

UNPUBLISHED REPORT 1968/02

Report on drill core from bore holes 8, 9, 10 and 11 from the site of the proposed block, State Library, Hobart

by P. C. Stevenson

Four bore holes were drilled during December 1967 to determine the rock types beneath the site of a proposed office block for the State Library of Tasmania in Hobart. This report and the attached geological logs describe the rocks present.

Borehole 8

The core from this bore hole shows that from 18'10" down to 32'0" a clay-matrixed conglomerate of mudstone and dolerite fragments is present. The proportions of particles to matrix vary, so that it may at one depth be described as a clay and at another as a gravel. The essential nature of the deposit remains unchanged; it is a geologically young, locally derived clay cemented conglomerate, likely to vary rapidly both in depth and laterally.

Below 32' 0" normal Triassic sandstone is seen, weathered near the top and, again as normal, with few joints.

Borehole 9

The deposit in this borehole from 35'0" to 54'1" has a higher proportion of clay, often pink, grey, red or yellow, and as well as mudstone and dolerite, some sandstone pebbles occur. The clay has sheared locally along inclined surfaces (listric surfaces).

A band of hard sandstone 11' thick occurs between 54'1" and 66'7" but its position is not known because much soft sand was encountered but not cored.

Triassic rocks occur below 66'7", brown oxidised beds giving way at 78'11" to green beds which apart from their colour are similar to the brown.

The base of the clay-conglomerate deposit is not clear from this borehole; the beds lost between 54'1" and 66'7" could belong to it. However the lost beds, being sandy, are more likely to be a weathered top to the Triassic.

Borehole 10

A clay containing weathered dolerite and mudstone fragments occurs in this borehole from 15'0" to 16'8". This soon passes down into Triassic sandstone, somewhat oxide stained and micaceous, and with typically widely spaced joints.

Borehole 11

From 25'0" downwards this borehole is entirely within Triassic sandstone. A few inclined joints were seen and occasional silty or clayey layers occur in the green sandstone.

Groundwater conditions

Sulphate determinations were made of water from bores PC1 and PC2. In both cases the values were low (PC1 – 12 ppm, PC2 – 95 ppm).

The following groundwater levels were also established

13 December 1967

PC1 13'2" below surface

PC2 13'5" below surface

14 December 1967

R4 12'6" below surface (bore depth 78'11")

R3 17'6" below surface (bore depth 38'6")

15 December 1967

R4 9'8" below surface (bore depth 95'0")

R3 18'2" below surface (bore depth 44'0")

[8 January 1968]

Progressive Depth	Depth	Core Drawn	Core Length	Casing	Recovery %				Graphic Log	Joints No. per Foot	Fluid Return	Ground Water	Remarks
					20	40	60	80					
	5'												
	10'												
	15'												
18' 10"	20'							△△△△△					Dolerite frags.
19' 5"	20'							O = O =					Mudstone frags. in clay matrix becoming more silty
22' 4"	25'							O : = O : =					Silty mudst. pebb. congl.
24' 8"	25'							O △					Mudst. frags and dolerite boulder then mudstone clay congl.
	30'							O = O =					
30' 1"	30'							= O = O					
32' 0"	30'							△ O △ O					Worn dolerite pebb. with some mudst. frags.
	35'												Weathered soft micaceous sandstone
35' 0"	35'												Medium hard sandstone w. soft bands
	40'												Medium hard homogeneous brown sandstone w. a few diagonal joints.
39' 6"	40'								2				
	45'												
49' 0"	50'												
	55'												
	60'												
	65'												
	70'												
	75'												
	80'												
	85'												
	90'												
	95'												
	100'												

DEPARTMENT OF MINES, TASMANIA—DRILLING RECORD.

AREA: Hobart	POSITION	CO-ORDINATES:	E: 5265	N.: 52521	HOLE No. 8
LOCATION: State Library		ON LINE:	BEARING:	AT CH.	
GEOLOGICAL PLAN:	LEVEL	AT STN.:	BEARING:	DIST:	MAP SHEET No.
DATES—(a) DRILLED:		SURFACE:	FORMATION:	WATER TABLE:	
METHOD: Diamond	INCL.	DIAMETER: NX			SHEET 1 OF 1 SHEETS
SITE REMARKS: logged by P. Johnson		HOLE DRILLED:	ANGLE FROM HORIZONTAL:	DIRECTION:	
		VERT. HDR./LWR:			

85011-2205-8

No Core

Ref No 5891

Progressive Depth	Depth	Core Drawn	Core Length	Casing	Recovery	Graphic Log	Joints No. per Foot	Fluid Return	Ground Water	Remarks
					%					
	5'				20					
	10'				40					
	15'				60					
	20'				80					
	25'				100					
	30'									
	35'									
	36' 4"					0-0-				Rotten soft grey gritty clay w. frags. of grey mudstone and sandstone
	39' 0"					0-0-0				Coarse and fine dolerite frags. up to 0" diam. w. seams of 1/4" frags. of dolerite sandstone and mudstone
	41' 8"					---				Compact mottled pink and grey siltstone and clay, some cemented joints and showing listric inclined movement planes
	42' 1"					0-0-				Heterogeneous red gritty clay, w. white sandstone pebbles and rotted dolerite, strong inclined slip surfaces.
	45' 6"					0-0-0				Soft gritty yellow mudstone congl. with inclined slip surfaces
	47' 11"					0-0-				Soft very heterogeneous sandy clay w. pebbles of dolerite and sandstone
	49' 11"					0-0-0				Medium hard brown banded sandstone w. iron stained clay filled joint.
	50' 10"					0-0-0				Mudstone frag. congl. w. sandstone and dolerite pebbles, and strong inclined listric slip surfaces.
	54' 1"					0-0-0				Hard sst. band w. clay filled joint
	55'					0-0-0				Red yellow clay w. dolerite pebbles. up to 5" and rounded sst.
	60'									11" of hard cemented sandstone w. soft horizons
	65'									
	66' 7"									Hard and soft bands of brown sandstone
	70'									
	71' 7"									Soft fine green silty sandstone
	75'									
	78' 11"									Soft fine green silty sandstone w. conspic. clay filled joint.
	80'									
	83' 5"									Medium hard micaceous green sandstone w. some clay bands
	86' 6"									Homogenous med. hard micaceous green sandstone w. occasional mud pellets. Unjointed.
	90'									
	94' 10"									
	100'									

DEPARTMENT OF MINES, TASMANIA—DRILLING RECORD.

AREA: Hobart	POSITION	CO-ORDINATES:	E: 5265	N: 52521	HOLE No. 9
LOCATION: State Library		ON LINE:	BEARING:	AT CH.	
GEOLOGICAL PLAN: SURVEY PLAN:	LEVEL	AT STN.:	BEARING:	DIST:	MAP SHEET No.
DATES— (a) DRILLED: 7-15 Dec. 1967 (b) WATER TABLE:		SURFACE:	FORMATION:	WATER TABLE:	
METHOD: Diamond DIAMETER NX	INCL.	HOLE DRILLED:	ANGLE FROM HORIZONTAL:	DIRECTION:	SHEET 1 OF 1 SHEETS
SITE REMARKS: <i>logged by PC Stewart</i>		VERT./HOR./INC.			

85011-2205-8

No Core

Ref No 5890

Progressive Depth	Depth	Core Drawn	Core Length	Casing	Recovery %	Graphic Log	Joints No. per Foot	Fluid Return	Ground Water	Remarks
	5'				20					
	10'				40					
	15' 0"				60	○ ○ ○				Orange clay w. dolerite frags.
	16' 8"				80	○ ○ ○				Orange clay w. mudstone frags. and dolerite pebbs.
	22' 3"				100				Soft orange clayey micaceous sandstone, colour banded: without joints
	31' 3"								Med. hard orange mica. sandstone
	32' 8"								Dense dark orange sandstone, inclined iron-oxide-filled joint.
	42' 2"								
	45'									
	50'									
	55'									
	60'									
	65'									
	70'									
	75'									
	80'									
	85'									
	90'									
	95'									
	100'									

DEPARTMENT OF MINES, TASMANIA—DRILLING RECORD.

AREA: Hobart	POSITION	CO-ORDINATES: E: 5265 N.: 52521	HOLE No. 10
LOCATION: State Library		ON LINE: BEARING: AT CH.	MAP SHEET No.
GEOLOGICAL PLAN: SURVEY PLAN:	AT STN.: BEARING: DIST:	LEVEL	
DATES—(a) DRILLED: 20-21 Dec '67 (b) WATER TABLE:	SURFACE: FORMATION: WATER TABLE:	TRCL. HOLE DRILLED: ANGLE FROM HORIZONTAL: DIRECTION:	
METHOD: Diamond DIAMETER NX.	VERT. / HOR. / INCL.		
SITE REMARKS: Clogged by P. Peterson			

65011-Z205-8

No Core

Ref No 5889

Progressive Depth	Depth	Core Drawn	Core Length	Casing	Recovery %				Graphic Log	Joints No. per Foot	Fluid Return	Ground Water	Remarks
					20	40	60	80					
	5'												
	10'												
	15'												
	20'												
25'0"	25'								4				Medium hard brown micaceous sandstone w. a few diagonal joints
	30'												
36'9"	35'												Soft green sandstone w. occasional harder or silty bands.
	40'												
	45'												
	50'												
	55'												
59'11"	60'												Med hard green sandstone w. occasional clay pellet layers.
	65'												
	70'								2				Harder green banded sandstone w. rare tight diagonal joints
76'3"	75'												
	80'												
	85'												
	90'												
	95'												
	100'												

DEPARTMENT OF MINES, TASMANIA—DRILLING RECORD.

AREA: Hobart	POSITION	CO-ORDINATES:	E: 5265	N: 52521	HOLE No. 11
LOCATION: State Library		ON LINE:	BEARING:	AT CH.	MAP SHEET No.
GEOLOGICAL PLAN: SURVEY PLAN:	LEVEL	AT STN.:	BEARING:	DIST:	
DATES— (a) DRILLED: 18-19 Dec 1967 (b) WATER TABLE:		SURFACE:	FORMATION:	WATER TABLE:	
METHOD: Diamond DIAMETER NX	INCL.	HOLE DRILLED:	ANGLE FROM HORIZONTAL:	DIRECTION:	
SITE REMARKS: Logged by PC Stevenson		VERT./HOR./INC.			

85011-2205-B

Core thrown out

Ref No 58888