

TR12-69-71

## 15. REPORT ON DIAMOND DRILLING, PROPOSED TUNNEL, NUNAMARA

by D. E. Leaman

### INTRODUCTION

Diamond drilling was undertaken for the Launceston City Corporation along the line of this proposed water tunnel. The drilling followed a resistivity survey which had indicated that the dolerite was extensively weathered in several places.

### DRILLING RESULTS

The following is a description of the core.

#### HOLE 1

- 0' 0"-10' 0" No core. (Driller states boulders and clay.)
- 10' 0"-40' 0" Dolerite slightly weathered with all joints containing coatings of iron oxides, clay minerals and occasionally calcite. The average joint density is 6 per foot and in the ranges 0°-25° and 70°-90° to the core. There is no slickensiding on the joints and no reduction with depth in joint density.

#### HOLE 2

- 0' 0"- 9' 0" No core. (Clay and boulders.)
- 9' 0"-51' 0" Dolerite throughout, very slightly weathered with all joints containing coatings of iron oxides and some joints containing clay. In addition joints near 25 feet and 45 to 51 feet contain green fibrous minerals. The average joint density is 1-2 per foot with more fractured zones at 26 feet and 45 feet. In all cases the joint coatings are thin films. There has been no movement on any joint. Most joints are 70°-90° to the hole but some are 15° and 45°.

#### HOLE 3

- 0' 0"-11' 0" No core. (Clay and boulders.)
- 11' 0"-34' 0" Dolerite slightly weathered and joints thinly coated with iron oxides. One joint per foot, angles 0°-30° and 60°-80° to hole. A thickly deposited and much weathered 60° joint occurs at 16 feet 8 inches. Similar zones occur at 28 feet and 31 feet 5 inches.

- 34' 0"-45' 0" Dolerite considerably weathered, often to a soft green material. There is a clay zone 1 foot thick at 38 feet. All joints are deeply weathered and thickly coated with clay. The joint density is 5 per foot or more and joints are 0°-15° and 70° to core.
- 45' 0"-50' 0" To 46 feet the dolerite is reasonably fresh as in holes 1 and 2 but thereafter is completely weathered. Much calcite is present in joint traces at this depth.

## HOLE 4

- 0' 0"-11' 0" No core. (Clay.)
- 11' 0"-21' 0" Dolerite only slightly weathered with joints containing only thin films of iron oxides. Joint density 1 per foot. The joints are principally 45° to hole. At 21 feet there is a clay zone about 6 inches thick.
- 21' 0"-35' 0" Dolerite fresh with clean joints (approximately 6 feet).

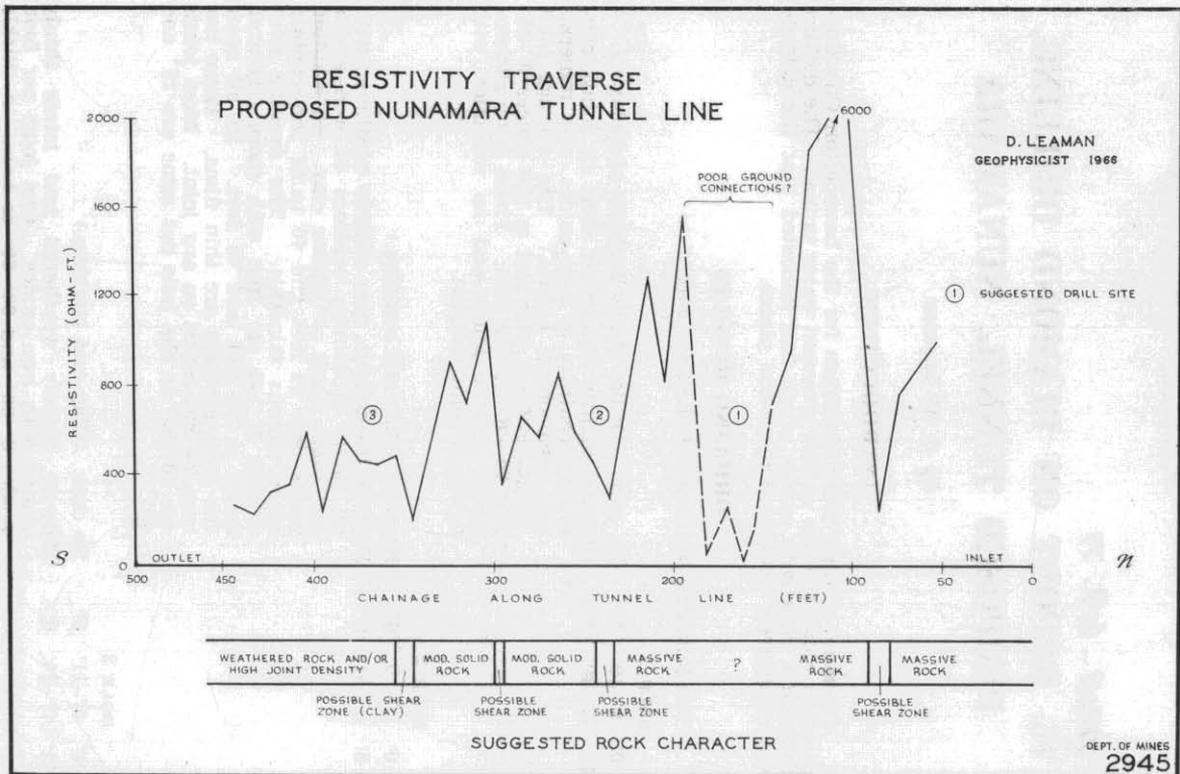
## HOLE 5

- 0' 0"- 8' 6" No core. (Clay.)
- 8' 6"-11' 6" Dolerite slightly weathered, with a joint density of 1 per foot. Joints are 30°, 45° to hole and are coated with clay and iron oxides.
- 11' 6"-23' 0" Dolerite completely weathered, joint density unknown.
- 23' 0"-27' 0" Dolerite slightly weathered but firm. Joint density 1 per foot.

## SUMMARY

Only the rock in holes 2 and 4 is reasonably firm; that in holes 3 and 5 is soft. The shattered nature of the rock in the first hole would make it unsuitable for tunnel support. It would appear that the rock itself would be unable to support a tunnel and would need bracing and lining.

FIGURE 18



5 cm