

1979/11. Recommendations for the construction of an access road and associated land drain in the heel area of the Parklands slip mass, Burnie.

P.C. Stevenson
W.L. Matthews

Abstract

Land in the heel area of the Parklands slip mass was inspected and recommendations made regarding a proposed access road and associated drainage works.

INTRODUCTION

At the request of Mr Charles Phillips of McLean and Phillips, Solicitors, Burnie, a route for an access road was examined by the writers on the 26 March. The route runs from the western end of Bay Street, Parklands, Burnie, westward along the foot of the cliff to reach a block of land owned by Mr W.E. Ashton and previously reported on (Matthews, 1974). This report should be read in association with the earlier report.

The request had significance because the route in question runs across the heel area of the Parklands landslip mass. Not only are the previously installed natural drains to be re-routed and extended but the road itself can affect the natural drainage for good or ill.

GEOLOGY

The escarpment behind Parklands consists of indurated and folded beds of quartzite and phyllite, overlain on an eroded irregular surface by basalt flows. This succession forms the plateau inland. The basalt is deeply weathered giving rise to the 'red soil' and the lower part of the escarpment is mantled by a mixture of basalt and quartzite boulders in an abundant matrix of mainly basalt-derived red and yellow clay. This material, in the presence of water, becomes plastic and is capable of flow. This phenomenon takes place commonly on a small scale as earthflows activated by intense rain and run-off and has probably been active on a large scale in the recent geological past to produce the Parklands slip mass.

The material is therefore sensitive to the presence of increased amounts of water, and the steep seaward face of the mass became active recently, leading to the construction of the new retaining wall on the Bass Highway.

RECOMMENDATIONS

Although the route for the access road was reasonably well defined by the 11 m strip of right of way lying behind the rear boundaries of the properties along Button Street, the absence of prepared drawings made the exact intentions of the road constructors difficult to picture.

The following recommendations are therefore made as a general guide to the construction.

Any new construction runs the risk of unintentionally collecting and diverting run-off and spring waters into a position where the slip clay may be moistened and mobilised. Every action must therefore be aimed at disposing of collected water into natural or artificial watercourses so

that access of water to locally elevated areas of the slip mass does not occur. Not only this, but every drain must be itself constructed so that any movement or failure leading to leakage, is visible and cannot occur in a position hidden from open view.

In the known presence of sensitive clay and of natural waters there is an onus on the constructor and owner of the road to ensure that the drainage system is constructed adequately and well, is conscientiously maintained and that to do so is easy. If any of these points are neglected then the risk of damage is increased.

The road itself requires to be drained and the best way to achieve the above ideal is for the road drain to act also as the drain for land on its upper side. In this way a simple, easily maintained easily constructed adequate accessible and unconcealed system may be designed.

The following guidelines should be followed:

The drain which will fall both ways from the highest point of the road should be continuous or should overlap so that no line directly downslope can be drawn without intersecting a drain.

The drain should be in the form of a half round spoon drain or gutter open to the sky and of the general shape and at least of the dimensions of the existing drain.

It should be on the uphill side of the road, and the road and its cuts and fills on its upper side should be cambered, so as to drain into it.

It should be of impervious material such as concrete and constructed and reinforced so that minor soil movements will not cause sections to part and leak.

The flow in the drain should be disposed of into council stormwater systems and in no event allowed to flow over unprotected slip-prone clay.

Cuts and fills should be limited to one metre in height.

Cuts should be stone pitched at low batters or where appropriate grassed so as to drain into the road drain.

Fills should be self draining toward the base and as far as possible given impermeable surfaces.

REFERENCE

MATTHES, W.L. 1974. Stability of land owned by W.E. Ashton at Parklands, Burnie. *Unpubl.Rep.Dep.Mines Tasm.* 1974/39.

[28 March 1979]