William C. Cromer Pty. Ltd. Environmental, engineering and groundwater geologists

Borehole log

BH-013

Sheet 1 of 3

Project	Macquarie Point GI	**Location**	Macquarie Point	**Client**	MPDC
Coordinates	527495.11mE; 5252403.87mN	**Drill type**	Sonic	**Hole started**	15/5/24
Datum	GDA2020	**Drill rig**	MRS XL Max	**Hole finished**	15/5/24
RL	3.94mAHD			**Drilled by**	SWD (G. Bourke)
Inclination	Vertical	**Drill fluid(s)**	Water (where indicated)	**Logged by**	G. Bremner
Bearing				**Checked by**	W. Cromer

Method	Penet. resist	Water	Notes (Samples and field tests)	RL mAHD	Depth (m)	Recovery (%)	Graphic log	USCS	Materials (Soil type, colour, plasticity or particle characteristics, secondary and minor components)	Moisture condition	Consistency / Density index	Structure, geology, interpretation, additional observations
Sonic					0.3	100		CL, GC	Gravelly sandy CLAY: brown; low plast	M<>PL	F-St	Fill
			ASS 0.5 – 0.6m	3	1	100		GW	Sandy silty GRAVEL: brown-grey; trace clay; non-plastic; 50% well-graded subangular clasts of dolerite, brick, sandstone to 75mm	D-M	MD	
			ASS 1.0 – 1.1m			30		GC	Sandy clayey GRAVEL: dark brown; low plasticity; 50% well-graded subangular clasts of dolerite, and sandstone to 75mm	W		
			ASS 1.5 – 1.6m									
			ASS 2.0 – 2.1m	2	2							
			ASS 2.5 – 2.6m		2.5m	30		SP	Silty SAND: orange grading to grey; trace clay; some sandstone clasts to 100mm	M		
			ASS 3.0 – 3.1m	1	3.0m							
			SPT 3, 3, 3 N=6 Recovery: 200/450		3.45m	60		CL	Clayey sandy SILT: black; low plasticity; trace oil; c30% subangular-subrounded dolerite gravel to 50mm	W	VS	
			ASS 3.5 – 3.6m									
			ASS 4.0 – 4.1m	0	4							
			ASS 4.5 – 4.6m		4.2m	100		SM, GM	Sandy gravelly SILT: light grey; non-plastic; some dolerite clasts to 100mm at top	D-M		(Concrete?)
			ASS 5.0 – 5.1m	-1	5	100		GP	Sandy clayey GRAVEL: dark grey – black; some silt; 50% poorly graded subangular dolerite and sandstone clasts to 50mm	W		Fill
			ASS 5.5 – 5.6m									
			ASS 6.0 – 6.1m	-2	6							
			No SPT @ 6m (blocked hole)		6.0m	100		SP	SAND: dark grey; fine-med; some silt and 5% fine white shell fragments	W	MD	Estuarine sediments
			ASS 6.4 – 6.5m		6.5m	80						
			SPT 1, 2, 2 N=4 Recovery: 350/450	-3	6.95m							
					7	0		Core loss				
			ASS 7.5 – 7.6m		7.5m							
			SPT 4, 4, 4 N=8 Recovery: 400/450	-4	7.95m	90		SP	SAND: dark grey; fine-med; some silt and 5% fine white shell fragments			
			PSD 7.95 – 8m		8	100						
			ASS 8.0 – 8.1m									
			ASS 8.5 – 8.6m									
			ASS 9.0 – 9.1m	-5	9							
								Core loss 9.5 – 10.5m				
				-6	10							

Consistency (silt, clay, sandy clay, silty clay) VS = Very soft (<25kPa; exudes in fingers when squeezed); S = Soft (25-50kPa; easily penetrated by fist); F = Firm (50-100kPa; easily penetrated by thumb); St = Stiff (100-200kPa; indented by thumb, penetrated with difficulty); VSt= Very Stiff (200-400kPa; easily penetrated by thumbnail); H = Hard (>400kPa; indented by thumbnail with difficulty); Fb = Friable (crumbles or powders when scraped by thumbnail)

Relative density (sand and gravel) VL = Very loose (ravelling); L = Loose (easy shovelling); MD = Medium dense (hard shovelling); D = Dense (picking); VD = Very dense (hard picking)

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Borehole log

BH-013

Sheet 2 of 3

Project	Macquarie Point GI	**Location**	Macquarie Point	**Client**	MPDC
Coordinates	527495.11mE; 5252403.87mN	**Drill type**	Sonic	**Hole started**	15/5/24
Datum	GDA2020	**Drill rig**	MRS XL Max	**Hole finished**	15/5/24
RL	3.94mAHD			**Drilled by**	SWD (G. Bourke)
Inclination	Vertical	**Drill fluid(s)**	Water (where indicated)	**Logged by**	G. Bremner
Bearing				**Checked by**	W. Cromer

Method	Penet. resist	Water	Notes (Samples and field tests)	RL mAHD	Depth (metres)	Recovery (%)	Graphic log	USCS	Materials (Soil type, colour, plasticity or particle characteristics, secondary and minor components)	Moisture condition	Consistency Density index	Structure, geology, interpretation, additional observations
Sonic					10	0	Core loss					Estuarine sediments
			ASS 10.5– 10.6m		10.5m	70		SP	SAND: dark grey; fine-med; some silt and 5% fine white shell fragments; trace clay near 11.7m, increasing to base to clayey SAND	W		
			10.7m SPT 2, 1, 16 N=17 Recovery: 300/450 11.15	-7	11							
			ASS 11.0– 11.1m									
			ASS 11.5– 11.6m			30		SC, CL				
			ASS 12.0– 12.1m	-8	12							
			ASS 12.5– 12.6m		12m	100		SC, loc CL, GW	Gravelly clayey SAND: dark khaki; non-plastic – low plasticity; some silt; up to 75% subangular-subrounded dolerite and minor sandstone clasts up to 100mm	W M D		Colluvial sediments
			Aggress 12.7– 12.8m		12.8m							
				-9	13	100		GC CL	Clayey sandy GRAVEL: dark khaki – grey, and dark orange-brown; some silt; low plasticity; locally up to 50% subangular-subrounded dolerite to 200mm, and minor sandstone	M - D		
				-10	14							
					14.3m	100		GW	Silty sandy GRAVEL: light grey-blue; trace-some clay; low plasticity	D		Dolerite bedrock
				-11	15				15.0m: end sonic; start HQ3 coring			
					16							
					17							
					7.5m							
					18							
					19							
					20							

Consistency (silt, clay, sandy clay, silty clay) VS = Very soft (<25kPa; exudes in fingers when squeezed); S = Soft (25-50kPa; easily penetrated by fist); F = Firm (50-100kPa; easily penetrated by thumb); St = Stiff (100-200kPa; indented by thumb, penetrated with difficulty); VSt= Very Stiff (200-400kPa; easily penetrated by thumbnail); H = Hard (>400kPa; indented by thumbnail with difficulty); Fb = Friable (crumbles or powders when scraped by thumbnail)

Relative density (sand and gravel) VL = Very loose (ravelling); L = Loose (easy shovelling); MD = Medium dense (hard shovelling); D = Dense (picking); VD = Very dense (hard picking)

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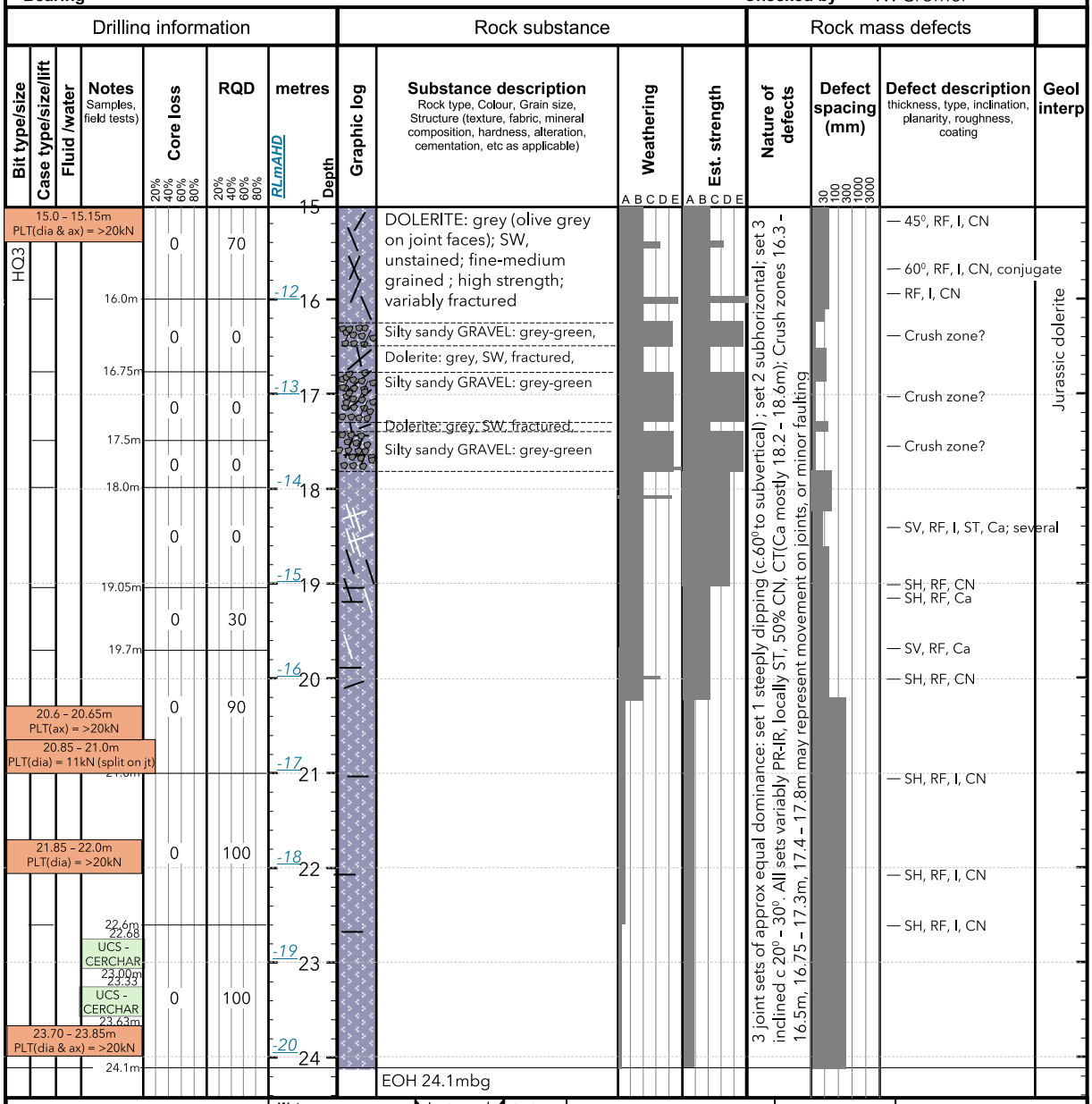
Engineering log – Cored borehole

Incorporating the Unified Rock Classification System (URCS)

BH-013

Sheet 3 of 3

Project	Macquarie Point GI	**Location**	Macquarie Point	**Client**	MPDC
Coordinates	527495.11mE; 5252403.87mN	**Drill type**	HQ3 diamond drilling	**Hole started**	15/5/24
		Equipment	MRS XL Max	**Hole finished**	15/5/24
Datum	GDA2020			**Drilled by**	SWD (G. Bourke)
RL	3.94mAHD				
Inclination	Vertical	**Drill fluid(s)**	Water	**Logged by**	G. Bremner
Bearing				**Checked by**	W. Cromer



Drilling
T = Triple tube coring
B = Blades
R = Roller/Tricone
A = Auger
W = Wash boring
DT = Double tube coring
HAM = Rotary hammer
S = Sonic

Case lift: Casing used; Barrel withdrawn
Fluid/water: Level/date; Partial water loss; Water inflow

RQD (Rock Quality Designation Index) The sum of the lengths of 'sound' core pieces >100mm in a drilling run is divided by the total core run length. Expressed as %. Core length measured along centreline. Core drilling breaks not included

Water Inflow Outflow

Unit weight (UW, g/cc)
A = >2.55 B = 2.40-2.55 C = 2.25-2.40
D = 2.10-2.25 E = <2.10

Strength Hammer impact test	Approx. point load strength index Is(50), MPa	Approx. UCS MPa
A = rebound (RQ)	>4	>103
B = pit (PQ)	2-4	55-103
C = dent (DQ)	1-2	21-55
D = crater (CQ)	0.25-1	7-21
E = mouldable, friable (MQ)	<0.25	<7

Note: X on log is test result. Otherwise, visually estimated. US = Unconfined Compressive Strength

Core loss
Core loss (interval known)
Core loss (interval unknown). Loss is shown in Graphic log column at top of run.

Samples and Notes
R = SPT penetration refusal
D = Disturbed sample
N = Standard Penetration Test
PP = Pocket penetrometer test
SV = In-situ Shear Vane test
cSV= Shear Vane test on core
CS = Core Sample
Ux = Undisturbed tube sample (x mm diameter)
Nd = SPT and Disturbed Sample

Weathering
A = Micro fresh state (MFS)
B = Visually fresh state (VFS)
C = Stained state(STS)
D = Partly decomposed state (PDS)
E = Completely decomposed state (CDS)

Soil consistency
Fine grained soils
VS = Very Soft
S = Soft
F = Firm
St = Stiff
VSt = Very stiff
H = Hard

Soil density index
Coarse grained soils
Fb = Friable
VY = Very Loose
L = Loose
MD = Medium Dense
D = Dense
VD =Very Dense

Defects
Joint; Vein; Shear zone; Crush zone; Infill seam; EW seam

Orientation
Dip (degrees) relative to horizontal plane, or to core axis if inclined.
SH, SV = subhoriz, subvert

Roughness, shape, infill
SM = Smooth RF = Rough
PR = Planar UN = Undulating
PO = Polished SL = Slickensided
I = Irregular CU = Curved
VU = Vuggy ST = Stepped
CN = Clean CT = Coating
Ca = Calcite Ch = Chlorite
Cl = Clay O = Other

PointID: BH-013 Depth Range: 0.0 – 3.0 m

	TITLE MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN WCC	DATE 29/5/24
		CHECKED	DATE
		SCALE Not to Scale	A4
		PROJECT No. PS212776	FIGURE No. 1/10

PointID: BH-013 Depth Range: 3.0 – 6.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 2/10

PointID: BH-013 Depth Range: 6.0 – 8.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 3/10

PointID: BH-013 Depth Range: 8.0 – 10.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 4/10

PointID: BH-013 Depth Range: 10.0 – 12.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 5/10

PointID: BH-013 Depth Range: 12.0 – 14.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 6/10

PointID: BH-013 Depth Range: 14.0 – 15.0 m

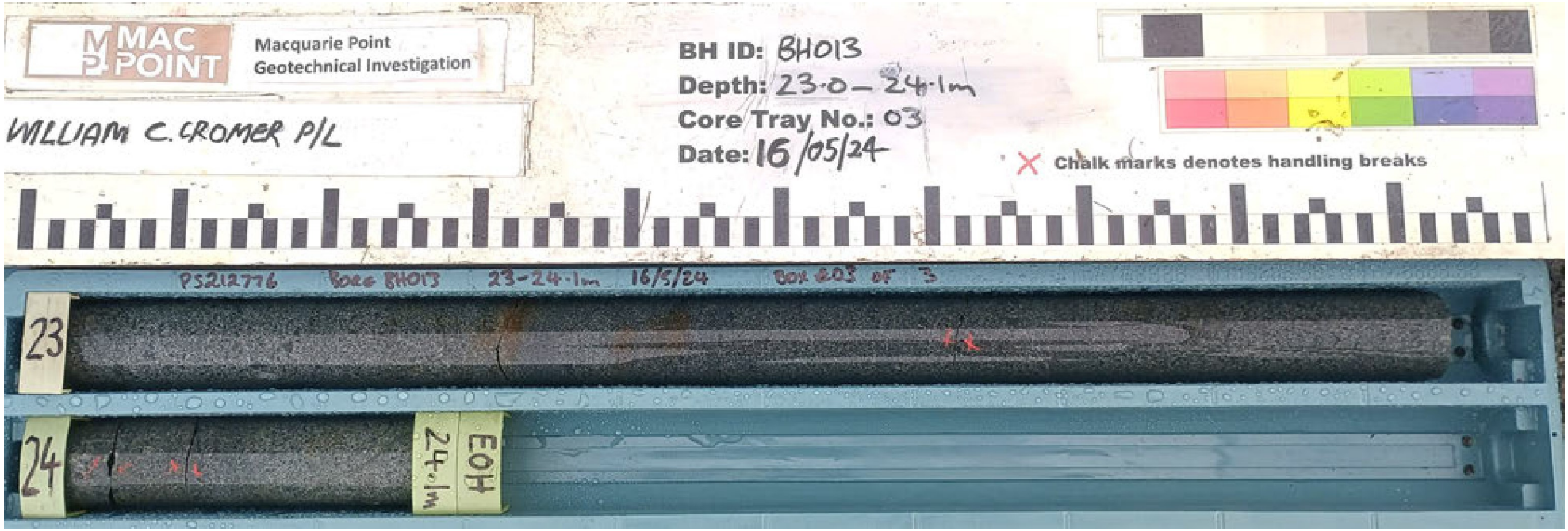
	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 7/10

PointID: BH-013 Depth Range: 15.0 – 19.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 8/10

PointID: BH-013 Depth Range: 19.0 – 23.0 m

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 9/10



10/13

PointID: BH-013 Depth Range: 23.0 – 24.1 m EOH

	TITLE: MPDC Macquarie Point Macquarie Point GI Core Photo – BH-013	DRAWN: WCC	DATE: 29/5/24
		CHECKED	DATE
		SCALE: Not to Scale	A4
		PROJECT No.: PS212776	FIGURE No.: 10/10