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## Groundwater investigations at Lime Bay and Plunkett Point, Tasman Peninsula.

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*Abstract*

Drilling in superficial deposits at Plunkett Point and Lime Bay on the Tasman Peninsula did not encounter groundwater.

## INTRODUCTION

The National Parks and Wildlife Service asked whether groundwater would be available for domestic and toilet facilities at the camping grounds at Lime Bay and Plunkett Point on Tasman Peninsula. To be a viable alternative to surface water, the groundwater should occur at or adjacent to the sites, should need little or no treatment, and be easily recoverable using simple equipment. The areas were visited briefly in late October, and drilling at various sites was undertaken on 21-22 November 1978.

## INVESTIGATIONS

*Plunkett Point* [EN588404]

The camping area and surrounds (fig. 1) are in the Saltwater River Reserve. Triassic sandstone and Jurassic dolerite form the bedrock in the district, and in the Coal Mine Hill area both are covered by a variable thickness of sand and clayey sand. It was these unconsolidated sediments which were investigated as a possible source of groundwater. Four mechanically augered holes were drilled in and near the camp site (fig. 1). The logs (depths in metres) are:

*Hole 1* (dry)

0 - 2.2 Stiff yellow-brown clay.

*Hole 2* (on track near abandoned convict well)

0 - 2.0 Damp, slightly clayey grey sand.  
2.0 - 2.2 Stiff grey-brown clay.

*Hole 3* (on roadside near old tramway cutting)

0 - 1 Grey fine to medium-grained sand.  
1 - 2.2 Yellow-brown fine to medium-grained sand; grey between 2 and 2.2 m.  
2 - 6.0 Yellow brown sand.  
6.0 - 7.9 Damp, grey slightly clayey sand.  
7.9 - 8.2 Mottled green-grey clay; possibly weathered sandstone bedrock.

*Hole 4* (in a topographic depression)

0 - 3.7 Brown-grey fine-grained sand.  
3.7 - 5 Buff fine to medium-grained sand, becoming mottled near 5 m.  
5 - 6.4 Grey, green and brown clay; possibly weathered sandstone bedrock.

All holes were either dry or damp, suggesting that despite the nature and thickness of the sediments, no permanent water table exists. An explanation for this may be that the relief of the sandstone basement is

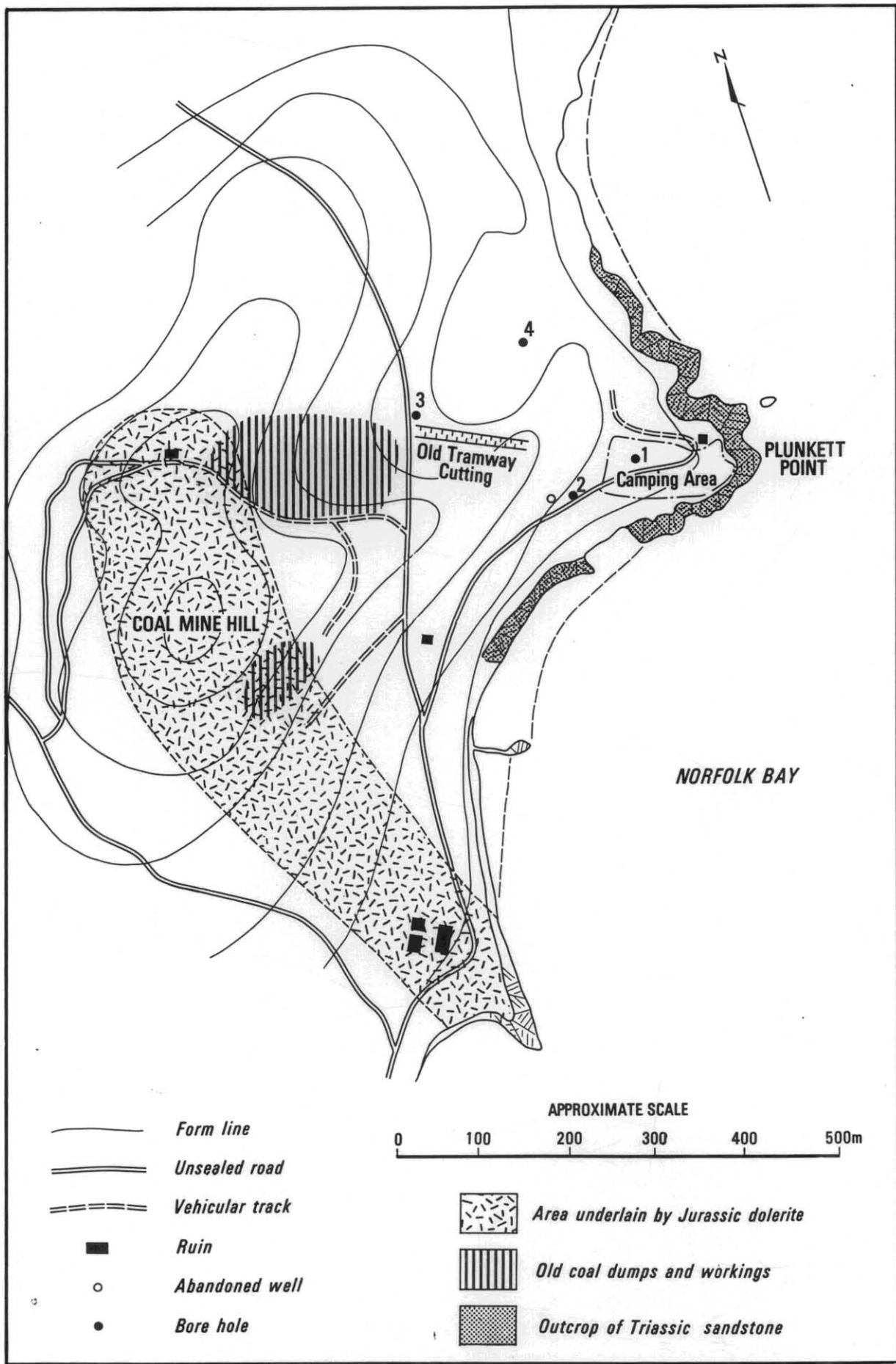
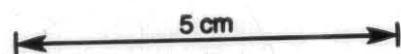


Figure 1. Sketch map of the Plunkett Point area, Tasman Peninsula.



sufficiently high to enable groundwater to drain rapidly coastwards (many seepages occur at sea level), and that the dense bushy vegetation does not permit much infiltration of water or rapidly evapotranspires that which does infiltrate.

The chances of finding useful amounts of groundwater in the sediments are poor. There may be local pockets of groundwater in small depressions (the old convict well, which is now filled in, may have tapped one of these) but even then the supply is unlikely to be permanent. The underlying Triassic sandstone probably contains water, but a drilling rig would be needed to explore its potential.

It is suggested instead that surface water supplies (for example, the swampy area drained by creeks north of the site) be investigated to provide water to the camping area.

*Lime Bay* [EN573437]

This camping area is on a small headland of Triassic sandstone in the middle of Lime Bay Beach (fig. 2). The geology of the surrounding area is similar to Plunkett Point in that Triassic sandstone and mudstone is overlain in places by a variable thickness of windblown sand, and sand and clay derived from weathered bedrock material. Seven augered holes were drilled at or near the site. Their logs (depths in metres) are:

*Hole 1*

0 - 0.7 Sand  
0.7 - 1.5 Clay

*Hole 2*

As for hole 1.

*Hole 3*

0 - 0.3 Sand  
0.3 - Clay

*Hole 4*

0 - 3.3 Stiff yellow-brown and blue mottled clay (weathered bedrock?).

*Hole 5*

0 - 0.3 Sand  
0.3 - 0.6 Stiff clay.

*Hole 6*

0 - 1.8 Very fine-grained light brown sand.  
1.8 - 3 Clay

*Hole 7*

0 - 3 Sand (breakdown of drilling rig prevented further drilling).

All the holes were dry, indicating the absence of permanent groundwater (especially as during late winter and spring water levels are generally at their highest). Over much of the area the cover sand is very thin

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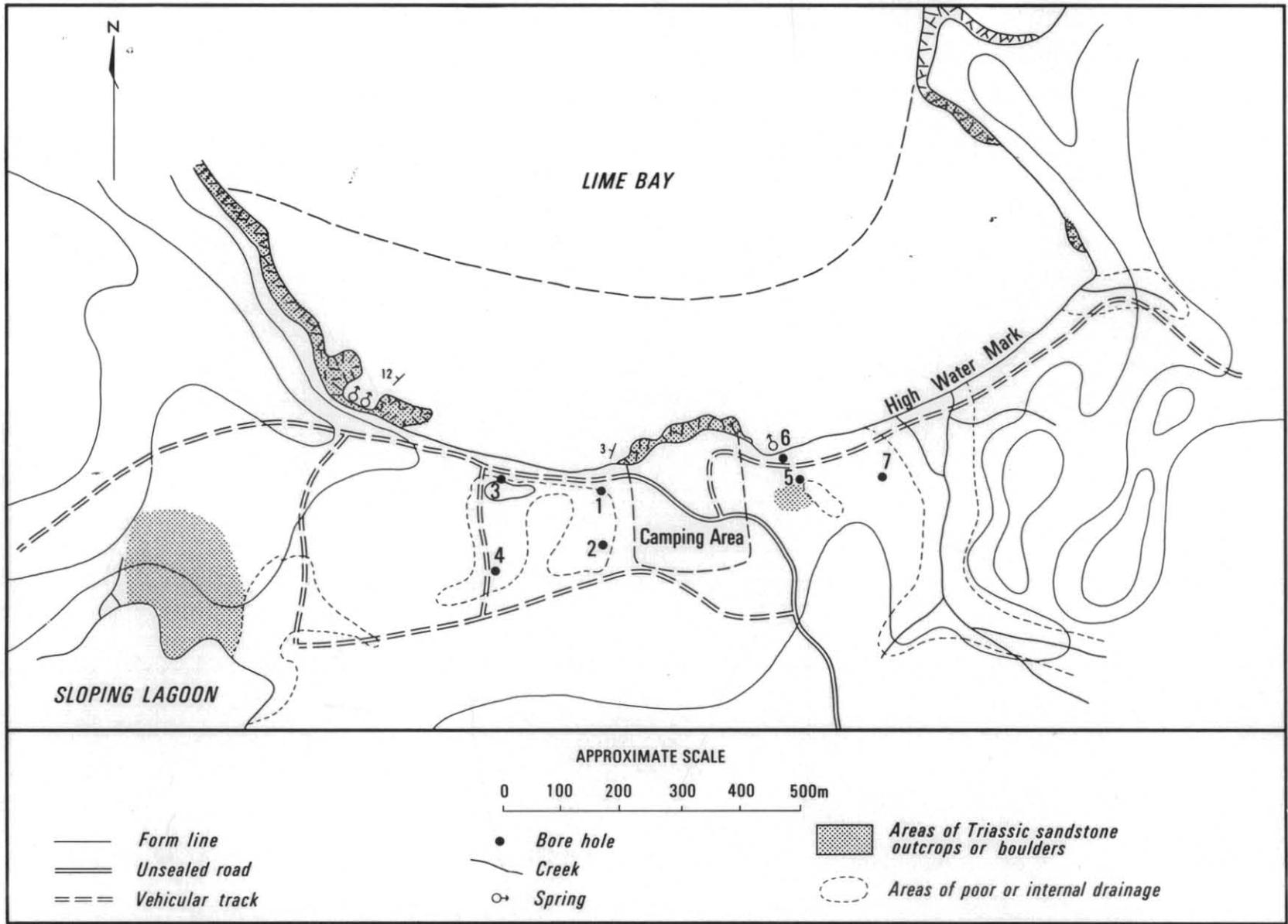
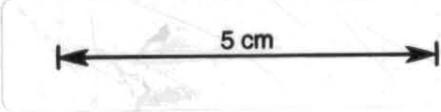


Figure 2. Sketch map of the Lime Bay area, Tasman Peninsula.



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and there is no chance of obtaining groundwater from it. Drilling the underlying sandstone is not recommended because of the low elevation of the site.

#### CONCLUSIONS

The unconsolidated sediments at both sites are not favourable aquifers. All holes drilled were dry. In each case, water will need to be trucked to the camping ground if existing surface water cannot be used. It is probably not economic to investigate the groundwater prospects of the Triassic sediments.

[22 December 1978]