tonkin

DESCRIPTION AND CLASSIFICATION OF SOILS
SUMMARY SHEET TO ACCOMPANY ENGINEERING BORELOGS

Soils are logged by an experienced Geotechnical Engineer in accordance with the Unified Soil Classification (USC) System as outlined in AS 1726 -2017 "Geotechnical Site Investigations". Where laboratory investigations such as Particle Size Distribution and Atterberg Limit testing have been completed, soil classifications are required to be confirmed in accordance with the 'Laboratory Classification' section on Page 2.

CLASSIFICATION OF COARSE GRAINED SOILS

Major Divisions			Field Identification	USC		Primary Descriptor
COARSE GRAINED SOILS More than 65 % of material less than 63 mm is larger than 0.075mm	GRAVELS More than half of coarse fraction larger than 2.36 mm	<12% passing 0.075mm	Well graded. Wide range in grain size and substantial amounts of all intermediate sizes.	GW		GRAVEL
			Poorly graded. Predominantly one size or a range of sizes with more intermediate sizes missing.	GP		GRAVEL
		>12% passing 0.075mm	Coarse material with excess non -plastic fines.	GM		Silty GRAVEL
			Coarse material with excess plastic fines.	GC		Clayey GRAVEL
	SANDS More than half of coarse fraction smaller than 2.36mm	<12% passing 0.075mm	Well graded. Wide range in grain size and substantial amounts of all intermediate sizes.	SW		SAND
			Poorly graded. Predominantly one size or a range of sizes with more intermediate sizes missing.	SP		SAND
		>12% passing 0.075mm	Coarse material with excess non -plastic fines.	SM		Silty SAND
			Coarse material with excess plastic fines.	SC		Clayey SAND

For fines contents between 5% and 12%, the soil shall be given a dual classification comprising the two group symbols separated by a dash, e.g. for a gravel with between 5% and 12% silt fines, the classification is GP-GM.

CLASSIFICATION OF FINE GRAINED SOILS

Major Divisions			Field Identification			USC		Primary Descriptor
			Dry Strength	Dilatancy	Toughness			
FINE GRAINED SOILS More than 35% of material less than 63 mm is smaller than 0.075 mm	SILTS & CLAYS (Low to medium plasticity)	Liquid Limit <=50%	None to Low	Slow to Rapid	Low	ML		SILT
			Medium to High	None to Slow	Medium	CL, CI		CLAY
			Low to Medium	Slow	Low	OL		Organic SILT
	SILTS & CLAYS (high plasticity)	Liquid Limit >50%	Low to Medium	None to Slow	Low to Medium	MH		SILT
			High to Very High	None	High	CH		CLAY
			Medium to High	None to Very Slow	Low to Medium	OH		Organic CLAY
HIGHLY ORGANIC SOIL			Identified by colour, odour, spongy feel and frequently fibrous texture			Pt		PEAT

* Plot results of Atterberg Limit testing on modified Casagrande Chart (See Page 2) for accurate classification

DESCRIPTORS FOR SECONDARY/MINOR SOIL COMPONENTS

Designation	In Coarse Grained Soils				In Fine Grained Soils	
	% Fines	Terminology	% Coarse Fraction	Terminology	% Sand/ Gravel	Terminology
Minor	<5	Add 'trace clay/silt" as applicable	<15	Add 'trace sand/gravel" as applicable	<15	Use 'Trace'
	>5, <12	Add 'with clay/silt" as applicable	>15, <30	Add 'with sand/gravel" as applicable	>15, <30	Add 'with sand/gravel" as applicable
Secondary	>12	Prefix soil name as 'Silty' or 'Clayey' as applicable	>30	Prefix soil name as 'Sandy' or 'Gravelly' as applicable	>30	Prefix soil name as 'Sandy' or 'Gravelly' as applicable

tonkin

DESCRIPTION AND CLASSIFICATION OF SOILS
SUMMARY SHEET TO ACCOMPANY ENGINEERING BORELOGS

MOISTURE CONDITION -

COARSE GRAINED SOILS

Name	Symbol	Field Guide to Moisture
Dry	D	Non-cohesive and free running
Moist	M	Feels cool, darkened in colour Soil tends to stick together
Wet	W	Feels cool, darkened in colour Soil tends to stick together Free water forms when handling

FINE GRAINED SOILS

Name	Symbol	Field Guide to Moisture
Moist/Dry of Plastic Limit	M<PL	Hard and friable or powdery
Moist/Near Plastic Limit	M~PL	Soils can be moulded at a moisture content approximately equal to the plastic limit
Moist/Wet of Plastic Limit	M>PL	Soils usually weakened and free water forms on hands when handling
Near Liquid Limit	M>>PL	Wet, near liquid limit

DENSITY/CONSISTENCY –

NON-COHESIVE SOILS

Name	Symbol	Density Index (%)
Very Loose	VL	<15
Loose	L	15 - 35
Moderately Dense	MD	35 - 65
Dense	D	65 - 85
Very Dense	VD	>85

COHESIVE SOILS

Consistency	Symbol	Field Guide to Consistency	S_u (kPa)
Very Soft	VS	Exudes between the fingers when squeezed in h and	<12
Soft	S	Can be moulded by light finger pressure	12-25
Firm	F	Can be moulded by strong finger pressure	25–50
Stiff	St	Cannot be moulded by fingers	50-100
Very Stiff	VSt	Can be indented by thumb nail	100-200
Hard	H	Can be indented with difficulty by thumb nail	>200
Friable	Fb	Can be easily crumbled or broken into small pieces by hand	N/A

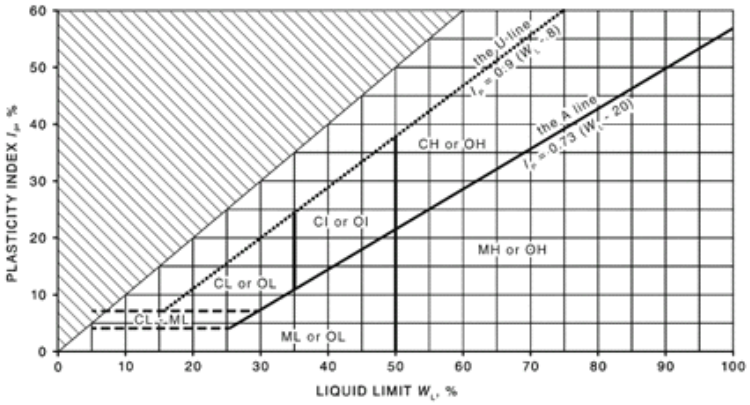
The undrained shear strength Su is assessed in the field using a pocket or hand penetrometer (PP). Su values are approximately half of the PP reading.

LABORATORY CLASSIFICATION -

PARTICLE SIZE DEFINITIONS

Name	Fraction	Size (mm)
Boulders		>200
Cobbles		63 - 200
Gravel	Coarse Medium Fine	19 – 63 6.7 – 19 2.36 – 6.7
Sand	Coarse Medium Fine	0.6 – 2.36 0.21 – 0.6 0.075 – 0.21
Silt		0.002 – 0.075
Clay		<0.002

MODIFIED CASAGRANDE CHART



DRILLING/EXCAVATION METHOD -

BH	Backhoe Bucket
PT	Push Tube
HFA	Hollow Flight Auger
HA	Hand Auger
N	Natural Exposure
X	Existing Excavation
AST	Auger Screwing + TC bit
ADT	Auger Drilling + TC bit
ASV	Auger Screwing + V bit
ADV	Auger Drilling + V bit

WATER -

▼ Standing Water Level at Date 1 Shown

▽ Standing Water Level at Date 2 Shown

▼ Standing Water Level at Date 3 Shown

If observance of groundwater was not possib le due to collapse of test pit /borehole or similar, add to notes: 'GROUNDWATER NOT OBSERVED '

If the test pit /borehole was dry soon after excavation add to notes:
'GROUNDWATER NOT ENCOUNTERED '

(Note: Groundwater may still be present in less permeable strata, or inflows may have been observed had the test pit /borehole been left open for a longer period.)

SAMPLING AND TESTING-

SPT	Standard Penetration Test – Results expressed as blows per 150mm (N Value = Sum of blows excluding 150mm seating).
PP	Pocket Penetrometer Test – Results expressed in 'Comments/ Observations' as instrument reading in kPa
AU	Auger Cuttings
BK	Bulk Sample
PT	Push Tube
SS	Split Spoon
U100	Undisturbed 100mm
U50	Undisturbed 50mm

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH01**

CLIENT	Wentworth Shire Council	**NORTHING**	6222844	**ELEVATION (mAHD)**	43.4
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	609920	**TOTAL DEPTH (mBGL)**	2.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
			-	-	-	50 mm Spray Seal				
			-	-	-	FILL. Granular pavement material recovered as sandy gravel, black, cemented with binder.		BH1_0.0-0.2		
43.2	0.2		-	D	MD	FILL. Calcareous Clayey Sand, fine to coarse grained, pale brown to white, low plasticity fines, with fine to medium grained gravels				
43.0	0.4									
42.8	0.6									
42.6	0.8		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, white, low plasticity fines, trace fine to medium grained gravels, sub-rounded				
42.4	1.0									
42.2	1.2									
42.0	1.4									
41.8	1.6									
41.6	1.8									
41.4	2.0					End of hole at 2.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH01**

CLIENT	Wentworth Shire Council	**NORTHING** 6222844	**ELEVATION (mAHD)** 43.4
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 609920	**TOTAL DEPTH (mBGL)** 2.00
LOCATION	Wentworth, NSW		

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES**
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			Groundwater not encountered
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

PHOTOS

ADDITIONAL NOTES

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH02**

CLIENT	Wentworth Shire Council	**NORTHING**	6222874	**ELEVATION (mAHD)**	43.3
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	609934	**TOTAL DEPTH (mBGL)**	2.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
43.1	0.2		-	D	D	FILL. Calcareous Clayey Sand, fine to coarse grained, pale brown, low plasticity fines, with fine to medium grained gravels, sub-rounded to sub-angular		BH2_0.1-0.3		
42.9	0.4									
42.7	0.6									
42.5	0.8		SC	D	L MD	Calcareous Clayey SAND. Fine to coarse grained, pale brown and white, low plasticity fines, with fine to medium grained gravels, sub-rounded to sub-angular				
42.3	1.0									
42.1	1.2									
41.9	1.4									
41.7	1.6					Colour darkens and gravel content decreases				
41.5	1.8									
41.3	2.0					End of hole at 2.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH02**

CLIENT	Wentworth Shire Council	**NORTHING** 6222874	**ELEVATION (mAHD)** 43.3
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 609934	**TOTAL DEPTH (mBGL)** 2.00
LOCATION	Wentworth, NSW		

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

PHOTOS

ADDITIONAL NOTES

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH03**

CLIENT	Wentworth Shire Council	**NORTHING**	6222862	**ELEVATION (mAHD)**	43.5
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	609947	**TOTAL DEPTH (mBGL)**	2.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
			-	-	-	50 mm Spray Seal				
43.3	0.2		-	D	MD	FILL. Gravelly Clayey Sand, fine to coarse grained, poorly graded, brown, fine to medium grained gravels, sub-angular to angular, low plasticity fines		BH3_0.1-0.3		
43.1	0.4									
42.9	0.6									
42.7	0.8					Concrete inclusion				
42.5	1.0		-	D	MD	FILL. Clayey Sand, fine to coarse grained, orange-brown, low plasticity fines, trace fine grained gravels, minor black inclusions, possibly slag				
42.3	1.2		SC	D	MD	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace fine grained gravels				
42.1	1.4									
41.9	1.6									
41.7	1.8									
41.5	2.0					End of hole at 2.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH03**

CLIENT	Wentworth Shire Council	**NORTHING** 6222862	**ELEVATION (mAHD)** 43.5
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 609947	**TOTAL DEPTH (mBGL)** 2.00
LOCATION	Wentworth, NSW		

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		⧩			

PHOTOS

ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH04**

CLIENT	Wentworth Shire Council	**NORTHING**	6222840	**ELEVATION (mAHD)**	46
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610046	**TOTAL DEPTH (mBGL)**	3.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		⧩			

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
			-	D	MD	FILL. Calcareous sandy gravel, fine to medium grained, sub-rounded to angular, asphalt inclusions, with low plasticity fines				
45.8	0.2		SP	D	MD	Calcareous SAND. Fine to coarse grained, pale brown, with low plasticity fines, trace fine grained gravels				
45.6	0.4		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, white, with fine to coarse grained gravels, sub-rounded to sub-angular, becoming pale brown with depth				
45.4	0.6									
45.2	0.8									
45.0	1.0									
44.8	1.2									
44.6	1.4									
44.4	1.6									
44.2	1.8									
44.0	2.0									
43.8	2.2		SC	D	MD	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace fine grained gravels				
43.6	2.4									
43.4	2.6									
43.2	2.8									
43.0	3.0		CL	w<PL	Fb	Sandy CLAY. Low plasticity, orange-brown, fine to coarse grained, trace fine grained gravels				
						End of hole at 3.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH04**

CLIENT	Wentworth Shire Council	**NORTHING**	6222840
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610046
LOCATION	Wentworth, NSW		

				ELEVATION (mAHD)	46
STARTED	17/03/2023	**COMPLETED**	17/03/2023	**TOTAL DEPTH (mBGL)**	3.00
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

PHOTOS

ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH05**

CLIENT	Wentworth Shire Council	**NORTHING**	6222854	**ELEVATION (mAHD)**	47.5
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610106	**TOTAL DEPTH (mBGL)**	3.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
47.3	0.2		SC	D	L MD	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, pale brown, low plasticity fines, with fine to medium grained gravels, sub-angular to sub-rounded, organics to 200 mm depth				
47.1	0.4									
46.9	0.6									
46.7	0.8		SC	D	L MD	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, white, low plasticity fines, with fine to coarse grained gravels, becoming trace gravels from 0.9 mBGL				
46.5	1.0									
46.3	1.2									
46.1	1.4									
45.9	1.6									
45.7	1.8									
45.5	2.0									
45.3	2.2									
45.1	2.4		SC	D	MD	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace fine grained gravels				
44.9	2.6									
44.7	2.8									
44.5	3.0					End of hole at 3.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH05**

CLIENT	Wentworth Shire Council		**NORTHING**	6222854	**ELEVATION (mAHD)** 47.5
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610106	**TOTAL DEPTH (mBGL)** 3.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED** 17/03/2023			
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

PHOTOS

ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH06**

CLIENT	Wentworth Shire Council		**NORTHING**	6222852	**ELEVATION (mAHD)** 48.5
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610217	**TOTAL DEPTH (mBGL)** 3.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED** 17/03/2023			
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES Groundwater not encountered

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
48.3	0.2		SC	D	L MD	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, pale brown, low plasticity fines, with fine to medium grained gravels, sub-angular to sub-rounded, organics to 100 mm depth				
48.1	0.4									
47.9	0.6									
47.7	0.8		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, white, with fine to coarse grained gravels, sub-rounded to sub-angular				
47.5	1.0									
47.3	1.2									
47.1	1.4					Becomes pale brown				
46.9	1.6									
46.7	1.8									
46.5	2.0		SC	D	MD	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace fine grained gravels				
46.3	2.2									
46.1	2.4									
45.9	2.6									
45.7	2.8									
45.5	3.0					End of hole at 3.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH06**

CLIENT	Wentworth Shire Council		**NORTHING**	6222852	**ELEVATION (mAHD)** 48.5
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610217	**TOTAL DEPTH (mBGL)** 3.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED** 17/03/2023			
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

PHOTOS

ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH07**

CLIENT	Wentworth Shire Council	**NORTHING**	6222870	**ELEVATION (mAHD)**	45.7
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610312	**TOTAL DEPTH (mBGL)**	3.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED**	17/03/2023		
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES Groundwater not encountered

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
			SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, pale brown, low plasticity fines, with fine to medium grained gravels, sub-angular to sub-rounded, organics throughout				
45.5	0.2		CI	w<PL	Fb	Calcareous Sandy CLAY. Medium plasticity, brown and white, black flecking, fine to coarse grained sands, trace fine grained gravels.				Inferred to be in situ as a mixture of cobbles and calcareous clayey sand per TP01, but recovery from borehole as per description.
45.3	0.4									
45.1	0.6									
44.9	0.8									
44.7	1.0									
44.5	1.2		CI	w<PL	Fb	CLAY. Medium plasticity, grey with brown mottling, with fine to coarse grained sands, minor calcareous white pockets				
44.3	1.4									
44.1	1.6									
43.9	1.8									
43.7	2.0									
43.5	2.2		CL	w<PL	Fb	Sandy CLAY. Low to medium plasticity, pale brown with minor grey mottling, fine to coarse grained sands				
43.3	2.4									
43.1	2.6									
42.9	2.8									
42.7	3.0					End of hole at 3.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH07**

CLIENT	Wentworth Shire Council	**NORTHING** 6222870	**ELEVATION (mAHD)** 45.7
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 610312	**TOTAL DEPTH (mBGL)** 3.00
LOCATION	Wentworth, NSW		

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

PHOTOS

ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH08**

CLIENT	Wentworth Shire Council	**NORTHING**	6222908	**ELEVATION (mAHD)**	48.7
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610266	**TOTAL DEPTH (mBGL)**	3.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED**	17/03/2023		
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES Groundwater not encountered

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
			-	D	VD	FILL. Granular pavement material recovered as sandy gravel, white, fine to coarse grained gravels, sub-angular to angular, fine to coarse grained sands				
48.5	0.2		SC	D	D	Clayey SAND. Fine to coarse grained, red-brown, low plasticity fines, lenses grade to with clay				
48.3	0.4									
48.1	0.6				L					
47.9	0.8				MD					
47.7	1.0									
47.5	1.2		SC	D	MD	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace fine to coarse grained gravels				
47.3	1.4									
47.1	1.6									
46.9	1.8									
46.7	2.0									
46.5	2.2									
46.3	2.4									
46.1	2.6		SC	D	D	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines				
45.9	2.8									
45.7	3.0					End of hole at 3.0 m, target depth reached				

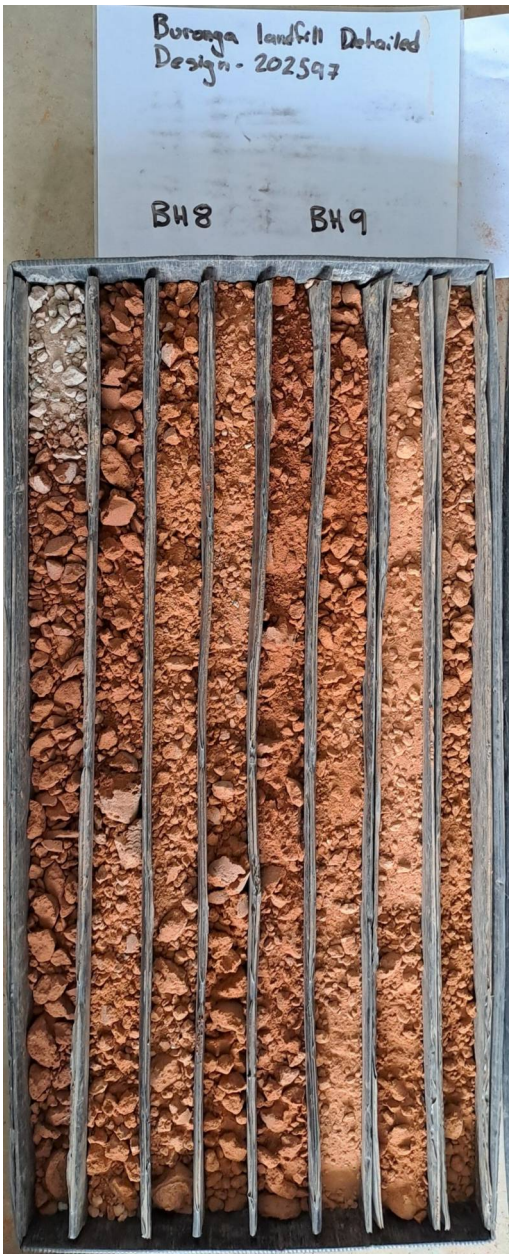
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH08**

CLIENT	Wentworth Shire Council	**NORTHING** 6222908	**ELEVATION (mAHD)** 48.7
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 610266	**TOTAL DEPTH (mBGL)** 3.00
LOCATION	Wentworth, NSW		

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		⧩			

PHOTOS



ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH09**

CLIENT	Wentworth Shire Council	**NORTHING**	6223099	**ELEVATION (mAHD)**	46.25
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610295	**TOTAL DEPTH (mBGL)**	3.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
46.1	0.2		SC	D	MD D	Clayey SAND. Fine to coarse grained, red-brown, low plasticity fines, grades to with clay in places.				
45.9	0.4									
45.7	0.6		SC	D	MD	Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace fine grained gravels, lenses grade to Sandy CLAY				
45.5	0.8									
45.3	1.0									
45.1	1.2									
44.9	1.4		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, pale brown to white, low plasticity fines, with fine to medium grained gravels, sub-angular to sub-rounded				
44.7	1.6									
44.5	1.8									
44.3	2.0		SP	D	MD	SAND. Fine to coarse grained, poorly graded, orange brown to orange and red-brown, with low plasticity fines grading to clayey in places, trace fine to medium grained gravels				
44.1	2.2									
43.9	2.4									
43.7	2.6									
43.5	2.8									
43.3	3.0					End of hole at 3.0 m, target depth reached				

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

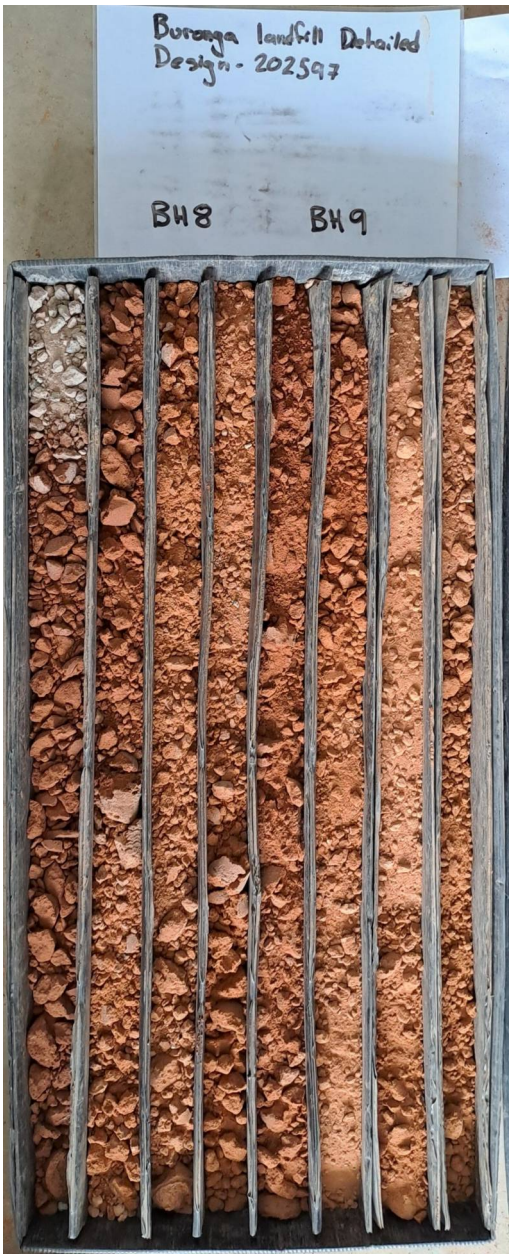
BOREHOLE NUMBER **BH09**

CLIENT	Wentworth Shire Council		**NORTHING**	6223099	**ELEVATION (mAHD)** 46.25
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610295	**TOTAL DEPTH (mBGL)** 3.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED** 17/03/2023			
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

PHOTOS



ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH10**

CLIENT	Wentworth Shire Council	**NORTHING**	6223689	**ELEVATION (mAHD)**	39.3
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610560	**TOTAL DEPTH (mBGL)**	4.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED**	17/03/2023		
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES Groundwater not encountered

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
39.1	0.2		-	D	MD	TOPSOIL. Silty Sand, fine to coarse grained, brown, non plastic fines, trace fine to medium grained gravels				
38.9	0.4		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, pale brown, low plasticity fines, with fine to medium grained gravels, sub-rounded to sub-angular.				
38.7	0.6									
38.5	0.8		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, white, low plasticity fines, trace fine to medium grained gravels, sub-rounded				
38.3	1.0									
38.1	1.2									
37.9	1.4									
37.7	1.6		SP	D	MD	SAND. Fine to coarse grained, orange-brown, with low plasticity fines, trace gravels, possibly calcareous				
37.5	1.8									
37.3	2.0		SC	D	MD	Becomes Clayey SAND. Fine to coarse grained, orange-brown, low plasticity fines, trace gravels, possibly calcareous				
37.1	2.2									
36.9	2.4		CL	w<PL	Fb	Calcareous Sandy CLAY. Low to medium plasticity, orange-brown and white, minor black flecking, fine to coarse grained, trace fine to medium grained gravels				
36.7	2.6									
36.5	2.8									
36.3	3.0									
36.1	3.2		CL	w<PL	Fb	Calcareous CLAY. Low to medium plasticity, grey, white and pale brown, with fine to medium grained sands, possibly calcareous				
35.9	3.4									
35.7	3.6									
35.5	3.8					Becoming red-brown with minor grey				
35.3	4.0					End of hole at 4.0 m, target depth reached				

PROJECT NO. 202597

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

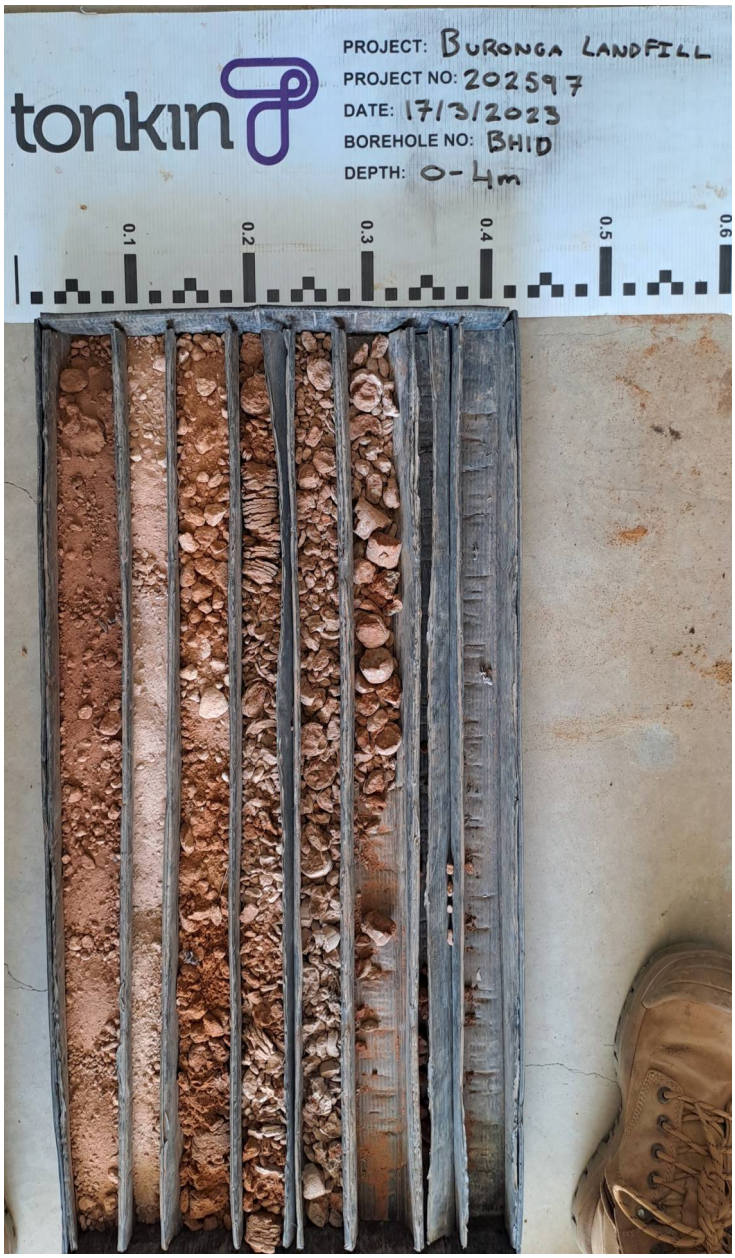
BOREHOLE NUMBER **BH10**

CLIENT	Wentworth Shire Council		**NORTHING**	6223689	**ELEVATION (mAHD)** 39.3
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610560	**TOTAL DEPTH (mBGL)** 4.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED** 17/03/2023			
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

PHOTOS



ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH11**

CLIENT	Wentworth Shire Council	**NORTHING**	6223506	**ELEVATION (mAHD)**	38.75
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	611220	**TOTAL DEPTH (mBGL)**	4.00
LOCATION	Wentworth, NSW				

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN	▼			
EQUIPMENT	Rockmaster	**CHECKED BY**	MA	▽			
METHOD	PT	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
38.6	0.2		SP	D	MD	SAND. Fine to coarse grained, poorly graded, pale orange brown, grey and black, with low plasticity clay, trace fine to medium grained calcareous gravels				
38.4	0.4		CL	w<PL	Fb	Sandy CLAY. Low plasticity, pale orange brown, fine to coarse grained sands, trace fine to medium grained calcareous gravels, sub-rounded to sub-angular				
38.2	0.6									
38.0	0.8									
37.8	1.0									
37.6	1.2		SC	D	MD	Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, low plasticity fines, possibly calcareous				
37.4	1.4									
37.2	1.6									
37.0	1.8									
36.8	2.0		CL	w<PL	Fb	Sandy CLAY. Low to medium plasticity, grey with minor orange and white mottling, trace fine to medium grained gravels, calcareous in pockets				
36.6	2.2									
36.4	2.4									
36.2	2.6									
36.0	2.8									
35.8	3.0									
35.6	3.2		CI	w<PL	Fb	Sandy CLAY. Medium to high plasticity, grey with white and red-brown mottling, fine to coarse grained sands, calcareous in pockets				
35.4	3.4									
35.1	3.6		GP	D	D	Sandy GRAVEL. Fine grained, poorly graded, subangular to subrounded, grey, white and minor red-brown, fine to coarse grained sands				
			CI	w<PL	Fb	Sandy CLAY. Medium to high plasticity, grey, fine to coarse grained sands				
34.9	3.8									
34.7	4.0					End of Hole at 4.0 m, target depth reached				

PROJECT NO. 202597

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH11**

CLIENT	Wentworth Shire Council			**NORTHING**	6223506
PROJECT	Buronga Landfill Expansion Detailed Design			**EASTING**	611220
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED**	17/03/2023		
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	PT	**PERMIT NO.**			

ELEVATION (mAHD) 38.75
TOTAL DEPTH (mBGL) 4.00

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

PHOTOS

ADDITIONAL NOTES

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH12**

CLIENT	Wentworth Shire Council	**NORTHING**	6222786	**ELEVATION (mAHD)**	41.6
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	611156	**TOTAL DEPTH (mBGL)**	4.00
LOCATION	Wentworth, NSW				
STARTED	17/03/2023	**COMPLETED**	17/03/2023		
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	PT	**PERMIT NO.**			

SYMBOL	SWL (mBGL)	DATE
▼		
▽		
▼		

NOTES
Groundwater not encountered

DEPTH (mAHD)	DEPTH (mGBL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	IN-SITU TESTING	COMMENTS/OBSERVATIONS
41.4	0.2		SC	D	MD	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, pale brown and white, low plasticity fines, fine to coarse grained gravels.				
41.2	0.4									
41.0	0.6									
40.8	0.8		CL	w<PL	Fb	Sandy CLAY. Low plasticity, pale orange brown, fine to coarse grained sands, trace fine to medium grained calcareous gravels, sub-rounded to sub-angular				
40.6	1.0									
40.4	1.2									
40.2	1.4		CI	w<PL	Fb	CLAY. Medium plasticity, orange-brown with pale brown mottles, with fine to medium grained sands, trace fine grained gravels, possibly calcareous				
40.0	1.6									
39.8	1.8									
39.6	2.0		SC	D	MD	Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, low plasticity fines				
39.4	2.2					Coarse grained content increasing from 2.25 m				
39.2	2.4									
39.0	2.6		CL	w<PL	Fb	Sandy CLAY. Low plasticity, orange brown with minor dark brown mottling, fine to coarse grained sands				
38.8	2.8		SC	D	D	Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, low plasticity fines				
38.6	3.0		CL	w<PL	Fb	Sandy CLAY. Low plasticity, orange brown with minor dark brown mottling, fine to coarse grained sands				
38.4	3.2									
38.2	3.4		SC	D	D	Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, low plasticity fines				
38.0	3.6									
37.8	3.8		CI	w<PL	Fb	Sandy CLAY. Medium plasticity, orange-brown and grey, fine to coarse grained sands				
37.6	4.0					End of Hole at 4.0 m, target depth reached				

PROJECT NO. 202597

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **BH12**

CLIENT	Wentworth Shire Council	**NORTHING** 6222786	**ELEVATION (mAHD)** 41.6
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 611156	**TOTAL DEPTH (mBGL)** 4.00
LOCATION	Wentworth, NSW		

STARTED	17/03/2023	**COMPLETED**	17/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Berri Drafting & Drilling	**LOGGED BY**	IPN				
EQUIPMENT	Rockmaster	**CHECKED BY**	MA				
METHOD	PT	**PERMIT NO.**					

PHOTOS

ADDITIONAL NOTES

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

TEST PIT NUMBER **TP01**

CLIENT	Wentworth Shire Council	**NORTHING**	6222861.157	**ELEVATION (mAHD)**	44.244
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	609969.976	**TOTAL DEPTH (mBGL)**	1.2
LOCATION	Wentworth, NSW				

STARTED	21/03/2023	**COMPLETED**	21/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Wentworth Shire Council	**LOGGED BY**	IPN	▼			
EQUIPMENT	25t Excavator	**CHECKED BY**	MA	▽			
METHOD	E	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	COMMENTS/OBSERVATIONS
44.1	0.1		SC	D	D	Mixture of Calcareous Clayey SAND, Calcrete Boulders and Calcrete Cobbles. Fine to coarse grained Calcareous Clayey Sand, pale brown to orange brown, low plasticity fines, with fine to coarse grained gravels, sub-angular, 20% boulders, angular to sub-angular to 300 mm, 5% cobbles, sub-angular			
44.0	0.2								
43.9	0.3								
43.8	0.4								
43.7	0.5								
43.6	0.6								
43.5	0.7								
43.4	0.8								
43.3	0.9								
43.2	1.0		SC	D	D	Clayey SAND. Fine to coarse grained, orange brown, low plasticity, with fine to coarse grained gravels			
43.1	1.1								
43.0	1.2					End of hole at 1.2 m, no waste encountered			

PHOTO / SKETCH

ADDITIONAL NOTES

Located in drop off area

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

TEST PIT NUMBER **TP02**

CLIENT	Wentworth Shire Council	**NORTHING**	6222975.596	**ELEVATION (mAHD)**	45.060
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610545.848	**TOTAL DEPTH (mBGL)**	0.9
LOCATION	Wentworth, NSW				

STARTED	21/03/2023	**COMPLETED**	21/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Wentworth Shire Council	**LOGGED BY**	IPN	▼			
EQUIPMENT	25t Excavator	**CHECKED BY**	MA	▽			
METHOD	E	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	COMMENTS/OBSERVATIONS
45.0	0.1		-	M D	MD	FILL. Mixture of Calcareous Clayey Sand, Calcrete Boulders and Calcrete Cobbles, fine to coarse grained clayey sand, pale brown to orange brown, low plasticity fines, with fine to coarse grained gravels, sub-angular, 20% boulders, angular to sub-angular to 300 mm, 5% cobbles, sub-angular			
44.9	0.2								
44.8	0.3		-	M	MD	FILL. Clayey Sand, stained black, potentially leachate impacted and strong waste/organics odour. No tactile log due to leachate impact but inferred to be similar to above. Waste inclusions.			
44.7	0.4								
44.6	0.5								
44.5	0.6								
44.4	0.7								
44.3	0.8								
44.2	0.9					End of hole at 0.9 m. Leachate impacted soils and edge of waste inclusions indicate inferred extent of waste.			

PHOTO / SKETCH

ADDITIONAL NOTES

Edge of exiting landfill

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

TEST PIT NUMBER **TP03**

CLIENT	Wentworth Shire Council	**NORTHING**	6223001.724	**ELEVATION (mAHD)**	40.524
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610691.21	**TOTAL DEPTH (mBGL)**	1.0
LOCATION	Wentworth, NSW				

STARTED	21/03/2023	**COMPLETED**	21/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Wentworth Shire Council	**LOGGED BY**	IPN	▼			
EQUIPMENT	25t Excavator	**CHECKED BY**	MA	▽			
METHOD	E	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	COMMENTS/OBSERVATIONS
40.4	0.1		-	M D	MD	FILL. Calcareous clayey sand, pale brown and orange, low plasticity, with fine to coarse grained gravels, waste inclusions			
40.3	0.2								
40.2	0.3		-	M	MD	FILL. Clayey Sand, stained black, potentially leachate impacted and strong waste/organics odour. No tactile log due to leachate impact but inferred to be similar to above. Waste inclusions.			
40.1	0.4								
40.0	0.5								
39.9	0.6								
39.8	0.7								
39.7	0.8								
39.6	0.9								
39.5	1.0		SC	D	D	Clayey SAND. Fine to coarse grained, orange brown, low plasticity, with fine to coarse grained gravels			
						End of hole at 1.2 m. Edge of leachate impacted soils and waste inclusions inferred extent of waste.			

PHOTO / SKETCH

ADDITIONAL NOTES

Edge of exiting landfill

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

TEST PIT NUMBER **TP04**

CLIENT	Wentworth Shire Council	**NORTHING**	6222963.076	**ELEVATION (mAHD)**	39.611
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610765.52	**TOTAL DEPTH (mBGL)**	0.9
LOCATION	Wentworth, NSW				

STARTED	21/03/2023	**COMPLETED**	21/03/2023	**SYMBOL**	**SWL (mBGL)**	**DATE**	**NOTES** Groundwater not encountered
CONTRACTOR	Wentworth Shire Council	**LOGGED BY**	IPN	▼			
EQUIPMENT	25t Excavator	**CHECKED BY**	MA	▽			
METHOD	E	**PERMIT NO.**		▼			

DEPTH (mAHD)	DEPTH (mBGL)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DENSITY/ CONSISTENCY	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE TYPE /ID	COMMENTS/OBSERVATIONS
39.5	0.1		-	M D	MD	FILL. Calcareous clayey sand, pale brown and orange, low plasticity, with fine to coarse grained gravels, organics throughout			
39.4	0.2		-	D	MD	FILL. Sand, fine to coarse grained, poorly graded, grey, trace low plasticity fines, organics throughout			
39.3	0.3		-	D	MD	FILL. Calcareous clayey sand, pale brown and orange, low plasticity, with fine to coarse grained gravels, waste inclusions			
39.2	0.4								
39.1	0.5								
39.0	0.6								
38.9	0.7								
38.8	0.8								
38.7	0.9		-	-	-	Waste. Mixed, plastic bags, chip packets, plastics, cardboard.			
						End of hole at 1.0 m. Waste encountered.			

PHOTO / SKETCH

ADDITIONAL NOTES

Edge of exiting landfill

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW1**

CLIENT	Wentworth Shire Council	**NORTHING**	6223212.34
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610277.539
LOCATION	Wentworth, NSW	**ELEVATION (mAHD)**	44.09
		TOTAL DEPTH (m BGL)	15.25

STARTED	17/04/2023	**COMPLETED**	17/04/2023
CONTRACTOR	In-Depth Drilling	**LOGGED BY**	IPN
EQUIPMENT	Rockmaster	**CHECKED BY**	MA
METHOD	AU	**PERMIT NO.**	

SYMBOL	SWL (mTOC)	DATE
▼	12.3	17/04/2023
▽	12.5	18/04/2023
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 45.014 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
		SP	D	SAND. Fine to coarse grained, poorly graded, pale brown, with low plasticity fines, with fine to coarse grained gravels, rounded				44.0	
1.0			D	Becoming trace gravels, sub-rounded, colour becoming pale orange-brown				43.0	
2.0								42.0	
3.0								41.0	Concrete Grout
4.0		SC	D	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, orange-brown darkening with depth, low plasticity fines				40.0	
5.0		SC	D	Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, minor black flecking, trace fine to medium grained gravels, pockets of low plasticity CLAY				39.0	

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW1**

CLIENT	Wentworth Shire Council	**NORTHING** 6223212.34	**ELEVATION (mAHD)** 44.09
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 610277.539	**TOTAL DEPTH (m BGL)** 15.25
LOCATION	Wentworth, NSW		
STARTED	17/04/2023	**COMPLETED** 17/04/2023	
CONTRACTOR	In-Depth Drilling	**LOGGED BY** IPN	
EQUIPMENT	Rockmaster	**CHECKED BY** MA	
METHOD	AU	**PERMIT NO.**	

SYMBOL	SWL (mTOC)	DATE
▼	12.3	17/04/2023
▽	12.5	18/04/2023
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 45.014 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
0.0		SC	D	Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, minor black flecking, trace fine to medium grained gravels, pockets of low plasticity CLAY *(continued)*				38.0	Bentonite Seal
7.0								37.0	
8.0								36.0	Gravel Filter Pack
9.0		SP	M D	SAND. Fine to coarse grained, poorly graded, orange-brown, with low plasticity fines				35.0	
10.0		SC	M D	Clayey SAND. Fine to coarse grained, poorly graded, dark orange-brown, low plasticity fines.				34.0	
11.0				Becoming trace fine grained gravels, rounded				33.0	
		CH	w<PL	CLAY. High plasticity, red-brown, minor white flecking, with fine to coarse grained sands, calcareous in places					Screen

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW1**

CLIENT	Wentworth Shire Council		**NORTHING**	6223212.34	**ELEVATION (mAHD)** 44.09
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610277.539	**TOTAL DEPTH (m BGL)** 15.25
LOCATION	Wentworth, NSW				
STARTED	17/04/2023	**COMPLETED** 17/04/2023			
CONTRACTOR	In-Depth Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	AU	**PERMIT NO.**			

SYMBOL	SWL (mTOC)	DATE
▼	12.3	17/04/2023
▽	12.5	18/04/2023
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 45.014 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
		CH	w<PL	Sandy CLAY. Medium to high plasticity, red-brown, minor white flecking, with fine to coarse grained sands, calcareous in places				32.0	
13.0		CH	w<PL	CLAY. Medium to high plasticity, red-brown, minor white flecking, with fine to coarse grained sands, calcareous in places				31.0	
			w~PL						
14.0				Becoming pale red-brown				30.0	
15.0		SC	W	Clayey SAND. Fine to coarse grained, yellow and minor red-brown, medium plasticity fines.				29.0	Collapse
				End of hole at 15.25m				28.0	
								27.0	

PROJECT NO. 202597

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW2**

CLIENT	Wentworth Shire Council	**NORTHING** 6223123.65	**ELEVATION (mAHD)** 37.795
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 610952.866	**TOTAL DEPTH (m BGL)** 12.00
LOCATION	Wentworth, NSW		
STARTED	17/04/2023	**COMPLETED** 17/04/2023	
CONTRACTOR	In-Depth Drilling	**LOGGED BY** IPN	
EQUIPMENT	Rockmaster	**CHECKED BY** MA	
METHOD	AU	**PERMIT NO.**	

SYMBOL	SWL (mTOC)	DATE
▼	5.1	17/04/2023
▽	6.1	18/04/2023
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 38.783 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
0.0		SC	D	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, low plasticity fines, trace fine to medium grained gravels, sub angular to sub-rounded				37.0	Concrete Grout
1.0									Bentonite Seal
2.0		CH	w<PL	Calcareous Sandy CLAY. Low to medium plasticity, brown and white, fine to coarse grained sands, trace fine grained gravels				36.0	Gravel Filter Pack
3.0				Colour darkens				35.0	
4.0								34.0	Screen
5.0		CH	w~PL	CLAY. High plasticity, brown and grey, with fine to coarse grained sands				33.0	
								32.0	

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW2**

CLIENT	Wentworth Shire Council	**NORTHING**	6223123.65	**ELEVATION (mAHD)**	37.795
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING**	610952.866	**TOTAL DEPTH (m BGL)**	12.00
LOCATION	Wentworth, NSW				

STARTED	17/04/2023	**COMPLETED**	17/04/2023	**NOTES**	Stickup finish in yellow steel standpipe Monitoring Point Elevation to top of PVC 38.783 mAHD
CONTRACTOR	In-Depth Drilling	**LOGGED BY**	IPN		
EQUIPMENT	Rockmaster	**CHECKED BY**	MA		
METHOD	AU	**PERMIT NO.**			

SYMBOL	SWL (mTOC)	DATE
▼	5.1	17/04/2023
▽	6.1	18/04/2023
⧩		

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
0.0		CI	w~PL	Sandy CLAY. Medium plasticity, red-brown with minor white, fine to coarse grained sands, with fine grained gravels, sub-rounded				▽	
7.0				Becoming brown				31.0	
		SC	W	Clayey SAND. Fine to coarse grained, poorly graded, brown, low plasticity fines, trace fine grained gravels				30.0	
8.0									
9.0				Becoming pale brown				29.0	
10.0				No recovery				28.0	Collapse
11.0								27.0	
				End of hole at 12.0 m, hole collapsing				26.0	

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW3**

CLIENT	Wentworth Shire Council	**NORTHING** 6223245.46	**ELEVATION (mAHD)** 39.566
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 610893.05	**TOTAL DEPTH (m BGL)** 13.00
LOCATION	Wentworth, NSW		
STARTED	17/04/2023	**COMPLETED** 17/04/2023	
CONTRACTOR	In-Depth Drilling	**LOGGED BY** IPN	
EQUIPMENT	Rockmaster	**CHECKED BY** MA	
METHOD	AU	**PERMIT NO.**	

SYMBOL	SWL (mTOC)	DATE
▼	7.8	18/04/2023
▽		
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 40.524 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
0.0		SP	D	SAND. Fine to coarse grained, poorly graded, pale brown, with low plasticity fines, trace fine to medium grained gravels, sub angular to sub rounded, minor roots top 200 mm, calcareous.				39.0	
1.0		SC	D	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, orange-brown, low plasticity fines, trace fine to medium grained gravels, sub angular to sub-rounded				38.0	Concrete Grout
2.0		SC	D	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, orange, low to medium plasticity fines, with fine to medium grained gravels, sub angular to sub rounded, white, calcareous				37.0	Bentonite Seal
3.0		SC	D	Calcareous Clayey SAND. Fine to coarse grained, poorly graded, red, brown and grey, low plasticity fines, with fine to medium grained gravels, subrounded to sub angular, white, pockets grade to Sandy CLAY				36.0	Gravel Filter Pack
4.0		Cl	w<PL	Calcareous Sandy CLAY. Medium to high plasticity, grey with red and white gravels, fine to coarse grained sands, trace fine grained gravels, sub-rounded				35.0	
5.0								34.0	Screen

tonkin
97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW3**

CLIENT	Wentworth Shire Council		**NORTHING**	6223245.46	**ELEVATION (mAHD)** 39.566
PROJECT	Buronga Landfill Expansion Detailed Design		**EASTING**	610893.05	**TOTAL DEPTH (m BGL)** 13.00
LOCATION	Wentworth, NSW				
STARTED	17/04/2023	**COMPLETED** 17/04/2023			
CONTRACTOR	In-Depth Drilling	**LOGGED BY** IPN			
EQUIPMENT	Rockmaster	**CHECKED BY** MA			
METHOD	AU	**PERMIT NO.**			

SYMBOL	SWL (mTOC)	DATE
▼	7.8	18/04/2023
▽		
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 40.524 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
		CH	w~PL	CLAY. High plasticity, grey with minor yellow mottling, with fine to coarse grained sands				33.0	
7.0		CI	w~PL	Sandy CLAY. Medium to high plasticity, brown with red and white mottling, fine to coarse grained sands, trace fine grained gravels				32.0	
8.0									
				Pockets of grey Clayey Sand				31.0	
9.0			w~PL	Colouring brown only, moisture content increasing				30.0	
10.0									
				No recovery				29.0	
11.0								28.0	Collapse

97 Pine Avenue
Mildura VIC 3500
T +61 3 5021 4486

BOREHOLE NUMBER **MW3**

CLIENT	Wentworth Shire Council	**NORTHING** 6223245.46	**ELEVATION (mAHD)** 39.566
PROJECT	Buronga Landfill Expansion Detailed Design	**EASTING** 610893.05	**TOTAL DEPTH (m BGL)** 13.00
LOCATION	Wentworth, NSW		

STARTED	17/04/2023	**COMPLETED**	17/04/2023
CONTRACTOR	In-Depth Drilling	**LOGGED BY**	IPN
EQUIPMENT	Rockmaster	**CHECKED BY**	MA
METHOD	AU	**PERMIT NO.**	

SYMBOL	SWL (mTOC)	DATE
▼	7.8	18/04/2023
▽		
▼		

NOTES
Stickup finish in yellow steel standpipe
Monitoring Point Elevation to top of PVC 40.524 mAHD

DEPTH (m)	GRAPHIC LOG	USCS CLASS.	MOISTURE	DESCRIPTION AND OBSERVATIONS	SAMPLE	SAMPLE ID	SPT (N Value)	ELEV (m AHD)	WELL CONSTRUCTION
				No recovery *(continued)*				27.0	
13.0				End of hole at 13.0 m, hole collapsing				26.0	
								25.0	
								24.0	
								23.0	
								22.0	