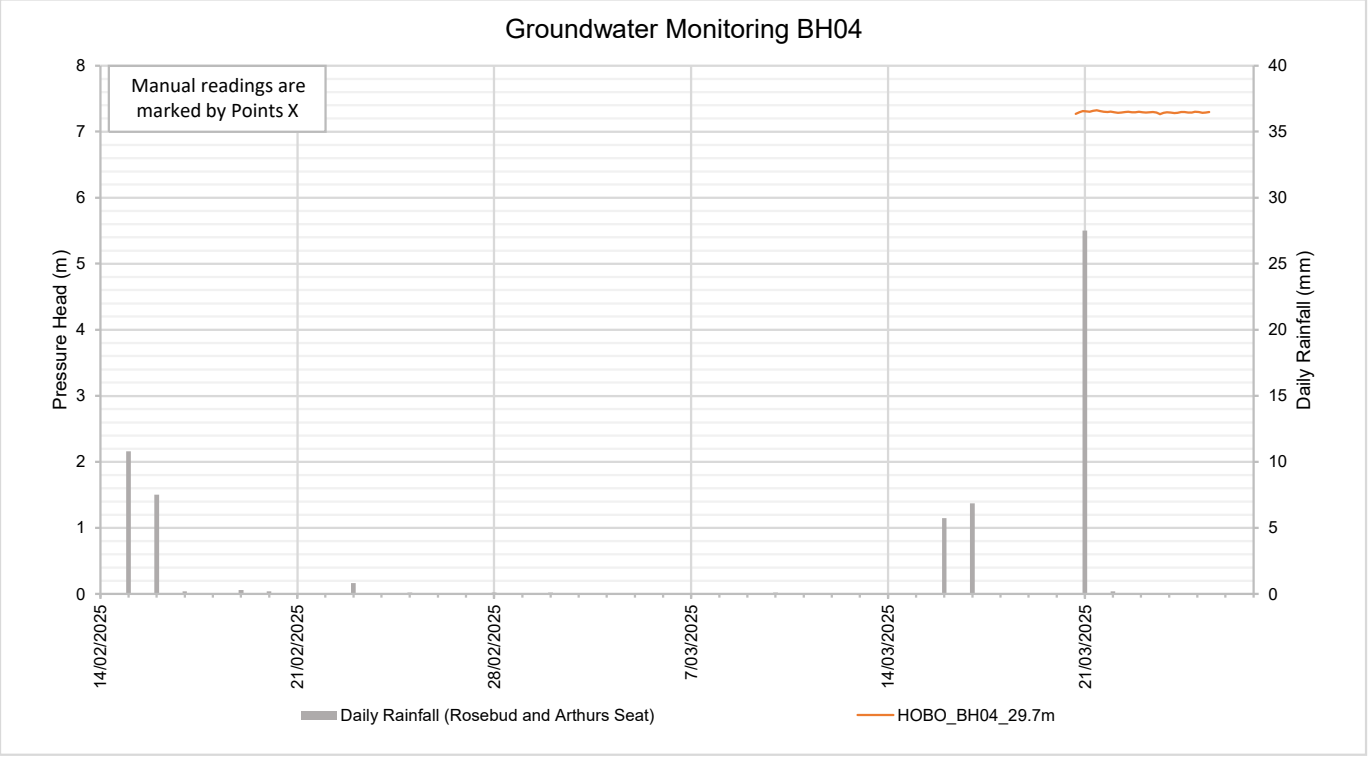




Notes: 1. Daily rainfall data has been averaged from the daily rainfall available at Rosebud (Country Club) Station ID 86213 and Arthurs Seat Rain Gauge at Seawinds National Park Station ID 586202. This data is provided up to 24/03/2025.

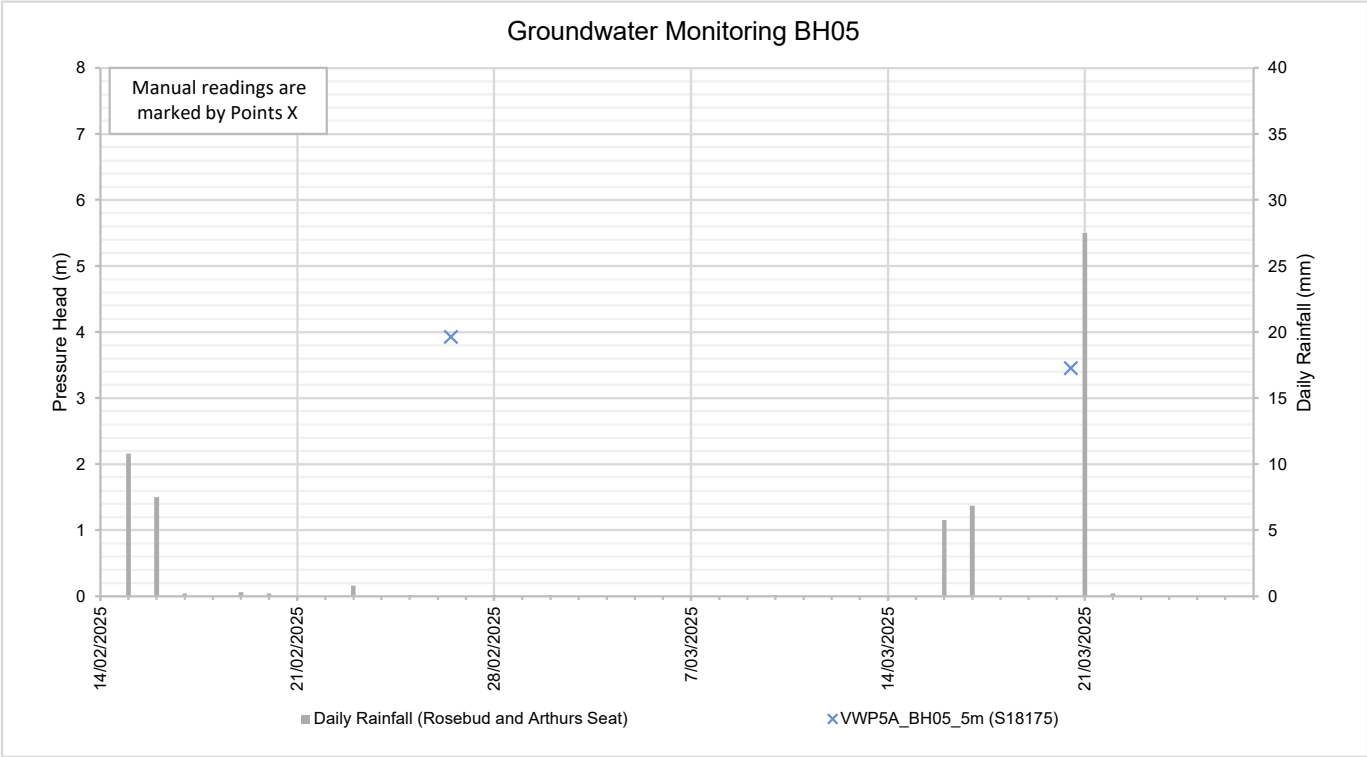
Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Groundwater Monitoring BH01 and BH02	
PSM5665-GFR	FIGURE G1

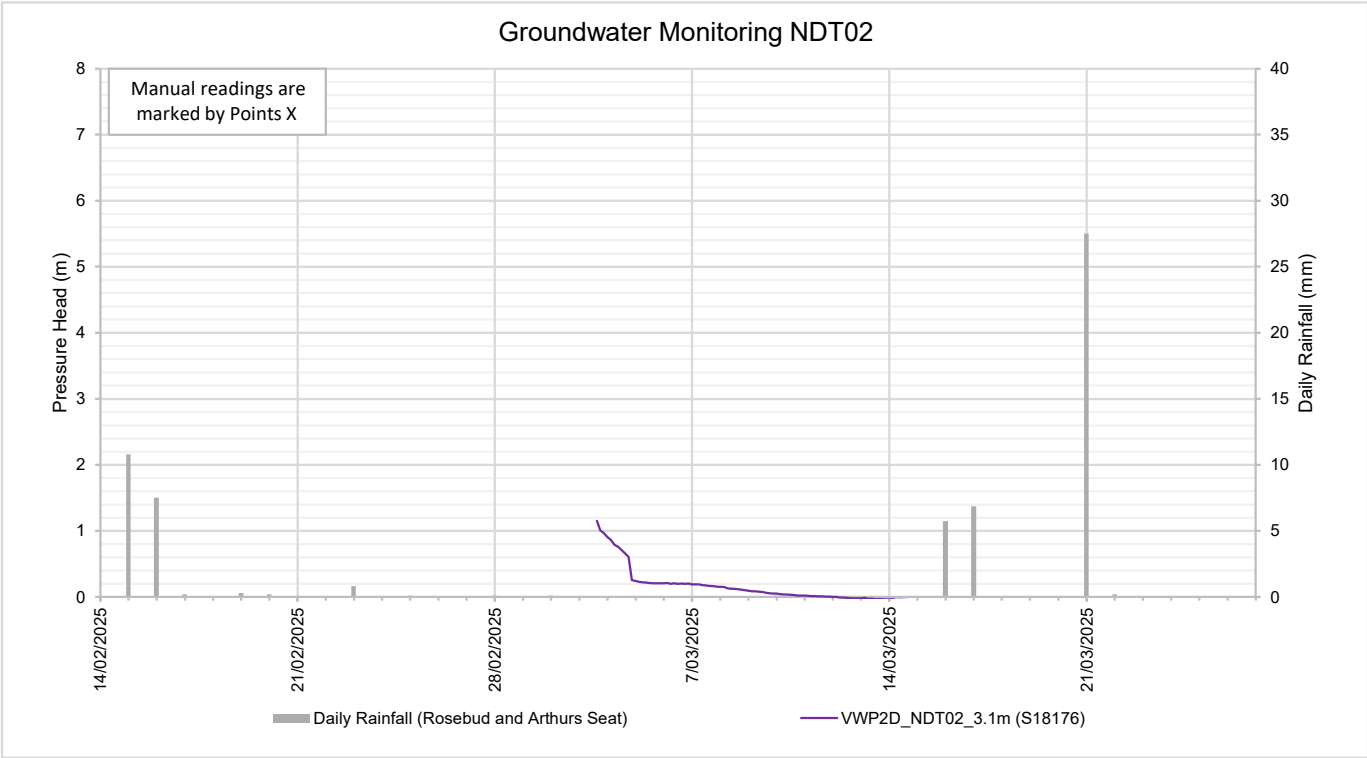




Notes: 1. Daily rainfall data has been averaged from the daily rainfall available at Rosebud (Country Club) Station ID 86213 and Arthurs Seat Rain Gauge at Seawinds National Park Station ID 586202. This data is provided up to 24/03/2025.

Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Groundwater Monitoring BH03, BH03A and BH04	
PSM5665-GFR	FIGURE G2





Notes: 1. Daily rainfall data has been averaged from the daily rainfall available at Rosebud (Country Club) Station ID 86213 and Arthurs Seat Rain Gauge at Seawinds National Park Station ID 586202. This data is provided up to 24/03/2025.

Mornington Peninsula Shire Council McCrae Landslide Geotechnical Investigation Groundwater Monitoring BH05 and NDT02	
PSM5665-GFR	FIGURE G3