TR17_137_138

32. Diamond drilling at building site, 144-148 Macquarie Street, Hobart.

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In October 1971 the Department of Mines drilled three bore holes (BH 1, 2 and 3) at the Macquarie Street building site at the locations shown in Figure 35. In each of the bore holes a thin dolerite sill was encountered beneath Tertiary clay at depths of 4.5-7.5 m below ground surface. The sill appears to dip to the south and overlies Triassic sandstone and mudstone. The Tertiary clays and the dolerite sill are previously unknown at this locality, but the Triassic rock has been encountered by drilling in nearby localities.

The appearance of Tertiary sediments indicates a break in the Triassic sandstone escarpment that lies between, and determines the direction of Davey and Macquarie Streets. The break has occurred where a small dolerite body, possibly marginal to a larger body known to exist to the south has broken through the Triassic sandstone. The break in the escarpment has trapped and preserved Tertiary clays and siltstones which have not been preserved nearby, but are related to the known Tertiary sediments of the Sandy Bay basin.

In 1972, I.L. Johnstone and Associates, consulting engineers, sited four further holes (BH 4, 5, 6 and 7) on this building site and requested the Department of Mines to drill and log cores from the holes. It is proposed to erect on the site an eleven storey building with two additional basement levels below ground surface. The basements require excavation to a depth of approximately 9 m and consequently the engineers were particularly interested in the extent of dolerite, its thickness, hardness and state of weathering. For the foundations of the proposed building the engineers required further information on the Triassic sediments on which the building would be founded. This resulted in the 1972 drill holes penetrating to greater depths than those of 1971.

DRILLING RESULTS

In all the holes drilled dolerite was encountered, the dolerite sill having a slope to the south and an increased thickness to the east as indicated in the following table and Figure 35. The dolerite has a minimum thickness of one metre in BH 1 and a maximum thickness of 3.5 m in BH 3.

	BH 5 (m)	*BH 3 (m)*
Elevation of the ground surface above sea level	22.0	21.5
Elevation of the dolerite sill top	17.3	17.3
Elevation of the dolerite sill bottom	14.3	13.7
Thickness of the dolerite sill	3.0	3.6

	BH 7 (m)	*BH 4 (m)*	*BH 6 (m)*
Elevation of the ground surface above sea level	20.7	20.7	20.7
Elevation of the dolerite sill top	13.7	13.7	13.7
Elevation of the dolerite sill bottom	12.8	11.8	10.5
Thickness of the dolerite sill	1.0	2.0	3.0

	BH 1 (m)	BH 2 (m)
Elevation of the ground surface above sea level	20.4	21.0
Elevation of the dolerite sill top	13.4	13.7
Elevation of the dolerite sill bottom	12.5	10.6
Thickness of the dolerite sill	1.0	2.0

INTERPRETATION

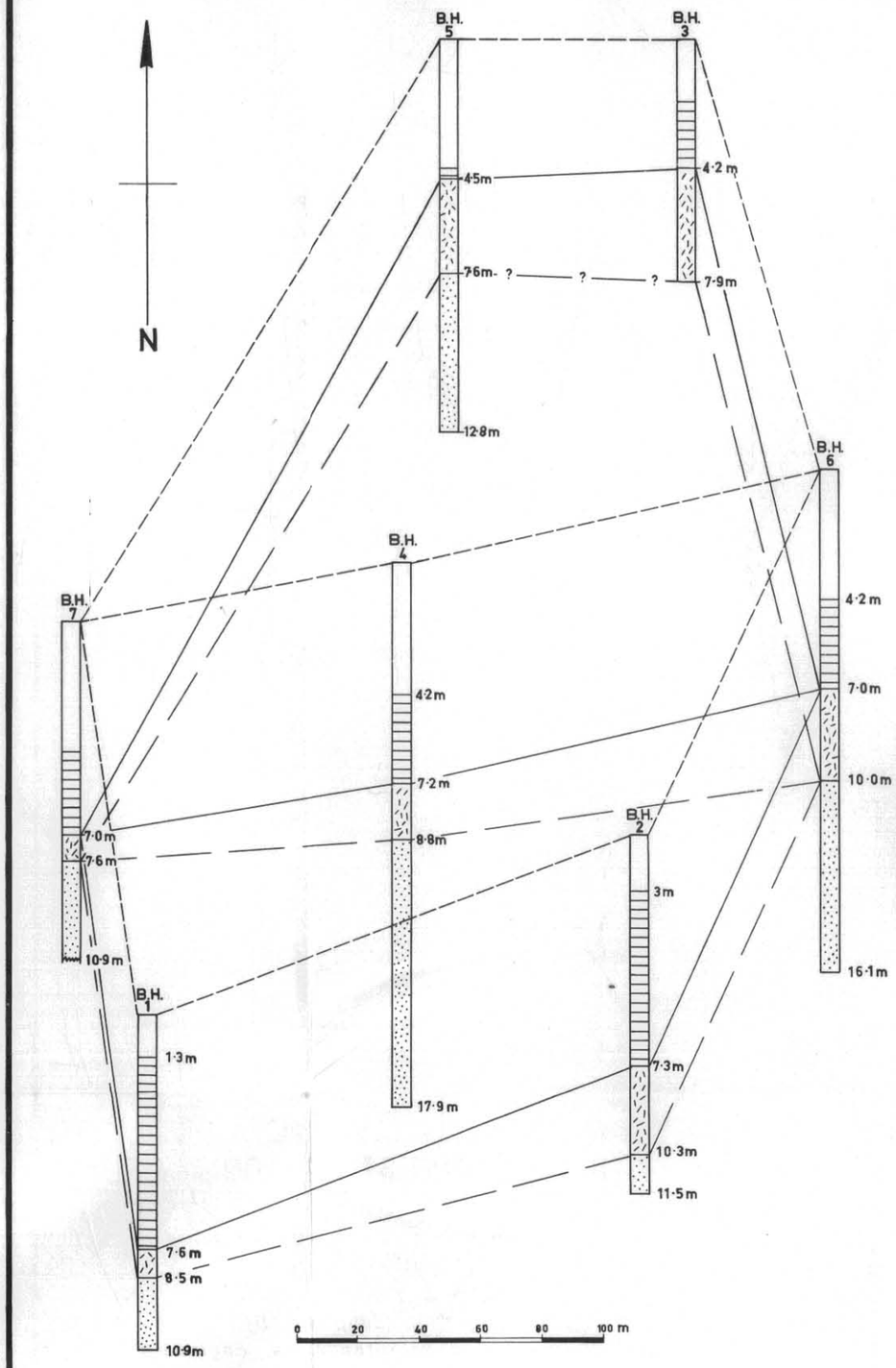
The greater part of the dolerite sill appears from the 1972 drilling program to be very deeply weathered and frequently, almost completely decomposed or rotted to a clay. The greatest thickness of solid dolerite encounted was 0.6 m in BH 7. Greater thichnesses of solid dolerite appear to have been encounted in the holes of the 1971 drilling program, but the drill cores are no longer available for comparison.

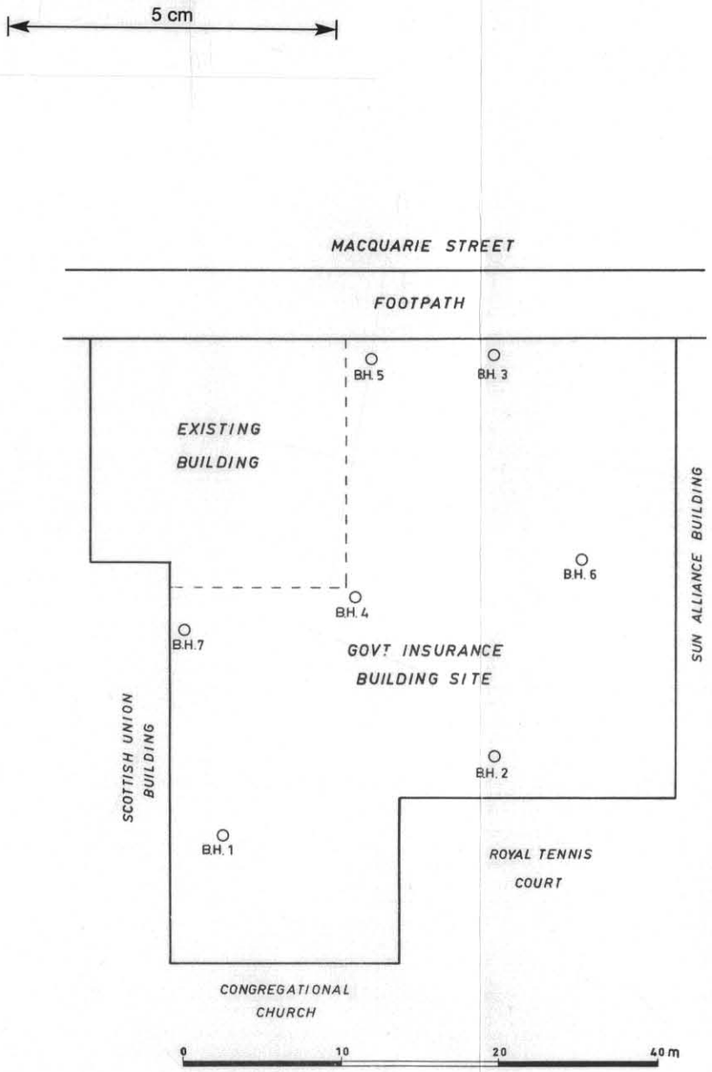
Even though it is known that the weathering of dolerite is extremely selective and varies greatly within short distances, from the 1972 drilling program it appears that most of the dolerite can be excavated without difficulty.

The Tertiary sediments overlying the dolerite are mottled orange and grey clays which are frequently highly sheared with conspicuous slickensides and polish on the shear planes. The clays contain dolerite boulders which are frequently rotten and decomposed to clay. These dolerite boulders in the clay made it difficult to locate the top of the dolerite sill which is also weathered to a rubbly clay.

In the 1972 drilling program, no attempt was made to obtain core in the made ground. Casing was run immediately to depths of 4-5 m, consequently the top of the Tertiary clay and the bottom of the fill was not accurately located.

The Triassic sediments are mainly hard quartz sandstone. Very little micaceous mudstone or soft fine-grained sandstone appeared in the cores of the four holes drilled. The compact sandstone would appear to be a very suitable material to bear loads and accommodate the foundations of the proposed structure.





SITE INVESTIGATION
GOVERNMENT INSURANCE BUILDING
144–148 MACQUARIE STREET
HOBART

Drilling Plan Supplied By
I.L. Johnston and Associates Cons. Engineers

GEOLOGIST : W.R.MOORE
Drawn : P.J.Donnelly

Dept. of Mines — Aug. 1972

3657

Figure 35.