UR1971_13

Report on the failure of a clay bank near Comalco's dam, Bell Bay.

P.C. Stevenson

The surroundings of a dam owned by Comalco were examined during the course of an investigation of the route of the Bell Bay Railway. The dam is situated approximately 3½ miles south of George Town on the opposite side of the East Tamar Highway to the George Town Golf course.

Part of the dam, presumably the clay core, was excavated from a borrow pit which lies immediately downstream from the dam wall and is approximately 250 x 100 ft in area. The pit was formed by oversteepening the right bank of the small valley, which is cut in the compact white grey and pink plastic clays of the Launceston Beds. This material is well known as a potent factor in the occurrence of landslips throughout the Tamar Valley.

The bank that failed is approximately 20 ft in height and forms the steepest side of the borrow pit, sloping at an angle estimated at 16°. The bank lies parallel to the old valley side, is at right angles to the dam centre line and is situated downstream from it (fig. 1).

Part of the bank has failed and is slipping back into the borrow pit. The slip is at present approximately 75 ft in width, 50 ft from heel to toe, and at the nearest margin approximately 80 ft from the dam centre line.

The style of slip is similar to many in the Tamar area and is probably of the shallow blanket slide type (Stevenson, 1971). Steps at the heel and in the upper half are from 6-18 ins in height, and a well developed toe bulge is 1-2 ft high.

The heel has cut back up the slope and is now affecting previously undisturbed grass land, but most of the slip area is bare clay. No attempt has been made to grass over the bank, or to divert surface drainage which has cut gullies in both slipped and unslipped parts of the bank to a depth of 3 ft.

As with most landslips the cause is complex and is probably due to a combination of the following mechanisms:

(a) Stripping of surface cover, with consequent disturbance of moisture profile, shrinkage and cracking;

(b) Failure to divert surface run-off thus enabling concentrated flow into shrinkage cracks;

(c) Oversteepening of the bank. 11° is probably about the limit for stability in this material, provided the other factors are corrected.

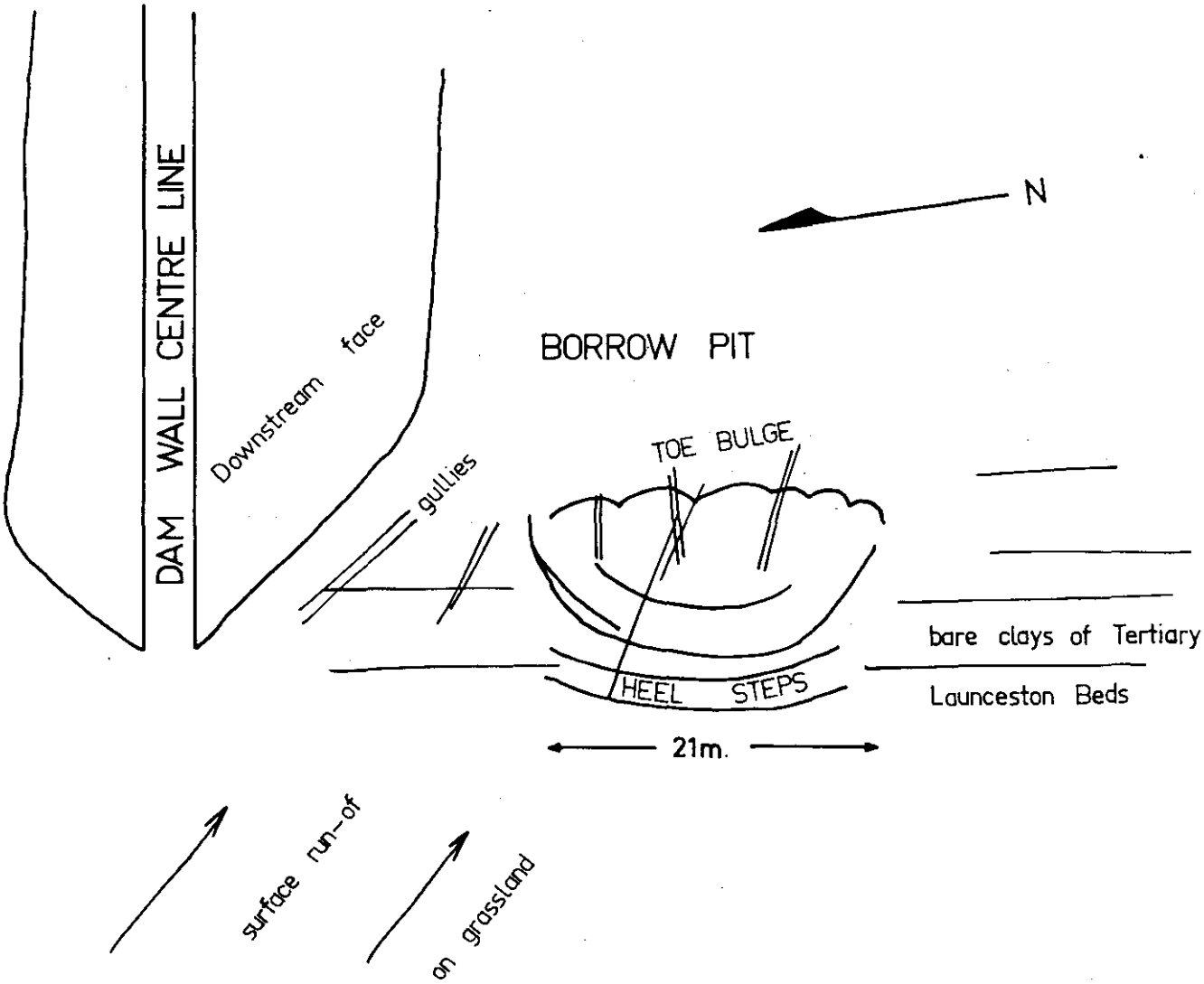
CONCLUSION

There is no threat at present to the dam wall, but a slip once established will very rarely stabilise without extensive effect on adjacent slopes. Further slips will therefore almost certainly occur and will in time affect the downstream side of the right abutment.

REFERENCE

STEVENSON, P.C. 1971. A mud spring and a landslip at Deviot. *Tech.Rep.Dep. Mines Tasm.* 14:79-82.

[4 June 1971]



BANK FAILURE AT COMALCO'S DAM NEAR GEORGE TOWN

28th. MAY 1971

Figure 1

3466-3c

5 cm