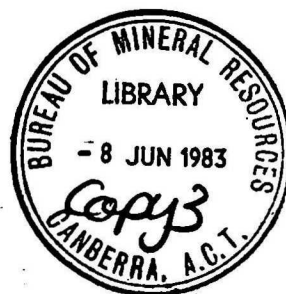


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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD

RECORD 1983/7

STRATIGRAPHIC HOLES DRILLED IN THE CANBERRA AREA,
1979 to 1981

by

G.A.M. Henderson

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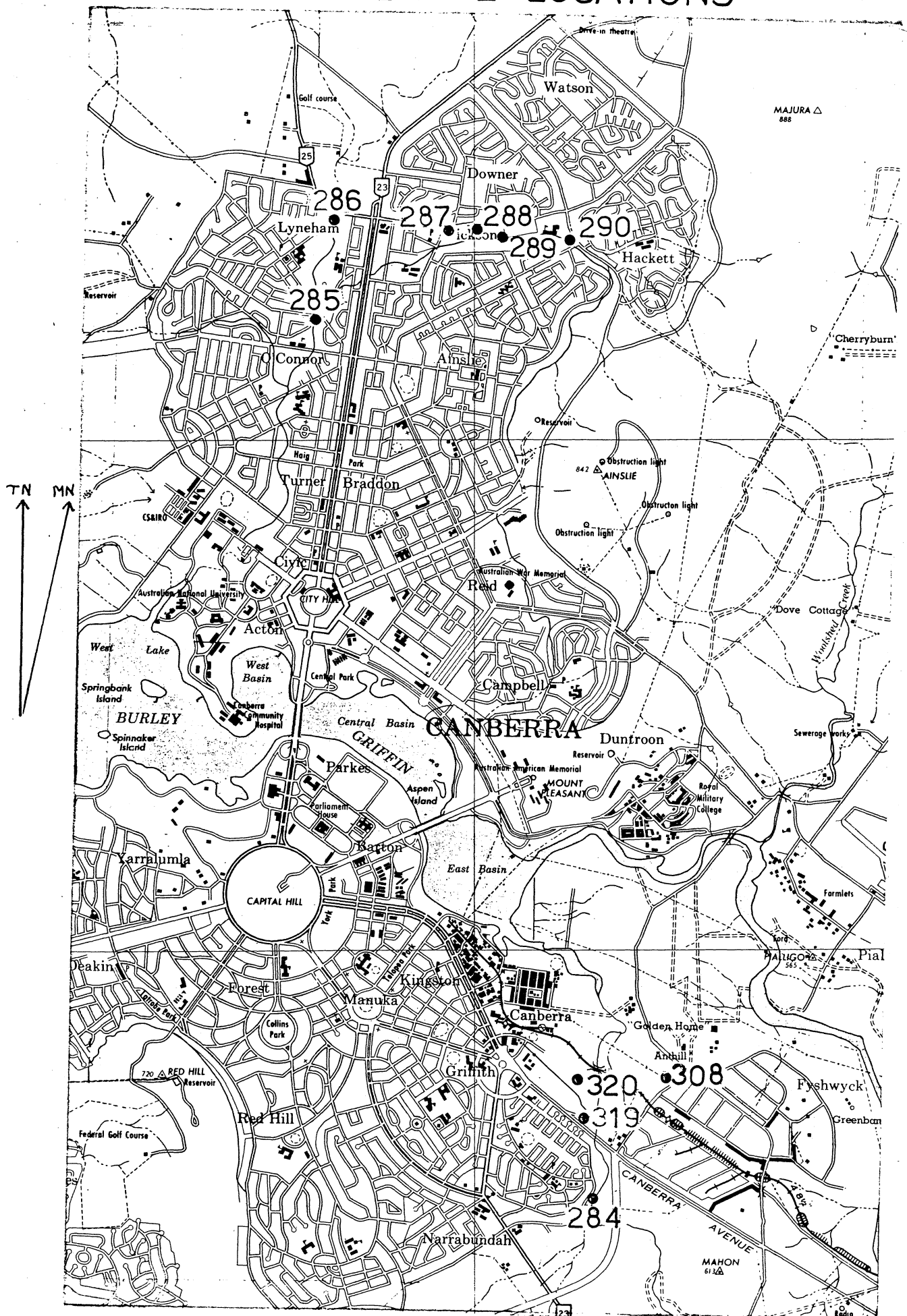
I

SUMMARY

Ten cored stratigraphic holes ranging in depth from 20 to 67 m were drilled in the Canberra urban area between 1979 and 1981. Most of the holes were in sedimentary rocks of the Canberra Formation; one was in the Narrabundah Ashstone Member. In addition, a previously drilled hole in the Yass Formation 25 km northwest of Canberra was deepened in an unsuccessful attempt to reach an underlying stratigraphic unit.

DRILLHOLE LOCATIONS

Fig. 1



INTRODUCTION

Ten holes were drilled during 1979 to 1981 for stratigraphic and weathering profile studies in the North Canberra and South Canberra 1:10000 scale map sheet areas. In addition, a hole in the Yass Formation (C155) drilled in 1976 (Henderson, 1978) was deepened by 20.4 m. This hole is 100 m west of the Barton Highway, 25 km from Canberra.

DRILLHOLE DATA

General data on depths of drillholes and lithologies drilled are shown below (Table 1), and the locations of all holes except C155 are shown in Figure 1. For location of hole C155 see Henderson (1978). Co-ordinates of holes shown on the logs are those for the ACT metric grid based on Mount Stromlo co-ordinates E200 000, N600 000. All the North and South Canberra holes were drilled in the middle Silurian Canberra Formation.

TABLE 1. SUMMARY DRILLHOLE DATA

Hole No.	Depth of hole (m)	Lithology
C284	30.00	Ashstone (Narrabundah Ashstone Mbr)
C285	28.30	Alluvium, mudstone, minor sandstone
C286	29.10	Alluvium, mudstone
C287	33.50	Clay, ironstone, limestone
C288	44.70	Clay, ironstone, limestone
C289	31.40	Siltstone, minor sandstone
C290	20.45	Mudstone
C308	38.65	Mudstone, limestone
C319	67.20	Alluvium, tuff, mudstone, siltstone
C320	20.40	Alluvium, limestone
C155	240.40	Mudstone and siltstone (calcareous in part), sandstone, limestone, minor tuff (Yass Formation).

DRILLING OBJECTIVES AND RESULTS

Hole C284

This hole was drilled at the type locality of the Narrabundah Ashstone Member of the Canberra Formation, the small disused quarry between Matina Street and Jerrobomberra Creek, Narrabundah. The object was to drill through the ashstone and possibly reach underlying sedimentary rocks, and thus obtain a profile of the ashstone and determine its thickness. The base of the ashstone was not reached within the 30 m target depth of the hole; however, the drill core clearly showed variations in the grain size and texture of the unit in fresh rock, and provided good samples for microscopic study. The thin sections (numbers 79360057-59) are representative of the finest and coarsest rock intersected in the drillhole. In hand specimen, layering in the rock is barely visible, but it shows up quite clearly under the microscope, defined by the decomposed feldspar laths, angular quartz and minor biotite, which range to about 1 mm diameter.

The Narrabundah Ashstone Member represents one of the earliest Silurian volcanic episodes in the Canberra City area. It is most extensive (and probably thickest) at Narrabundah and to the south of Fyshwick; it has also been mapped at Woolshed Creek and Reid (Henderson, 1980).

Holes C285-C290

These six holes at O'Connor, Lyneham and Dickson were put down to obtain a representative picture of lithologies and weathering profiles in North Canberra. Three types of profile were penetrated, one in highly and deeply weathered clayey siltstone and mudstone (holes C285, C286, C289), another in clay and ironstone overlying fresh limestone (holes C287, C288) and a third in mudstone, fresh at shallow depth (hole C290).

The clay and ironstone in holes C287 and C288 is a residual material probably derived from shaly sediments and concentrated over areas of limestone by collapse of weathered material into solution cavities that would have formed at the top of the limestone. This is indicated by the large thickness of the clay and ironstone (43.6 m in hole C288) and the sudden transition into fresh limestone (see drill logs).

The extreme softness of the clay that is interspersed with fragmental ironstone has implications for any possible urban redevelopment in the Dickson area involving high rise buildings. When saturated and disturbed, as in drilling, the silty clay becomes an incoherent slurry with virtually no bearing strength. If the clay were to be found at a high-rise building site extending to the depths recorded in holes C287 and C288 expensive raft foundations would almost certainly be necessary (e.g. as for the former TAB building in Northbourne Avenue, Dickson).

The six North Canberra bores were all fitted with casing with slotted sections at the bottom ends, to enable groundwater levels to be measured regularly. This was only partly successful as, owing to the succession of dry seasons, the water levels in some holes fell ~~to~~ below the casing where the holes had caved in. Slotted PVC casing was placed inside the original steel casing in January, 1982, after the holes had been flushed out; since then it has been possible to measure water levels in four of the holes. Representative water levels measured are shown on the logs of the drill holes. The two holes not successfully restored, holes C287 and C288, are the ones drilled in the clay and ironstone. Hole C288 was 'dry' to 19.95 m on 9.12.82 with indications of wet clay at this depth blocking the hole. Readings on hole C287 are inconsistent and unreliable, possibly because of litter dropped down the hole after the lock was broken and the cap removed by vandals.

Hole C308

This hole was drilled mainly to obtain a deeper weathering profile of the extremely weathered mudstone revealed in the excavations for the nearby Googong Pipeline. Difficulty was experienced with core recovery in fragmented mudstone below 26 metres; the hole bottomed in limestone.

Holes C319, C320

These two holes were put down near Jerrabomberra Creek to determine the thickness of alluvium and the nature of the underlying rock.

Hole 319 revealed tuff overlying mudstone and extremely deep weathering beneath 4.8 m of alluvium and fill. The tuff resembles in texture the coarsest parts of the Narrabundah Ashstone Member revealed in hole C284 and it could possibly represent the basal part of this unit; however the tuff is deeply weathered, which contrasts markedly with the Narrabundah Ashstone Member seen elsewhere in which the weathering is invariably shallow. Tuff is known to occur at other levels in the Canberra Formation so proximity to Narrabundah Ashstone Member outcrop does not necessarily mean that the tuff in this hole belongs to that unit.

Hole C320, in contrast to hole C319, penetrated slightly weathered and fresh limestone immediately below 9.3 m of alluvium and fill.

Hole C155

It was intended to deepen this hole to 300 m from the 220 m previously drilled in 1976 and thereby possibly penetrate the topmost volcanic unit of the Mount Painter Volcanics interpreted as underlying the Yass Formation in this area (Abell, 1982). However, difficulties with caving and with recovering core forced drilling operations to be suspended at 240.40 m without achieving the desired goal. The extra 20.4 m drilled was in sedimentary rocks similar to those drilled higher in the hole.

The log of only the bottom 20.4 m is included in this report. The remaining log sheets are shown in Henderson (1978).

REFERENCES

- Abell, R.S., 1982 - Canberra, ACT and NSW 1:100 000 preliminary geological sheet. Bureau of Mineral Resources, Australia, 1:100 000 series 8727.
- Henderson, G.A.M., 1978 - Stratigraphic holes drilled in the Canberra area, 1971 to 1976. Bureau of Mineral Resources, Australia, Record 1978/28 (unpublished).
- Henderson, G.A.M., 1980 - Geology of Canberra, Queanbeyan and environs. Bureau of Mineral Resources, Australia 1:50 000 special geological sheet.

APPENDIX 1

Logs of drillholes

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS		PROJECT <u>RESEARCH DRILLHOLE</u> LOCATION <u>NARRABUNDAH, NEAR JERRABOMBERRA CK.</u>		HOLE NO <u>C284</u>																																																																																																		
GEOLOGICAL LOG OF DRILL HOLE		ANGLE FROM HORIZONTAL (θ) <u>90°</u> DIRECTION _____ COORDINATES <u>E213485 N597920</u> RL. OF COLLAR <u>563m</u>		SHEET <u>2</u> OF <u>2</u>																																																																																																		
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level																																																																																													
0 6 12 18 <table><tr><td rowspan="10">ASHSTONE Fresh</td><td rowspan="10">Pale grey, fine to medium grained, hard</td><td>✓</td><td rowspan="10">100%</td><td rowspan="10">25.00</td><td rowspan="10"></td><td rowspan="10"></td><td rowspan="10"></td><td>Core length of 1.14 m from 20.00</td><td rowspan="10"></td></tr><tr><td>✓</td><td>Calcite veins</td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td>✓</td><td></td></tr><tr><td></td><td></td><td>✓</td><td>100%</td><td></td><td></td><td></td><td>0.5-1cm wide calcite vein at 70°</td><td></td></tr><tr><td></td><td></td><td>✓</td><td>100%</td><td></td><td></td><td></td><td>Calcite stringers at 70°</td><td></td></tr><tr><td></td><td></td><td>✓</td><td>100%</td><td></td><td></td><td></td><td>Core length of 1.14 m from 26.35</td><td></td></tr><tr><td></td><td></td><td>✓</td><td>100%</td><td></td><td></td><td></td><td>Calcite veins at 70° becoming more numerous below 26.50.</td><td></td></tr><tr><td></td><td></td><td>✓</td><td>100%</td><td></td><td></td><td></td><td>Veins 1-5mm wide</td><td></td></tr><tr><td></td><td></td><td>✓</td><td>100%</td><td>30.00</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>END OF HOLE</td><td></td><td></td><td></td><td></td><td></td><td></td><td>30.00m</td><td></td></tr></table>										ASHSTONE Fresh	Pale grey, fine to medium grained, hard	✓	100%	25.00				Core length of 1.14 m from 20.00		✓	Calcite veins	✓		✓		✓		✓		✓		✓		✓		✓				✓	100%				0.5-1cm wide calcite vein at 70°				✓	100%				Calcite stringers at 70°				✓	100%				Core length of 1.14 m from 26.35				✓	100%				Calcite veins at 70° becoming more numerous below 26.50.				✓	100%				Veins 1-5mm wide				✓	100%	30.00							END OF HOLE							30.00m	
ASHSTONE Fresh	Pale grey, fine to medium grained, hard	✓	100%	25.00				Core length of 1.14 m from 20.00																																																																																														
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Drill type <u>Maghem</u> Feed <u>Hydraulic</u> Core barrel type <u>Triple tube</u> Driller <u>K. Hutt, BMR</u> Commenced <u>26/2/79</u> Completed <u>16/3/79</u> Logged by <u>G.A.M.H.</u>		Notes Fracture Log - Number of fractures per 25cm of core. Zones of core loss blocked in. Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis. Water Level Measurements - ☒ Level when hole in progress at specified depth ☒ Level in completed hole on specified date.				Core Photograph Negative No. <table><tr><td>Depth(m)</td><td>Black & White</td><td>Colour</td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>				Depth(m)	Black & White	Colour																																																																																										
Depth(m)	Black & White	Colour																																																																																																				
M(Pf) 221		Checked by _____				SHEET 2 OF 2, 16/I55-16/77																																																																																																

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS GEOLOGICAL LOG OF DRILL HOLE		PROJECT <u>RESEARCH DRILLHOLE</u> LOCATION <u>O'CONNOR, NEAR SULLIVANS CK</u> ANGLE FROM HORIZONTAL (G) <u>90°</u> DIRECTION _____ COORDINATES <u>E210730, N606535</u> R.L. OF COLLAR <u>566m</u>				HOLE NO <u>C285</u> SHEET <u>1</u> OF <u>2</u>				
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing	Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
ALLUVIUM	Not cored				1.00					
ALLUVIUM	Yellow-brown clay			60%	6.35m core					
	Yellow-brown clay with quartz pebbles to 1cm and nodular ironstone			100%						
	Mottled yellow-brown & white clay			100%						
	Dark brown clayey sand with quartz gravel and nodular ironstone			60%						
				70%						
				60%						
	Yellow-brown and buff clay, silty in places; minor gravel in places			80%						
				100%						
	Sandy clay			100%	5.00					
				80%						
			80%							
			100%	6.75						
MUDSTONE Extremely weathered	Pale yellow to white clay with some highly weathered mudstone fragments in places			100%						
				100%						
				90%						
				80%						
				90%						
				100%						
				100%						
				100%						
				100%						
				100%						
SANDSTONE Extremely weathered	Clay with coarse quartz grains			100%	10.00					
				100%						
MUDSTONE Extremely weathered	Yellow-brown to white clay with MW mudstone frags			100%	12.50					
	Pale yellow to white clay with MW green-grey mudstone fragments			100%	13.50					
	Pale grey clay with SW-MW pale-mid grey mudst. frags			100%	15.00					
	Yellow-brown clay with MW pale grey to brown mudstone fragments			75%						
				100%						
			80%	20.00						

Drill type Mayhew

Feed Hydraulic

Core barrel type Triple tube

Driller K. Huth, BMR

Commenced 19/3/79

Completed 22/3/79

Logged by G.A.M.H.

Notes

Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in.

Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.

Water Level Measurements - Level when hole in progress at specified depth

 Level in completed hole on specified date.

Checked by _____

Core Photograph Negative No.

Depth(m)	Black & White	Colour

SHEET 1 OF 2, 16/155-16/81

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS		PROJECT RESEARCH DRILL HOLE LOCATION O'CONNOR, NEAR SULLIVANS CK. ANGLE FROM HORIZONTAL (θ) 90° DIRECTION COORDINATES E210730, N606535 R.L. OF COLLAR 566m						HOLE NO C285 SHEET 2 OF 2			
GEOLOGICAL LOG OF DRILL HOLE											
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level		
MUDSTONE Highly to extremely weathered	Brown and pale grey with much clay		80%								
			95%								
			100%	25.00							
			100%	28.30							
	END OF HOLE							28.30 m			
Drill type Mayhaw Feed Hydraulic Core barrel type Triple tube Driller K. Hutch. BMR Commenced 19/3/79 Completed 22/3/79 Logged by G.A.M.H.		Notes Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in. Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis. Water Level Measurements - ▽ Level when hole in progress at specified depth ▽ Level in completed hole on specified date.						Core Photograph Negative No. Depth(m) Black & White Colour			
M(PF) 221		Checked by _____						SHEET 2 OF 2, 16/155-16/81			

PROJECT RESEARCH DRILLHOLE
LOCATION DICKSON, CNR, COWPER & ANTILL STREETS
ANGLE FROM HORIZONTAL (θ) 90° DIRECTION _____
COORDINATES E211900, N607430 RL OF COLLAR 578 m

SHEET 1 OF 2

25/1/82

Drill type <u>Mayhew</u>	Notes	Core Photograph Negative No.	
Feed <u>Hydraulic</u>	Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in.	Depth(m)	Black & White Colour
Core barrel type <u>triple tube</u>			
Driller <u>K. Huth BME</u>	Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.		
Commenced <u>2/4/79</u>	Water Level Measurements - ☒ Level when hole in progress at specified depths		
Completed <u>6/4/79</u>	☒ Level in completed hole on specified date.		
Logged by <u>G.A.M.H.</u>			
M(Pf) 221	Checked by _____		
		SHEET 1 OF 2, 16/I55-16/83	

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS						PROJECT RESEARCH DRILL HOLE LOCATION DICKSON, CNR COWPER & ANTILL STREETS							HOLE NOC287
GEOLOGICAL LOG OF DRILL HOLE						ANGLE FROM HORIZONTAL (B) 90° DIRECTION _____ COORDINATES E211400, N607430 RL OF COLLAR 578m							SHEET 2 OF 2
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Log	Lift and % core recovery	Depth end size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level				
RESIDUAL CLAY & IRONSTONE	Brown clay with minor quartz sand grains; small red patches in places		30%										
			60%										
	Brown clay												
	Black manganiferous ironstone gravel		70%										
	Black manganiferous silt		75%	25-00				Sample submitted for X-ray diffraction showed: Todorokite [(Mn,Ca) Mn ₅ O ₁₁ .4H ₂ O] Pyrolusite X minor Quartz, kaolinite, goethite					
	Black clayey manganiferous silt		100%										
	Dark brown clay with manganiferous ironstone gravel		45%	28-90									
	NO CORE RECOVERED		0%	30-00				LOST DRILLING WATER RETURN					
LIMESTONE Fresh	Pale grey, one core piece		100%	33-00 33-50									
	END OF HOLE							33-50 m					
		Notes											
Drill type Mayhew Feed Hydraulic Core barrel type triple tube Driller K. Hutch, BMR Commenced 2/4/79 Completed 6/4/79 Logged by G.A.M.H.		Fracture Log - Number of fractures per 25cm of core Zones of core loss blacked in Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis. Water Level Measurements - ▽ Level when hole in progress at specified depth ▽ Level in completed hole on specified date.											
		Core Photograph Negative No. Depth(m) Black & White Colour											
		SHEET 2 OF 2, 16/I55-16/83											

[illegible]

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS GEOLOGICAL LOG OF DRILL HOLE	PROJECT <u>RESEARCH DRILLHOLE</u>	HOLE NO <u>C289</u> SHEET <u>1</u> OF <u>2</u>
	LOCATION <u>NEAR NORTH END OF HAWDON STREET</u>	
	ANGLE FROM HORIZONTAL (°) <u>90°</u> DIRECTION _____ COORDINATES <u>E212400, N607305</u> RL OF COLLAR <u>582m</u>	

Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Log	Graphic Log	Lift and % core recovery	Depth and size of core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
	Not cored; cuttings include ironstone nodules, & pebbles of siltstone and weathered volcanics				3.00					
SILTSTONE highly weathered	Buff brown to cream; minor very fine sandstone			20%	6.35 cm core				Prominent vertical joints and bedding plane joints, loose Bedding at 45° and clay coated	4.42 on 21/5/79
				100%						
				100%	5.70					
SANDSTONE highly weathered	Yellow-brown to cream very fine grained			100%	6.65				Bedding at 30°	
SILTSTONE moderately to highly weathered	Red-brown, yellow-brown and cream; minor very fine sandstone			100%					Liesegang Rings	
				70%						
				100%	10.00					
				100%						
				90%					Liesegang Rings	
				100%	15.00				Steeply dipping joints, loose and clay coated	
				90%						
				95%					Bedding at 35°	
				95%	20.00					

Drill type <u>Mayhew</u> Feed <u>Hydraulic</u> Core barrel type <u>Triple tube</u> Driller <u>K. Huth, BMR</u> Commenced <u>17/4/79</u> Completed <u>20/4/79</u> Logged by <u>G.A.M.H.</u>	Notes	Core Photograph Negative No.
	Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in	Depth(m) Black & White Colour
	Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.	
	Water Level Measurements - ☒ Level when hole in progress at specified depth	
	☒ Level in completed hole on specified date	
Checked by _____	SHEET 1 OF 2, 16/155-16/85	

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS		PROJECT <u>RESEARCH DRILLHOLE</u> LOCATION <u>NEAR NORTH END OF HAWDON STREET</u>						HOLE NO <u>C289</u>	
GEOLOGICAL LOG OF DRILL HOLE		ANGLE FROM HORIZONTAL (θ) <u>90°</u> DIRECTION _____ COORDINATES <u>E212400, N607305</u> RL OF COLLAR <u>582 m</u>						SHEET <u>2</u> OF <u>2</u>	
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc	Water Level
SILTSTONE Moderately to highly weathered	Red-brown, yellow-brown and cream		50%						
			60%						
			100%	24.60					
SILTSTONE Moderately weathered, minor highly weathered	Red-brown, yellow-brown and cream. Core lengths to 40 cm.		100%	25.00					
			100%						
			100%						
			100%	29.50					
SILTSTONE Highly weathered	Red-brown, yellow-brown and cream; much clay		90%	30.00					
			100%						
				31.40					
	END OF HOLE							31.40m	

25/1/82 ✓
 7/12/82 ✓

Notes:

Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in.

Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.

Water Level Measurements - ☒ Level when hole in progress at specified depth.
☐ Level in completed hole on specified date.

Checked by _____

Drill type Mayhew

Feed Hydraulic

Core barrel type Triple tube

Driller K. Huith, BMR

Commenced 17/4/79

Completed 20/4/79

Logged by G.A.M.H.

N(P) 221

Core Photograph Negative No.

Depth(m)	Black & White	Colour

SHEET 2 OF 2, 16/I55-16/85

GEOLOGICAL LOG OF DRILL HOLE

ANGLE FROM HORIZONTAL (θ) 90° DIRECTION _____
COORDINATES E213130 N607289 R.L. OF COLLAR 593m

SHEET 1 OF 1

Drill type	Mayhew		Notes			Core Photograph Negative No.	
Feed	Hydraulic		Fracture Log - Number of fractures per 25cm of core Zones of core loss blocked in		Depth(m)	Black & White	Colour
Core barrel type	Triple tube		Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.		-----	-----	-----
Driller	K. Huth		Water Level Measurements - ▽ Level when hole in progress at specified depth		-----	-----	-----
Commenced	23/4/79		▽ Level in completed hole on specified date		-----	-----	-----
Completed	26/4/79				-----	-----	-----
Logged by	G.A.M.H.				-----	-----	-----
M(P) 221			Checked by -----		SHEET 1 OF 1, 16/I55-16/86		

BUREAU OF MINERAL RESOURCES,
GEOLOGY & GEOPHYSICS

PROJECT _____
LOCATION: NEAR DEPT. OF ADMIN. SERVICES, Fyshwick

HOLE No. _____
C308
SHEET 1 OF 2

GEOLOGICAL LOG OF DRILL HOLE

ANGLE FROM HORIZONTAL (S) 90° DIRECTION _____
CO-ORDINATES E214205 N699115 R L OF 573.0m

Drilling information					Rock Substance		Rock Mass Defects					Rock condition No. (Interpretive)		
Method	Drilling rate	Casing	Water	Pressure test *	Lift R/V core recovery	Depth (metres)	Graphic log	Substance description rock type, grain characteristics, colour, structure, minor components	Weathering	30 Point load 100 Strength 300 Strength 1000 Strength	Defect spacing (cm)		R. C. D.	Defect description thickness, type, inclination, planarity, roughness, coating strength
						10.6		NOT CORED						
						100		Brown clay						
						85								
						2.0								
						100		Brown clay & mudstone frags.	HW					
						2.4								
						4.0		Yellow-brown and red-brown mudstone frags.	HW					
						100								
						4.0								
						100			HW					
						6.0			HW					
						60			EW					
						80			HW					
						45								
						9.5								
						10.0		Dark brown and yellow-brown clay with black mangariferous pieces						
						12.0								
						15			EW					
						14.0								
						35								
						16.0								
						17.4								
						18.0		Buff brown mudstone	EW					
						55								
						20.0								

One 22cm core length

Drill type Mayhew
Feed hydraulic
Core barrel type triple tube
split inner tube
Driller BMR
Commenced Nov. 1979
Completed 20/2/81
Logged by G.A.M.H.
Vertical scale 1cm:1m

Weathering
Fr - Fresh
SW - Slightly weathered
MW - Moderately weathered
HW - Highly weathered
EW - Extremely weathered

Notes

Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis
* Water Pressure Tests

Water
10 Oct 73 water level date shown
Water inflow
Partial drilling water loss
Complete drilling water loss

Core Photography Negative No
Depth (m) B & W Colour

GEOLOGICAL LOG OF DRILL HOLE

ANGLE FROM HORIZONTAL S. 90° DIRECTION
CO-ORDINATES E 214 205 N 599 115 R L OF 573.0

SHEET 2 OF 2

Drilling Information					Rock Substance		Rock Mass Defects						
Method	Drilling Rate	Casing	Water	Pressure test #	Lift: 10% core recovery	Depth (metres)	Graphic log	Substance description: rock type, grain characteristics, colour, structure, major components	Weathering	35 Point load for strength (N/mm ²)	Defect spacing (cm)	Defect description: thickness, type, inclination, planarity, roughness, loading strength	Rock condition No. (interpretative)
						20.4		As above	EW				
						40		Buff brown mudstone with black manguniferous silt concentrated between 20.40 & 20.60	HW				
						23.0							
						20		Top 35cm of core yellow-brown buff clay with 1cm frags of MW mudstone Bottom 25cm of core pieces of buff, mod. weath. mudstone with solution cavities	MW -EW				
						26.0							
						0		CORE RECOVERY NOT ATTEMPTED IN FRAGMENTED MUDSTONE Caving controlled by cementing					
						31.30							
						100		Pale grey limestone breccia with a few dark grey calcareous mudstone lenses passing down into dark grey mudstone with pale bands Max. core length 30cm	SW				
						50							
						34.20		Pale limestone breccia bands in mudstone increasing downwards					
						34.70		Banded calcarenite and limestone breccia interbedded with grey calcareous mudstone. Banding diminishing downwards Max core length 22cm					
						100							
						35.80							
						80		Grey massive crystalline limestone breccia, coralline. Core lengths from top of 40, 75, 35, 15 & 65 cm.	FR				
						38.15							
								END OF HOLE					
												38.65m	

Drill type Mayhew
Feed hydraulic
Core barrel type triple tube split inner tube
Driller BMR
Commenced Nov. 1979
Completed 20/3/81
Logged by G.A.M.H.
Vertical scale 1cm = 1m

Weathering
Fr - Fresh
SW - Slightly weathered
MW - Moderately weathered
HW - Highly weathered
EW - Extremely weathered

Notes

Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis
* Water Pressure Tests

Water
▼ 10 Oct 73 water level date shown
▶ Water inflow
◀ Partial drilling water loss
◀ Complete drilling water loss

Core Photography Negative No.
Depth (m) B & W Colour

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS		PROJECT <u>SOUTH CANBERRA 1:10,000 SHEET</u> LOCATION <u>SECTION 39, FYSHWICK</u>		HOLE NO. <u>C319</u> SHEET <u>1</u> OF <u>4</u>					
GEOLOGICAL LOG OF DRILL HOLE		ANGLE FROM HORIZONTAL (B) <u>90°</u> DIRECTION _____ COORDINATES <u>E213455 NS98735</u> R.L. OF COLLAR <u>560 approx</u>							
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
FILL & ALLUVIUM	Not cored								
SAND	Med. gr. buff-grey slightly clayey & silty			4.0 4.0					
TUFF	Med. gr., yellow-brown clayey, feldspathic			2 1/2" 4.8					
Highly to extremely weathered		✓	50					Core cohesive owing to clay content. Less clayey sections generally broken	
		✓	7.0						
		✓	30						
		✓	9.0						
		✓	100	10.0					
		✓	100						
		✓	11.4						
		✓	80						
		✓	12.4						
		✓	100						
		✓	13.4						
		✓	100						
		✓	15.1	15.0					
		✓	100						
		✓	16.8						
		✓	100						
		✓	18.6						
		✓	100						
		✓		20.0					
Drill type <u>Mayhew</u> Feed <u>Hydraulic</u> Core barrel type <u>triple tube</u> Driller <u>BMR</u> Commenced <u>23/3/91</u> Completed <u>1/4/91</u> Logged by <u>G.A.M.H.</u>		Notes Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis. Water Level Measurements - <u>▼</u> Level when hole in progress at specified depth <u>▽</u> Level in completed hole on specified date.				Core Photograph Negative No. Depth(m) Black & White Colour _____ _____ _____ _____ _____ _____ _____ _____ _____ _____			
Checked by _____		SHEET 1 OF 4, 16/155-16/79							

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS		PROJECT SOUTH CANBERRA 1:10,000 SHEET LOCATION SECTION 39, Fyshwick						HOLE NO C319				
GEOLOGICAL LOG OF DRILL HOLE		ANGLE FROM HORIZONTAL (8) 90° COORDINATES E213455 N598735						DIRECTION R.L. OF COLLAR 560m approx				
SHEET 2 OF 4												
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level			
TUFF Highly to extremely weathered	Med. gr., yellow-brown clayey, feldspathic	✓	100	20.0								
		✓	21.0									
		✓	60									
		✓	21.7									
		✓										
		✓	85									
		✓										
		✓	23.5									
		✓										
		✓	100									
		✓										
		✓	25.2	25.0								
		✓										
		✓	100									
		✓										
		✓	26.2	26.4								
MUDSTONE Highly to extremely weathered	Buff to yellow-brown, clayey	-	90									
		-	27.2									
		-										
		-	80									
		-										
		-	29.2									
		-										
		-	95	30.0								
		-										
		-	30.9									
		-										
		-	25									
		-										
		-	32.4									
MUDSTONE Moderately to extremely weathered	Small to 1cm MW cleavage flakes of mudstone in yellow-brown clay	-	100									
		-										
		-	34.1									
		-										
		-	100									
		-										
		-	35.1	35.0								
		-										
		-	80									
		-										
		-	36.5									
		-										
		-	90									
		-										
		-	37.5									
		-										
		-	100									
		-										
		-	38.4									
		-										
		-	90									
		-										
		-	39.6									
		-										
		-	80	40.0								
		-										
Drill type Mayhew	Feed Hydraulic	Core barrel type triple tube	Driller BMR	Commenced 23/3/81	Completed 1/4/81	Logged by G.A.M.H.	Notes			Core Photograph Negative No.		
							Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in			Depth(m)	Black & White	Colour
							Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.					
							Water Level Measurements - ▽ Level when hole in progress at specified depth					
							▽ Level in completed hole on specified date					
							Checked by					
							SHEET 2 OF 4, 16/155-16/79					

PROJECT SOUTH CANBERRA 1:10,000 SHEET
LOCATION SECTION 39, Fyshwick
ANGLE FROM HORIZONTAL (θ) 90° DIRECTION _____
COORDINATES E213455 N598735 RL OF COLLAR 560m. approx.

HOLE NO. _____
C 319
SHEET 3 OF 4

Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
0 5 12 18+									
MUDSTONE Moderately to extremely weathered	Pieces to 5cm of buff MW-NW rock in yellow-brown clay; a few short intact cores as indicated at right	-	80	40.0					
		-	40.8						
		-	45						
		-	41.9						
		-	60						
		-	43.1						
		-	80						
		-	44.1						
		-	55	45.6					
		-	46.3						
	-	70							
	-	47.9							
	-	60							
	-	49.1							
	-	65	50.0						
	Pieces to 4cm of dark grey to buff rock in yellow-brown to grey clay	-	50.6						
		-	45						
		-	52.0						
		-	85						
		-	53.2						
		-	25						
		-	55.2	55.0					
	Brown to yellow-brown plastic clay	-		55.9					
MUDSTONE Fresh to extremely weathered	Dark grey fresh mudstone pieces in dark grey clay	-	85						
		-	57.2	57.0					
	Pale grey to yellow brown clay and mudstone pieces	-							
	Grey plastic clay with a few small dark grey mudstone pieces	-	45						
		-	52.9						
		-	50	60.0					
		-							
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Drill type Mayhew
Feed Hydraulic
Core barrel type triple tube
Driller BMR
Commenced 23/3/81
Completed 1/4/81
Logged by G.A.M.H.

Notes

Fracture Log – Number of fractures per 25cm of core. Zones of core loss blacked in.

Bedding & Joint Planes – Angles are measured relative to a plane normal to the core axis.

Water Level Measurements –  Level when hole in progress at specified depth.
 Level in completed hole on specified date.

Core Photograph Negative No.

Depth(m)	Black & White	Colour
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Checked by _____

BUREAU OF MINERAL RESOURCES,
GEOLOGY & GEOPHYSICS
GEOLOGICAL LOG OF DRILL HOLE

PROJECT SOUTH CANBERRA 1:10,000 SHEET
LOCATION SECTION 39, EYSHWICK
ANGLE FROM HORIZONTAL (θ) 90° DIRECTION _____
COORDINATES E213455 N598735 R.L. OF COLLAR 560m approx

HOLE NO. C319
SHEET 4 OF 4

Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
MUDSTONE Fresh to extremely weathered	Grey rock fragments in grey clay		50 60.9 70 62.1 100 62.9	60.0					
SILTSTONE Fresh	Short core lengths plus frags. Partly fragmented		65 64.8 90 65.6 100 66.3 100 67.2	65.0				Max core length 13cm Max core length 30cm Max core length 10cm Small tubular holes 1mm diam	
	END OF HOLE							67.2 m	

Drill type Mayhew
Feed Hydraulic
Core barrel type triple tube
Driller BMR
Commenced 23/3/81
Completed 1/4/81
Logged by G.A.M.H.

Notes
Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in.
Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.
Water Level Measurements - ☒ Level when hole in progress at specified depth
☒ Level in completed hole on specified date

Checked by _____

Core Photograph Negative No.
Depth(m) Black & White Colour

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS GEOLOGICAL LOG OF DRILL HOLE	PROJECT <u>SOUTH CANBERRA 1:10,000 SHEET</u>	HOLE NO <u>C320</u> SHEET <u>1</u> OF <u>1</u>
	LOCATION <u>SECTION 39, FYSHWICK</u>	
	ANGLE FROM HORIZONTAL (θ) <u>90°</u> DIRECTION _____ COORDINATES <u>E213380, N599040</u> R.L. OF COLLAR <u>561m approx</u>	

Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
FILL & ALLUVIUM	Not cored								
ALLUVIUM	Mottled grey & yellow-brown sandy clay with some gravel to 4.3		4.0						
	Clayey coarse sand		6.5						
	Sandy grey clay		7.0						
	Gravel to 5cm diam. of qtz & silicified acid volcanic rock in sandy clay matrix		20						
			9.0	9.3					
LIMESTONE Slightly weathered	Grey, mottled pale & dk. fossiliferous - favositids, halysitids, heliolitids		80					Max. core length 20cm	
			10.0					10-35cm core lengths	
			100					Broken 11.15-11.30	
			11.0					Broken with yellow-brown clay 11.70-11.90	
			100	12.1				Broken 12.00-12.10	
LIMESTONE Fresh	Grey, mottled pale & dark, fossiliferous - favositids etc		11.9					Core lengths 17-110cm	
			100					Grey clayey silt 14.50-14.60	
			14.6					Soft & crumbly 15.25-15.45	
			95					Core lengths to 60cm	
			17.4						
			100					Core lengths 8-70cm	
	END OF HOLE		20.4					20.4m	

Drill type <u>Mayhew</u> Feed <u>Hydraulic</u> Core barrel type <u>triple tube</u> Driller <u>BMR</u> Commenced <u>2/4/81</u> Completed <u>7/4/81</u> Logged by <u>G.A.M.H.</u>	Notes	Core Photograph Negative No.
	Fracture Log - Number of fractures per 25cm of core. Zones of core loss blacked in.	Depth(m) Black & White Colour
	Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis.	_____
	Water Level Measurements - ☒ Level when hole in progress at specified depth	_____
	☒ Level in completed hole on specified date.	_____
Checked by _____	SHEET 1 OF 1, 16/155-16/80	

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS		PROJECT <u>STRATIGRAPHIC DRILL HOLE</u> LOCATION <u>25 Km FROM CANBERRA ALONG BARTON HWY.</u>		HOLE NO <u>C155</u>					
GEOLOGICAL LOG OF DRILL HOLE		ANGLE FROM HORIZONTAL (θ) <u>90°</u> DIRECTION _____ COORDINATES <u>201600E, 626350N</u> RL OF COLLAR <u>610m</u>		SHEET <u>12</u> OF <u>12</u>					
Rock Type and Degree of Weathering	Description Lithology, colour, strength, etc.	Casing Graphic Log	Lift and % core recovery	Depth and size of Core	Fracture Log	RQD	Structural Log	Structures Joints, veins, seams, fault, etc.	Water Level
CALCAREOUS SILTSTONE FR	Dark and pale grey, banded, layers to 2cm with feldsp. grains		100%	220.50			b / 20°		
CALCAREOUS SILTSTONE FR	Dark and pale grey, banded		100%	221.02					
CALCAREOUS MUDSTONE	Dark and pale grey, a few fossiliferous layers		100%	224.30			b / 22°		
SANDSTONE & SILTSTONE FR	Feldspathic, banded			225.02					
CALCAREOUS SILTSTONE	Banded, a few feldspathic layers			225.56					
LIMESTONE AND CALCAREOUS MUDSTONE FR	Banded		100%	227.36					
SANDSTONE & SILTSTONE FR	Feldspathic, banded			228.24			b / 20°		
SILTSTONE & MUDSTONE FR	Faintly banded and massive		100%	229.75				Irregular inclusions of feldsp. sandstone, indicating slumping	
SANDSTONE FR	Feldspathic, banded, coarse			230.62					
SANDSTONE FR	Quartzo-feldspathic, massive, coarse			231.25			b / 30°		
LIMESTONE FR	Irregularly banded and massive, pale grey with a few dark grey patches and bands		100%						
			100%						
			100%	235.87					
SANDSTONE FR	Quartzo-feldspathic, banded, coarse			237.47			b / 25°	Decomposed chloritic material on bedding plane surface	
LIMESTONE FR	Banded at top, grading to massive & mottled		100%	238.30					
SANDSTONE FR	Feldspathic, medium to coarse, faintly banded		100%				b / 12°		
				240.40	HOLE DISCONTINUED ON 18/5/79 at 240.40m				

Drill type <u>Mohr</u> Feed <u>Hydraulic</u> Core barrel type <u>HQ</u> Driller <u>E. Ladwick, K. Huth</u> Commenced <u>3/5/76</u> Completed <u>18/5/79</u> Logged by <u>G.A.M.H.</u>		Notes Fracture Log - Number of fractures per 25cm of core Zones of core loss blacked in Bedding & Joint Planes - Angles are measured relative to a plane normal to the core axis. Water Level Measurements - ☒ Level when hole in progress at specified depth ☒ Level in completed hole on specified date		Core Photograph Negative No. Depth(m) Black & White Colour	
Checked by _____					