

PART 1. PRELIMINARY REPORT ON FOUNDATION CONDITIONS

An examination has been made of the site for the Rosny Matriculation College at the request of Daly, Milledge and Power, consulting engineers. The college is situated to the west of the Tasman Highway on the low paddock of the old Royal Hobart golf course and adjacent to Rosny tennis courts.

Few exposures are present in the region of the proposed building. The shoreline where the south-east corner will be placed shows a continuous outcrop of Triassic sandstone. In places this is thinly bedded and micaceous. Jurassic dolerite crops out on the shoreline some 60 m south of the proposed building and although the nature of the junction between sandstone and dolerite is not clear, it may be faulted. Dolerite also crops out at the tennis courts about 45 m west of the site.

Some small trenches have been dug within the site area. With two exceptions (Holes 8, 12) which showed sandstone, all holes revealed weathered dolerite. It is not clear whether the dolerite material is *in situ*. Holes 8 and 12 are situated toward the south-east corner of the proposed building. However, Hole 9 which is comparable in position to Hole 12 and also in this part of the area showed dolerite. There is no obvious consistency of line with the known rock junction on the shore with that implied in the holes.

Without deeper, cored boring it is not possible to determine the exact nature of the junction between the two rock types. It is possible that much of the dolerite revealed in these holes (to 3 m deep) could be surface material which has crept downslope.

It is recommended that a few (up to 6) diamond drill holes be made at the site:

- (1) One hole between Holes 9 and 12 to locate or indicate the nature of the rock junction.
- (2) Three holes, one at each of the NE, NW and SW corners of the site.
- (3) Two holes as necessary to determine the line of the fault (if present), or if there is no fault, the foundation conditions at the centre of the site.

PART 2. SITE INVESTIGATIONS

Site investigations are summarised below. Prior to the geological survey some back hoe trenches were dug on the site. As some discrepancies of observation and/or interpretation have occurred concerning this details are given below. As recommended in Part 1 of this report, bore holes have been drilled to solid and fresh rock. In addition, a magnetic survey of the eastern half of the site has been undertaken in order to delimit the junction between dolerite and sandstone.

OBSERVATIONS ON THE SITE AS INDICATED BY TRENCHES

Fourteen trenches dug under the supervision of Daly, Milledge and Power consulting engineers, revealed in all but one case (Trench 8) very weathered dolerite. Location of all trenches is shown in Figure 25. Trench 12 is indicated as being of sandstone on a plan prepared by the engineers but checking of the original description verifies observation of dolerite. Another

apparent discrepancy occurs in regard to Trench 7 (see magnetic survey and Bore Hole 5).

The material revealed by these trenches, to a depth of up to 3 m, is very weathered, granular dolerite with significant weathering on joints to travertine (a calcium carbonate). Joint density is also high due to the nearness of either a fault or igneous boundary. This has induced extreme weathering.

MAGNETIC SURVEY

As dolerite has a higher magnetic susceptibility, than sandstone, due to the proportion of ferromagnetic minerals present, a detailed magnetic survey was undertaken to reveal the boundary between the two rock types. Contours on the magnetic field are shown on the figure. The field over the western two-thirds of the side is never less than 30 units and commonly more than 31. Close to the shore, and along the eastern side of the site the field is in the range 27-27.5 units. Between the two regions is a narrow belt in which there is an abrupt step. This gradient of the field runs out into Kangaroo Bay at the area in which neither sandstone nor dolerite outcrop. The survey may be interpreted as showing a fairly straight boundary between the two rock types with values less than 28 being typical of sandstone and more than 30 of dolerite.

Some comments may be made of observations in trenches and bore holes with regard to these conclusions:

- (1) Bore Holes 1 to 4 which proved weathered dolerite are located in that part of the area where the field is in excess of 30 units. Trench 12 is also in this region, confirming the comment made previously.
- (2) Trenches 7 and 8 are in the region where the field is less than 28 units. However only Trench 8 appears to have revealed sandstone. In addition, Bore Hole 5 revealed dolerite somewhat unexpectedly as the field value is here less than 28.

The figure shows the direct interpretation of the field and also the likely position of the boundary considering all available information. No reasons can be advanced at this time to account for the 30° discrepancy in trend between 'actual' and interpreted boundary. Displacement of the field, weathering and drift effects or an angled fault will not produce the required divergence effect. This problem does not affect the examination of this site but it should be borne in mind in future surveys.

OBSERVATIONS ON THE SITE AS INDICATED IN BORE HOLES

Bore Hole 1	
m	
0 - 2	Soil (no recovery)
2 - 5	Very weathered dolerite, with friable, granular zones. Recovery 20%. In excess of 65 joints per metre.
5 - 6.5	Weathered dolerite showing mainly vertical jointing, some horizontal jointing. Recovery 80%. Up to 100 joints per metre.
6.5 - 9	Weathered, badly decomposed dolerite. Recovery 10-20%.

[Bore Hole 1]

m

- 9 - 11 Fairly fresh, blue medium-grained dolerite.
20 joints per metre with thin green clay coatings.

Bore Hole 2

m

- 0 - 2 Soil (no recovery)
- 2 - 6 Weathered dolerite, showing firm, bluish kernels coated thinly with iron oxides.
Recovery 50%.
- 6 - 8.3 Weathered, granular dolerite with many horizontal joints coated with iron oxides and travertine. Recovery 75-80%. 20-40 joints per metre.
- 8.3 - 11 Fairly fresh blue dolerite. Thin coatings of iron oxides on joints at 0-30° to core.
7 joints per metre.

Bore Hole 3

m

- 0 - 4.5 Soil and clay (no recovery)
- 4.5 - 6.2 Weathered dolerite, finely jointed. 20% recovery. Weathering products mainly iron oxides.
- 6.2 - 7.3 Very oxidised, weathered and broken dolerite. 20% recovery. Joint frequency exceeds 40 per metre.
- 7.3 - 8.5 Fairly fresh dolerite. 20-40 joints per metre, 95% recovery. Joints at 65-90° to core; weathering products include coatings of iron oxides, green clays and calcite.

Bore Hole 4

m

- 0 - 6.4 Soil and clay (no recovery)
- 6.4 - 7.2 Weathered dolerite. 20-50 joints per metre at 60-90° to core. Recovery 50%.
- 7.2 - 7.8 Moderately fresh dolerite. Joints 45-60°. Coatings of iron oxides on joints.

Bore Hole 5

m

- 0 - 7.4 Soil and clay (no recovery)
- 7.4 - 10.2 Weathered, broken dolerite. Significant coatings of iron oxides, travertine on fragments. Recovery 20%.
- 10.2 - 10.4 Massive fresh dolerite.

