

ENGINEERING GEOLOGY

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23. Examination of proposed road route, Burnie.

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Messrs Pitt and Sherry, consulting engineers of Devonport, are investigating a new outlet road from the suburb of Brooklyn, for the Burnie Council. Part of the route was mapped as potentially unstable in 1963 and the consulting engineers requested advice on what measures could be taken to prevent slips where deep cuts are proposed.

GEOLOGY AND RELIEF

The proposed road will cross comparatively gently sloping ground for most of its length. There is one section where the landsurface is steeper and cuts up to about 4 m are envisaged. The southern part of the proposed road is very close to Alexander Creek and cuts are expected to be small. On either side of Alexander Creek the landsurface rises sharply.

Most of the slopes around Alexander Creek are underlain by basalt talus and weathered Tertiary basalt and these rocks are expected to underlie most of the proposed road. Small outcrops of interbedded Precambrian sandstone and siltstone/slate with a dip of about 60°W occur near the proposed road. Some Tertiary sand and grit overlies Precambrian rocks which crop out on the existing road to Brooklyn. This sand underlies the basalt but the contact cannot be seen in this exposure. Downhill from the proposed road on the northern end is a small area of gravel containing mainly rounded boulders of basalt and quartzite. This gravel is a terrace deposit associated either with Alexander Creek or with an earlier, higher, sea-level. The flat area north and west of the northern end of the proposed road is a more recent marine terrace.

STABILITY

In the survey of the Burnie area in 1963 (Matthews, 1964), the part of the proposed road south of the Precambrian outcrops was mapped as being potentially unstable. It was mapped as such because the surrounding slopes have a history of instability and in recent years two slips on the Pulp road, nearby, have required piling to prevent further movement.

South of the Precambrian outcrops, the land which the new road will cross is generally fairly gently sloping except for an area just south of these outcrops where the deepest cuts are planned. It is in this area where slips could develop in the cuttings if weathered basalt and, or talus are thick. Underground drainage would be directed through this area because the Precambrian rocks are expected to be much less permeable than the Tertiary materials and deposits derived from them. If on the other hand, Precambrian rocks occur at shallow depth in the area where the deeper cuts are proposed, it is unlikely that excavations would promote instability of the area. Test pits about 4 m deep are recommended to determine what material underlies the area where deeper cuts are planned.

South of the above area, the depth of cuts decreases. However, for part of the length of this section of the route, the landsurface rises sharply to the east and removal of material for these cuts will remove some of

the support for the slopes and could promote slips. As little material as possible should be removed from these areas and batters of the cuts should be kept as low as practicable.

On the southern end of the road, the land to the east is flatter due to an old slip. In this section of the road cuts have been omitted and fill is planned.

Little can be done to prevent large slides from developing further up the hill and affecting the proposed road. Improved surface drainage could be helpful. Trees have been planted recently at close spacing over much of the steeper land and these should have a stabilising effect in the future.

Any supporting walls for cuttings should be drained to prevent accumulation of water in the sub-soil on the uphill side of these walls.

CONCLUSIONS AND RECOMMENDATIONS

Three test pits to about 4 m deep are suggested in areas where cuttings are intended to be deepest to determine the underlying material.

The amount of material removed during excavation of the cuttings should be kept to a minimum so that support is not removed for the land uphill.

Batters of cuttings should be kept as low as possible.

Drainage around the cuttings should be good, particularly if retaining walls are built.

Apart from improved surface drainage little can be done to prevent large slides developing uphill from the road and causing damage to it.

REFERENCE

MATTHEWS, W.L. 1964. The geology of the Burnie area. *Tech.Rep.Dep.Mines Tasm.* 8:103-107.



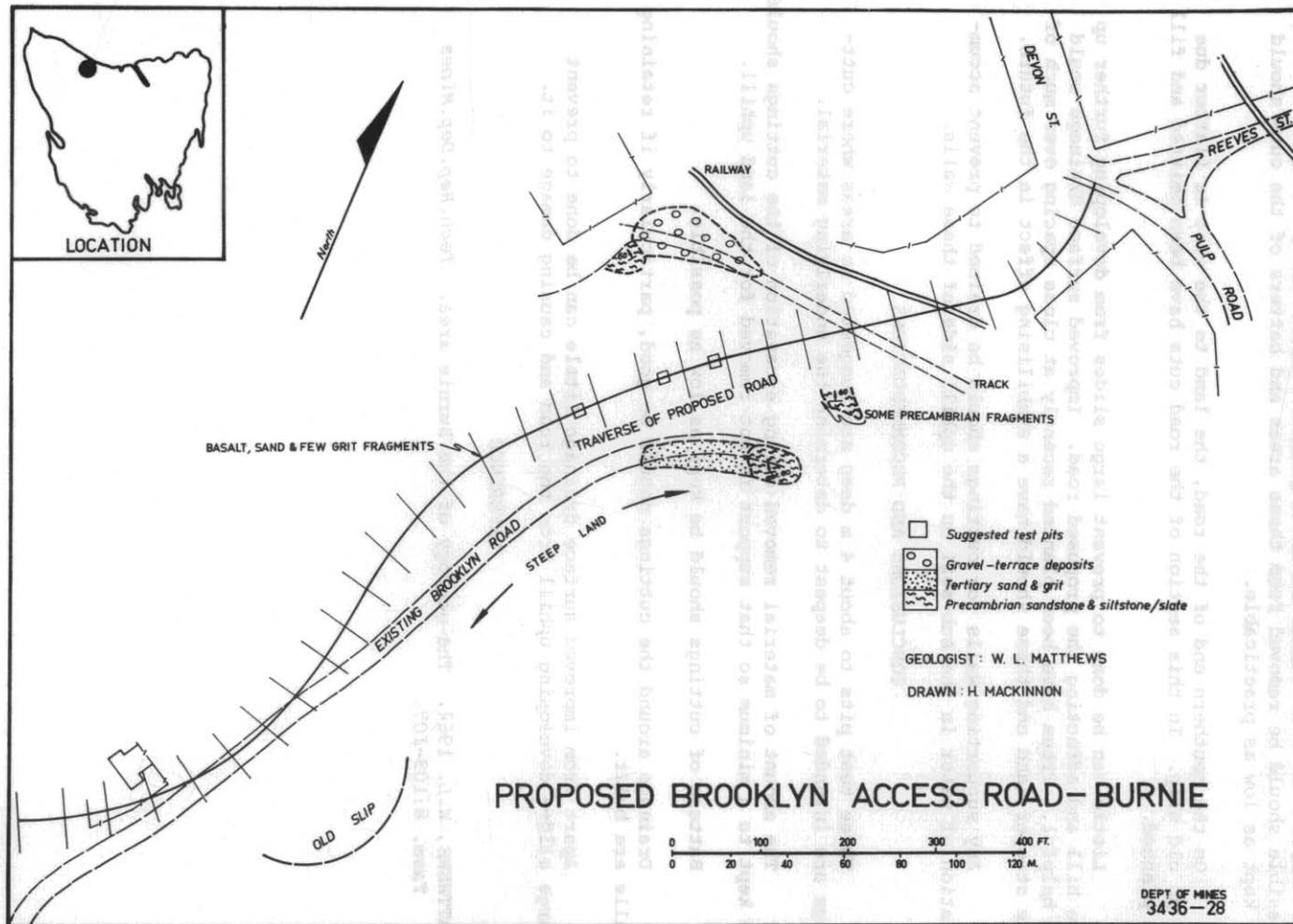


Figure 39.