UR1974-03

Results from trial pits at a proposed subdivision, Clara Street, West Ulverstone.

P.C. Stevenson

A previous report (Stevenson, 1973) indicated that a dormant landslip situation existed in part of the proposed subdivision and that a small active slip showed that stability might be marginal.

The report stated that more investigation was necessary. This aim was furthered by the digging of eight trial pits on the 5 December 1973 in the positions indicated approximately in Figure 1.

The sections seen in the trial pits were as follows:

Pit 1. Surface slope 19°

m	
0-1.2	Red soil, stiff friable sandy clay.
1.2-3.0	Grey granular weathered basalt with plastic layers. Wet at the top.
3.0-3.4	Yellow slightly coherent sand, wet.

No appreciable water entered the hole during a period of 2 hours.

Pit 2. Surface slope 11°

0-1.8	Red soil.
1.8-1.95	Grey clayey sand.
1.95-3.0	Red soil, with 20 cm sandstone (greybilly) boulder.

Materials encountered were only moist.

Pit 3. Surface slope 7°

0-2.4	Red soil, with a few 10 cm basalt boulders.
2.4-3	White very fine slightly coherent quartz sand.

A dry hole.

Pit 4. Surface slope 12°

0-1.2	Red soil.
1.2-1.35	Brown (fossil?) organic soil.
1.35-1.5	Red soil.
1.5-1.65	Grey plastic clay.
1.65-3.30	Chocolate brown waxy clay with many sheared surfaces.

Pit 5. Surface horizontal

0-3	Red soil, organic for 30 cm from surface, moist at depth.

Pit 6. Surface slope 12°

0-1.8	Red soil.
1.8-2.1	Grey plastic clay somewhat sandy.
2.1-3.0	Stiff dark brown plastic clay, strongly sheared.

Pit 7. Surface slope 18°

m	
0-1	Brown soil.
1-2.1	Weathered fractured basalt.

Pit 8. Surface slope 10°

0-3	Brown organic soil grading at about 1 m into stiff dark brown plastic and very strongly fissured and sheared clay, brightly polished listric surfaces.

The succession in the area consists of:

Red soil derived from the weathering of basalt.
Weathered basalt, brown or grey in colour.
Grey clay and white sand, not everywhere present.
Brown stiff plastic clay, probably derived from the weathering of Cambrian mudstone.

The red soil derived from the weathering of basalt rock forms a capping on the hill. The weathered material is rainwashed down the slopes and mantles all other units of the succession. Where any relatively unweathered basalt remains as in Pit 7 it prevents digging, but deeply weathered grey basalt as in Pit 1 can be penetrated.

The grey clays and white sand lie in some places under the basalt but are normally concealed by the red soil mantle. They can be found at lower levels as in Pit 3 or Pit 1.

The brown stiff clays are probably the weathered remnants of the much older Cambrian rocks, and form the basement of the succession examined.

The sequences seen in Pits 2 and 4 show that some mass movement has taken place, probably in the form of earthflows, resulting in the burial of one-time surface layers. The grey clay layer has been carried over the red soil in Pit 2, and a brown surface soil has been buried in Pit 4. That this effect is quite localised is shown, for example, in Pit 3 where no signs of overriding are apparent.

The appearance of the stiff brown sheared clays in Pits 6 and 8 and the weathered basalt in Pit 7 show that the grey clay and sand is not present to the western part of the proposed subdivision, and may account for the greater stability and hence the steeper slopes of this area.

CONCLUSIONS

The steeper slopes at the eastern end of the hill are marginally unstable and cause earthflows to encroach on the lower slopes at intervals of unknown frequency.

The earthflows are localised below the slipping slopes and are more in the nature of an expensive nuisance than a destructive hazard.

The suggestion that the subdivision be restricted to parts of the area having slopes of less than 12° appears to be a realistic and helpful one in a complex and difficult situation.

Any further decision on the steeper areas could only be made after a

drilling, sampling and testing programme on the red soil and underlying sediments, and the calculation of a stability analysis.

REFERENCE

STEVENSON, P.C. 1973. The stability of a proposed subdivision at Clara Street, West Ulverstone. *Unpubl.Rep.Dep.Mines Tasm.* 1973/47.

[11 January 1974]

BERTHA STREET (unformed)

8

6

7

4

1

2

5

3

STREET

39

25

24

26

27

28

29

30

31

32

33

15

BURNETT

AMY

CRESCENT

CLARA STREET

MAUD STREET

TRIAL PITS
PROPOSED SUBDIVISION CLARA STREET, ULVERSTONE

0 80 160 240 320 400 feet

0 25 50 75 100 metres

5 cm

⊣⊢ Position of slip

▭ Test pit

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