TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – BOREHOLE

Ref No: 14700

35 307

borehole no. MRDH 1
sheet 1 of 1

project NSCP location Meander River

co-ordinates
R.L.
inclination
bearing

drill type Geneco
drill method auger
drill fluid

hole commenced 13.8.85
hole completed
drilled by Danny Whammond
logged by
checked by

penetration 1 2 3	support	water	notes samples, tests	metres R.L	metres depth	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa 25 50 100 200 400	structure, geology
							SP-SC	CLAYEY SAND: medium - fine gr., brown. Clay ~ 20%.	M			
			approx.					as above, abundant pebbles to 25mm, basalt and puddingstone (perhaps boulder clay material)				
					1.0		CH	SANDY CLAY; high plasticity, yellow-brown. Sand fine - medium	>PL			
					2.0			As above, mottled red, grey.				
					3.0			As above, more grey clay.				
								CORING STARTED.				
					4.0							
					5.0							

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE

35 30S

borehole no. MRDH1
sheet 1 of

project NSCP | location Meander River

co-ordinates | drill type CEMCO | hole commenced 13.8.85 (tuesday)
R.L. | drill method Diamond drill | hole completed
inclination | drill fluid | drilled by D. Whammond
bearing | | logged by ALT
| | checked by

drilling information | **rock substance** | **rock mass defects**

cass-lift	fluid loss	water	notes	lugeons (0.3, 1, 10, 30, 100)	metres R.L	metres depth	graphic log	substance description (rock type: grain characteristics, colour, structure, minor components.)	weathering	strength (EL, VL, L, M, H, VH, EH)	defect spacing mm. (30, 100, 300, 1000, 3000)	defect description (thickness, type, inclination, planarity, roughness, coating; significant / general)
						1.0		install piezometers @ 39.0 – 40.0 m } 40 23.5 – 24.0 m } 24 12.0 – 12.5 m } 13 77 0.0 – 5.0 m. 3m.				NOTES 1 Pa = kg/m² ∴ 1 kPa = 1000 kg/m² = 1000 kg / 10000 cm² 1 kPa = 1/10 kg/cm² ∴ 10 kPa = 1 kg/cm² 23 kPa = 2.3 kg/cm²
						2.0						SAND CONTENT 10 20 30 40 50 60 (%)
						3.0		Augering. See attached log.				
			various SAMPLES S.F.				CH	CLAY; high plasticity; grey; mottled yellow and green brown; Fissured		K 23		Recent grey rhythmic mottling
							CH-SC	SANDY CLAY; as above; fine to coarse grained; [illegible] to (SC) at 3.8m				
						4.0	CH	(CH) CLAY at 3.9 m. SANDY CLAY; high plast. grey mottled yellow. fine to med.				Extremely wet & sloppy. Clay fragments incorporated in slurry.
			Min				CH	CLAY; high plas; grey mottled yellow; sandy, predominantly FeO		K 30		Abundant FeO. V stiff, dry homogeneous fibrous material at base of recent
			abun FeO₂			5.0		SANDY CLAY; as above				

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE

35 309

borehole no. MR BH 1
sheet 2 of

project NSCP location

co-ordinates
R.L.
inclination
bearing

drill type GEMCO
drill method diamond rotary
drill fluid

hole commenced
hole completed
drilled by DW
logged by ALT
checked by

drilling information						rock substance				rock mass defects	
case-lift	fluid loss	water	notes	lugeons 0.3 1 3 10 30 100	metres R.L. / depth	graphic log	substance description (rock type: grain characteristics, colour, structure, minor components.)	weathering	strength EL VL L M H VH EH (Point Load)	defect spacing mm 30 100 300 1000 3000	defect description (thickness, type, inclination, planarity, roughness, coating.) significant / general
			Mineral		5.0		grading to:				two highly dipping ite joints. Grey 1-2 — patches most colour at side of joints.
						CH	SANDY CLAY; grey, high plas., fine – med. sand				
					6.0						
			Mineralogy			CH	CLAY; as per –5.7m. Fissured but not slickensided				Yellow & red streaks in pockets. Low plastic, st & mean brittle
							as above. Large pebble 30mm x 20mm included in clay core; mottled purple, red, yellow green, grey down vertically. Sharp contact with grey clay.		25 35 17 >60		PEBBLE / inducte
					7.0	CH	CLAY, high plasticity. Alternate purple & red mottling and rather grey purple. Nodules incorporated		15 25		Varves. Nodules 2 Varve thickness 5
						CH	Alternate blue grey & brown. Thicker varves				varve thickness 10 purple-grey grey-green-grey-grey
					8.0		Varves continue as above with alternations of colours. Dull varves only 1mm. Shiny 10-15mm.		27		purple-grey.
			Core Loss.		9.0	CH	SANDY CLAY, high plas., grey, sand fine to medium.		12		
						CH	CLAY, high plas, green-grey, grey. Highly laminated, very stiff		>760		natural fissures, discontinuous, not slick
					10.0						

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE

35 310

borehole no. MRDH1
sheet 3 of

project NSCP
location Meander River

co-ordinates
R.L.
inclination
bearing

drill type GEMCO
drill method Rotary
drill fluid

hole commenced
hole completed
drilled by DW
logged by MLT
checked by SMND

drilling information

case-lift	fluid loss	water	notes	lugeons 0.3 – 3 – 10 – 30 – 100	metres R.L.	metres depth
			Min.		10.0	
			Mineralogy		11.0	
			Quartz. Mineralogy		12.0	
			CORE LOSS		13.0	
					14.0	
					15.0	

rock substance

graphic log	substance description (rock type: grain characteristics, colour, structure, minor components.)	weathering	strength EL VL L M H VH EH
CH	CLAY: varved (as to 8.90 m)		
CH	CLAY; high plas., grey mottled, same sand yellow mottling fissured, slickensides near vertical		19 19 17 17 260 240
	Silty to 210. As above, yellow & red pebbles		
SC	clayey SAND; fine-med, grey-mottled red. clay high plasticity		
	CORE LOSS		
CH	SANDY CLAY; high plas., grey speckled red with pebbles		
CH	CLAY; as per 10.4–11.6. dark grey for 12.7–12.9m also silty. grey-brown mottled red.		
	persistent slickensides ~ 80° abundant low angle slickensides indicating movement ~ 10-20° brown-grey		
	grey. some sand.		

rock mass defects

defect spacing mm 30 to 100 – 300 – 1000 – 3000	defect description (thickness, type, inclination, planarity, roughness, coating.) significant	general
	fossil wood – core standing upright – sandy clay	
	core loss probably gravelly sand or sand.	
	= abundant calcite pebbles very soft fissured vertically, not	
700		
170		
200	fissured, slickensides	
>600	more fissured	
>600		

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE

35 311

borehole no. ~~DES~~ MRDM 3
sheet 4 of

project NCCP location Meander River

co-ordinates
R.L
inclination
bearing

drill type Geco
drill method Rotary
drill fluid

hole commenced 19-8-85
hole completed 20-8-85
drilled by Durhammond
logged by ALT.
checked by

drilling information

case-lift | fluid loss | water | notes | lugeons (0.3 – 3 – 10 – 30 – 100) | metres R.L | metres depth

rock substance

graphic log | substance description (rock type: grain characteristics, colour, structure, minor components.) | weathering | strength (EL – L – M – H – VH – EH)

rock mass defects

defect spacing mm (10 – 30 – 100 – 300 – 1000 – 3000) | defect description (thickness, type, inclination, planarity, roughness, coating.) significant / general

15

mineralogy

As above, more sand 20%

Soft < P_L no fissures

16

?CORE LOSS?
?SAND?

CH CLAY; high plasticity, abundant iron oxide particularly bottom & top. Clay grey to green-grey. Some sand

transmide band

7600

17

CH CLAY; high plasticity grey, mottled finely dark grey.

abundant iron oxide
?Two dark grey bands (hard?) between CH clays as per N-Q

CH SC Sandy CLAY: white, fine

LATERITE

As above Sandy clay, indurated

18

LATERITISED SC & SAND f-m

SP Clayey SAND, poorly sorted, yellow to white, unconsolidated.

oxidised cement

yellow-grey-grey flecked grey

CH CLAY; high plasticity, yellow, abrupt change to grey-yellow, flecked with grey mottled yellow

laterised clay/cemented at ~55°–60°. Laterite 5-8 – thick with clay/oxide/silica/oxide. Ferricrete? nodules in clay also

19

yellow indurated

Yellow FeO cemented, mud coarse (laterised?)

BASE OF LATERITISE

Mineralogy

CH CLAY; high plasticity, grey, stiff

20

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE

35 312

borehole no.

sheet 5 of

project NSCP location Meander River

co-ordinates
R.L.
inclination
bearing

drill type Geo-co
drill method Rotary
drill fluid

hole commenced
hole completed
drilled by DW
logged by ALT
checked by

SAND

drilling information | rock substance | rock mass defects

case-lift	fluid loss	water	notes	lugeons 0.3 → 10 30 100	metres R.L	metres depth	graphic log	substance description (rock type: grain characteristics, colour, structure, minor components.)	weathering	strength EL VL L M H VH EH	defect spacing mm 60 to 200 200 to 600 600 to 1000 1000 to 3000 >3000	defect description (thickness, type, inclination, planarity, roughness, coating.) significant	general
							CH	CLAY; high plasticity, greasy feel, grey, stiff		200			
								CORE LOSS ?				Possible core loss	
								Clay has abundant white flecks, soft ?calcite?					
					21.0			As above, alternating bands stiff, waxy grey clay & some sand, & dull soft grey clay.		250			Rhythmites
							CH	Sandy CLAY, hi plas., grey, sand f. → m. Nodules calcareous ?/s.?		300 240		Carbonaceous material — Striations of bedding — Thin section of nodule	
								As per 20.9 ↓		110		Shiny bands appear 15 mm thicker than dull & 1 cm on average.	
			Micaceous		22.0					330			
								As above, shiny clay only.		250			
								As per 21.4 → 22.4. White flecks in shiny clay		350			
					23.0					350			
							CH	Sandy CLAY; grey, hi pl, med. sand f. → m. Interbedded grey, high plas. clay.		210		Sample to Richie, XR: kaolinite, apparently	
			Install piezometers					CORE LOSS SAND ?					
					24.0		ST	clayey SAND as per 21.3 - 21.4		30		Indurated ? feldspathic ss/ siltst	
							CH	CLAY; hi plas., grey, some sand ?clay pellets at bottom. Shiny waxy		420			
							ST	Clayey SAND, f. to m. gr.		2910			
					0-1		CH ↑ ST	as per 24.0 → 24.85		500			
								Clayey SAND; as per 22.5 - 23.5		400			
					25.0			CORE LOSS				Possible boundary of run.	

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE 35 313

borehole no. MRDH 1
sheet 6 of

project NSCP location Meander River

co-ordinates
R.L
inclination
bearing

drill type Geneo
drill method Rotary
drill fluid

hole commenced 18 · 8 · 85
hole completed 20 · 8 · 85
drilled by DW
logged by ALT
checked by

drilling information							rock substance				rock mass defects	
case-lift	fluid loss	water	notes	lugeons 0.3 3 10 30 100	metres R.L	metres depth	graphic log	substance description rock type: grain characteristics, colour, structure, minor components.	weathering	strength	defect spacing mm. 30 100 300 1000 3000	defect description thickness, type, inclination, planarity, roughness, coating. significant / general
			Mineralogy		25.0		CH	CLAY; h. plas., grey, slty, wavy. Rhythmic bedding. Soft drill clay bands 1-2 cm, bright 10-15 cm. Rhythmites become less obvious.	fw sw 350 450 550 >600			= sample for SEM; ptha 4 bands of ? siderite. Lower Layer of nodules
					26.0		CH	CLAY; as above, abundant glossy white flecks (? v. ash) mottled with clay. Indurated sand nodule	450 500 550 >600			No apparent bedding.
					27.0			As above with no white flecks but nodules (→ 30 mm) indurated sand	550			
			Mineralogy		28.0		SP CH	sandier at base SAND. Indurated – hard. As above, clay. 26.2 →	>600			Abundant slickensides at ~60°–70°. Up to 3 cm @ 120° apart. Movement generally downward, indicate loading
							CH CH CH SC	Sandy CLAY, grey, f → m. CLAY as per 27.8 → Sandy CLAY as per 28.2 → Grades to SC clayey SAND	250 400 200			
			Rhyolite		29.0		CH SC	As above	400			Indurated sand lo
							CH SC	As above	400 550			
			Eolianite				CH SC	As above. clay, grey to black, carbonaceous in parts.	500 570			Abundant slickensides as per 25.1 m. Indurated band carbonaceous Nodules
					30.0							

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE 35 314

borehole no. MRDA 4
sheet 1 of

project NSCP location Meander River

co-ordinates
R.L.
inclination
bearing

drill type Geco
drill method Rotary
drill fluid

hole commenced
hole completed
drilled by DW
logged by ALT
checked by

drilling information							rock substance				rock mass defects	
case lift	fluid loss	water	notes	lugeons 0.3 3 10 30 100	metres R.L	metres depth	graphic log	substance description rock type: grain characteristics, colour, structure, minor components.	weathering	strength EL VL L M H VH	defect spacing mm. 30 100 300 1000 3000	defect description thickness, type, inclination, planarity, roughness, coating. significant / general
						30·0	CH	CLAY, grey, structureless, some sand, trace white flecks		450		
										500		
								As above, metallic nodules to 5 mm.		500		
								Stiff, dry.		>600		
			mini-piston			31·0		Abundant white flecks.		>600		clay is harder in incorporating flecks
								As per 30·0 →		600		Abundant slickensided
										>600		
						32·0		As above, clay crumbly.		450		
								CORE LOSS				
										500		
						33·0		Abundant white flecks				
			mini-piston				CH	CLAY; high plas., grey, stiff thinly wavy to mottled soft clays.		450 / 150		Rutile tan. Hard wavy layers ~ 20 mm; soft layers 2-4 mm?
										wp		
										450 / 150		
								(SIDERITE LAYER)				
						34·0	SP	SANDSTONE; indurated, extremely hard.		>600		Sharp contact Top 5 mm s/s could be subaerial wood bearing pebbles
							SC	clayey SAND; f. to m. sand, with		200		
								CORE LOSS. SAND...				
								CORE LOSS				
						35·0	CH	See ore.				

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BORE HOLE

35 313

borehole no. MRDH 1
sheet 8 of

project NCCP location Meander River

co-ordinates
R.L.
inclination
bearing

drill type Geco
drill method Rotary
drill fluid

hole commenced 13·8·85
hole completed 20·6·85
drilled by DWhamond
logged by ALT
checked by

drilling information						rock substance				rock mass defects	
core lift	fluid loss	water	notes	lugeons 0.3 3.0 30 100	metres R.L. / depth	graphic log	substance description: rock type, grain characteristics, colour, structure, minor components.	weathering	strength	defect spacing mm. 10 30 100 300 1000 3000	defect description: thickness, type, inclination, planarity, roughness, coating. significant / general
			min.		35·0	CH	Sandy CLAY; h. plas., grey. Sand f–m. Trace white flecks. Some carbonaceous material (i.e. sticks etc.)		350 400		Clayey sides (highly)
						SP	Clayey SAND as above.		90		
						CH	Sandy CLAY as above		150		
					36·0		CORE LOSS SAND PRESUMABLY				
			AH.		74·0	SC	Clayey SAND; white/grey, saturated, f–m. gr. Clay plastic. Inundated at base.		320 400 Temp.		
					78·0		CORE LOSS SAND PRESUMABLY				
						SC	As above, with lignite. not saturated. F. to coarse gr.				
			Install piezometer		79·0		CORE LOSS SAND PRESUMABLY				
					91·0	SP	SAND; fine–coarse, lt. brown, clayey matrix, intercallated woody material				

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG – CORED BOREHOLE

35 316

borehole no. MRDH 1
sheet 9 of 9

project NSCP. location Meander River

co-ordinates
R.L.
inclination
bearing

drill type Cenco
drill method Rotary
drill fluid

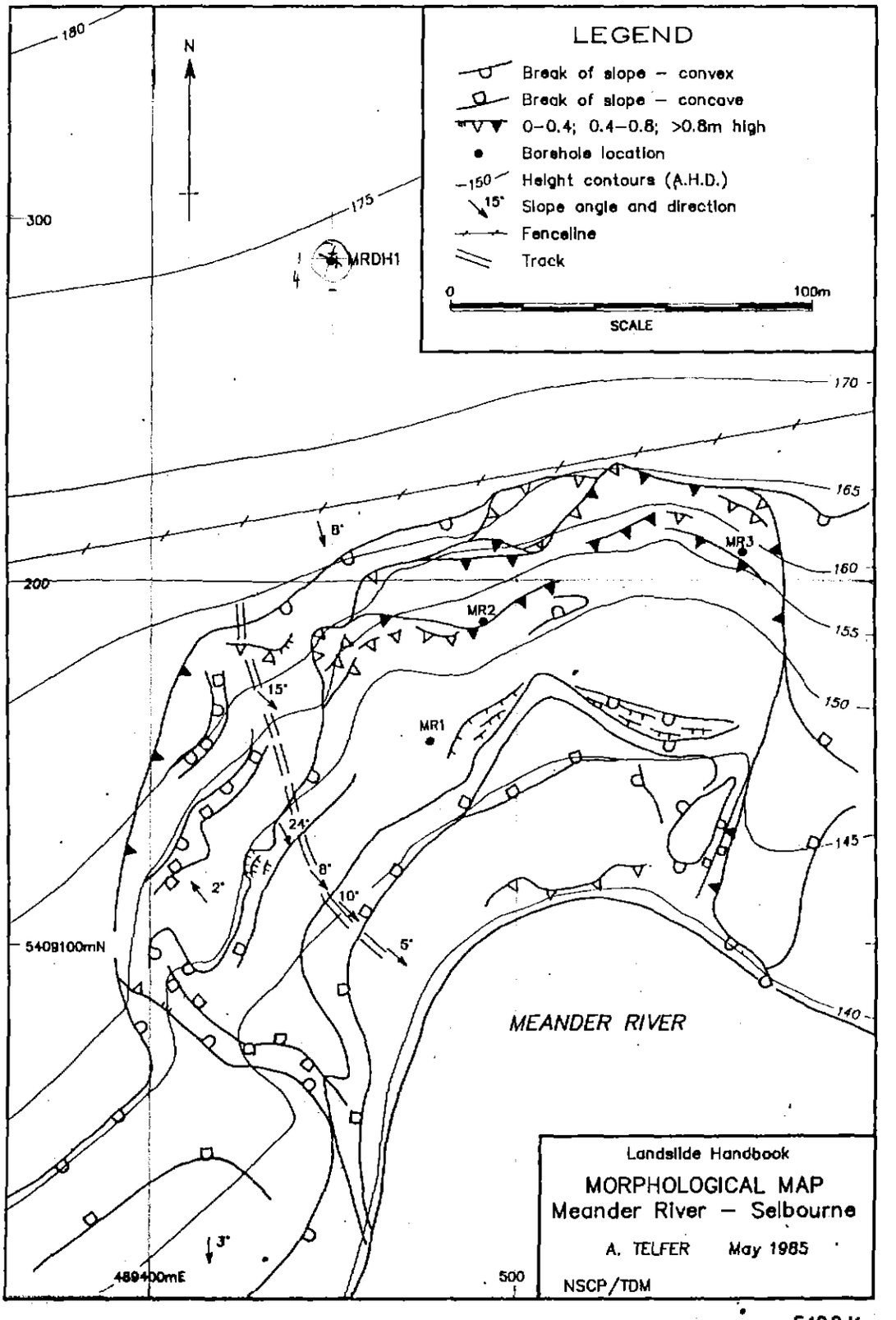
hole commenced 13.9.85
hole completed 20.8.85
drilled by D Whitehead
logged by ALT
checked by

drilling information							rock substance				rock mass defects	
case-lift	fluid loss	water	notes	lugeons 0.3 1 3 10 30 100	metres R.L	metres depth	graphic log	substance description rock type: grain characteristics, colour, structure, minor components.	weathering	strength EL VL L M H VH EH	defect spacing mm. 30 100 300 1000 3000	defect description thickness, type, inclination, planarity, roughness, coating. significant / general
						40.0	Pt	LIGNITE.				
										7600		
			AA				Pc	Carbonaceous mud.		7600		Approx
										7600		
						41.0	Pc	LIGNITE, as above.				
										7600		
								Carbonaceous mud.				
						42.0				7600		
										7600		
			AA			43.0						
										7600		
						44.0				7600		
			mineralog									
						45.6		END OF HOLE				

MR. D.H.1. Meander River AMG 48954091

489449 5409289

35 317



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