



## Report on drilling at 89 Doyle Avenue, Lenah Valley

by *W. R. MOORE*

One hole was drilled using a trailer-mounted Treifus auger drilling machine at a house at 89 Doyle Avenue, Lenah Valley. The hole was located at the rear of the house near the southwest corner, at the edge of the concrete driveway upslope of the garage entrance. There is little doubt about the depth of the unconsolidated fill in this hole at the rear of the house. Similar material is exposed beneath the fence at the northwest corner of the house and the house would appear to be sited entirely on fill, which is 2.5 m deep at the rear.

Many of the boulders encountered in the drilling were larger than those returned to the surface. The augers literally picked their way through this fill which made for slow and difficult drilling. The hole was jagged and kept collapsing behind the bit. This resulted in the drilling taking two hours. A hand-held auger machine would not have penetrated this material and no attempt was made to drill in front of the house.

The black clay below the fill appeared to be in situ. Unfortunately no complete soil horizon with a vegetation layer was seen, with the grass roots seen being few and dispersed. In Hobart this black clay frequently overlies weathered dolerite. The yellow-brown clay with gravel and grit beneath the black clay at Doyle Avenue is not the clay generally derived from dolerite. Consequently there is a possibility that the black clay horizon may be fill and may also have been dumped on the site.

The yellow-brown clay with gravel and grit below the black clay was thought to be definitely in situ. This clay

continues below the depth of 5.2 m drilled. The drilling was stopped because the fill material kept collapsing and jamming the auger, not because the clay was too difficult to penetrate.

To the writer's knowledge the only area where similar clay with the same gravel and grit material is exposed is on the foreshore off Droughty Point Road, below the cliffs. In a cracked house investigation for the Clarence Council, two diamond-drill holes were drilled by the Department after some inconclusive auger drilling. This clay was found beneath black surface clay and was 8 to 10 m deep. The drill core of this clay contained several old failure planes in both holes. One of these planes, at 3 to 4 m depth, has formed a shear plane across the property and becomes reactivated under heavy southeast rains, causing the house to move downslope by a series of small landslides.

At the Rokeby location the gravel and grit stopped and the clay graded to a yellow-green mottled clay which towards the bottom of the holes retained the dolerite rock texture before changing into unweathered dolerite bedrock at 13 and 18 metres. After this investigation, followed by some careful surface mapping, the clay was interpreted as an old Tertiary deposit, possibly an old embayment of a stream valley.

The properties of the Rokeby clay are similar to those at 89 Doyle Avenue but further tests on the Doyle Avenue material are being undertaken by the Department. Both the Rokeby clay and Doyle Avenue clay are expansive, which may cause structural problems to houses.

*[6 April 1988]*

**ENGINEERING LOG - BOREHOLE**

borehole no. **1**  
sheet **1** of **1**

project		Cracked House Investigation 89 Doyle Av. Lenah Valley Hobart		location		S.E. Corner of House 2m from Garage Edge of Driveway	
co-ordinates		5236-52537		drill type		Triefas	
R.L.		130m		drill method		Auger	
inclination		Vertical		drill fluid		None	
bearing		-		hole commenced		21.3.88	
				hole completed		21.3.88	
				drilled by		B.E. Cox	
				logged by		W.R. Moore	
				checked by		R.C. Donaldson	

  

penetration 1 2 3	support	water	notes samples, tests	metres		graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency density index	hand penetr- ometer kPa	structure, geology
				R.L.	depth							
	None	None			1.0	GP +		Gravel and Silt - Bimodal. Estimate Gravel, and Boulders 60% Silt 40% Gravel. Coarse Boulders, Cobbles and Pebbles. Returned size 20-50mm Pebbles angular unweathered. Dolerite. Quarry material	D	L HD		Fill Appears To be unconsolid- ated Quarry Waste.
			S1		2.0	HL		Silt Fawn-light grey low plasticity Poorly graded Sand Rock Flour.	D	Fb		
			S2		3.0			Clay. Black organic highly plastic Some roots but possibly downhole contamination.	M	Vst		Possible Soil horiz- on.
			S3		4.0	CH		Clay. Yellow-Brown Highly plastic with pebbles and grits Pebble - white angular mudstone Grits - Travertine, ironstone mudstone frags.	M	Vst		In Situ Yellow clay with gravel & grits.
			S4		5.0			Hole stopped at 5.1m. Augers becoming jammed.				
			S5					N.B. All. Samples Disturbed				
								Sample No. Depth (P.L.) (L.L.) (P.I.) (L.S.)				
								2. 2.4m. 19 78 59 22%				
								3. 3.4m 17 61 44 18%				
								4 4.3 19 60 41 17%				
								Sample 3 X.R.D. Composition.				
								Illite 45% Montmorillonite 25% Kaolinite 25%				
								Geothite 5%				