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13. STABILITY OF LAND, DON AREA

by W. L. Matthews

Land owned by Mr L. M. Marshall will initially be sub-divided into 5 acre blocks but normal sized town blocks have also been surveyed. Lester Franks & Co. surveyed the area and requested that a report on the stability of the land be prepared as the Devonport Council has withheld approval for the subdivision.

The Forth Main Road marks the E boundary of the proposed sub-division and the new Bass Highway runs along part of the N margin. A small tributary of the Don River runs through the E part of the area in a NNE direction and has cut down fairly deeply causing steep slopes (fig. 19).

GEOLOGY

Tertiary basalt and Permian mudstone are the only two rock types occurring in the immediate area. The basalt, which is deeply weathered, occurs on the higher ground. The Permian mudstone is light grey to brown, thinly bedded and where exposed is soft and breaks up into small angular fragments. It contains abundant pebbles, mainly of quartz and quartzite. Limonite has concentrated on joints and bedding planes. Burns (1963) mapped the mudstone as part of the Kelcey Tier mudstone and on the Forth Main Road recorded a dip of 25° NE. In some parts of the sub-division, there is a bench which marks the contact between the two rock types, although in some zones it has been obscured by downhill movement of basalt soil and boulders. No pre-basalt Tertiary sedimentation can be seen although Burns (op. cit.) mapped sand, gravel and/or quartzite N and S of the area. East of the creek, only Permian rocks occur on the proposed sub-division.

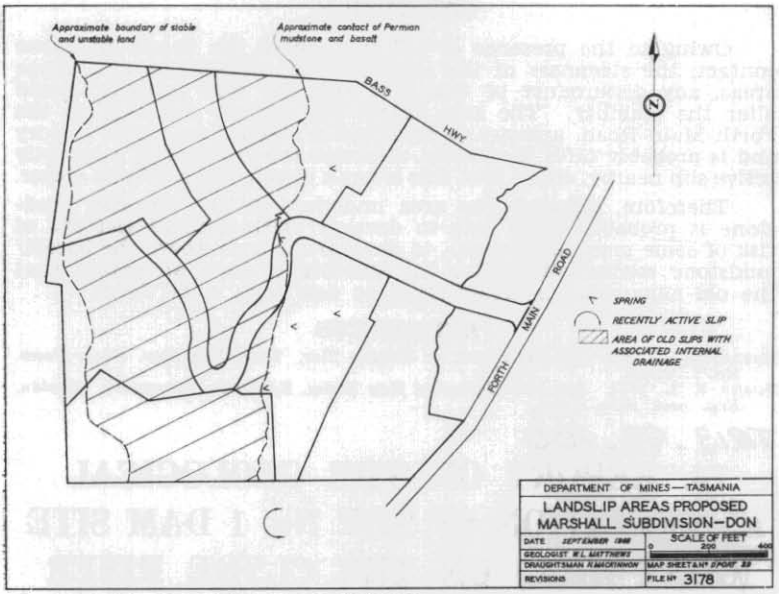

FIGURE 19.

DISCUSSION OF STABILITY

The deep weathering of the basalt and the steep slope of the landsurface W of the creek have been the two main factors causing landslides on this slope. Generally the slips are old with no signs of recent movement. They vary in size but extend up to 100 yards along the heel. They are mainly deep rotational-type slips and areas of internal drainage along the heel are fairly common. The approximate boundary between the area which has been subject to landslip and the apparently more stable area towards the top of the hill has been marked on the plan.

Near the contact of the basalt and Permian rocks there are a number of springs from which water runs down to join the creek. Some of the slip material has crossed the basalt-mudstone boundary and some features that might be due to landslip are present, although these are much less certain than those further up the hill.

The Permian mudstone itself does not appear to have been involved in much mass movement although in the N part of the area there are features which could be due to very old landslips. The only recently active slip in the vicinity is just to the S of the sub-division and is in an area underlain by the Permian mudstone. The movement has probably taken place in fairly recent times and is a shallower and more elongated type of slip than most of those in the basalt. Large rotational slips have been recorded in the Kelcey Tier mudstone, Burns (1957) but the topographic position is much different.

CONCLUSION

Owing to the presence of old slips above the basalt-mudstone contact, the steepness of the slope and the abundance of seepage areas, any disturbance of this area (e.g., by road forming) could alter the stability. The area below the contact and over to the Forth Main Road, appears to have had a much more stable history and is probably safer to develop, although the presence of a recently active slip nearby, shows that this is not a completely safe area either.

Therefore, although the area underlain by the Permian mudstone is probably fairly safe to develop (with a small element of risk of some mass movement), to develop the zone above the basalt/mudstone contact may alter the stability to such an extent that the old slips could be reactivated or new ones could form.

REFERENCES

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