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Stability of land at Fairlands subdivision, Somerset.

W.L. Matthews

The Housing Department requested advice on the stability of land in the undeveloped parts of the Fairlands subdivision, Somerset [DQ004560]. Much of the area consists of flat land and was not examined closely. The area examined in detail comprises all the more steeply sloping land and lies to the west of an area previously investigated (Matthews, 1974).

GEOLOGY AND RELIEF

The relatively flat area forms part of a marine terrace which extends along parts of the coastline in the Burnie area; it rises to about 10 m above sea level. Behind the terrace the landsurface rises sharply to a height of about 60 m and then flattens again.

Part of the area was mapped by Matthews (1965) and the whole area is included in the Burnie 1:63 360 geological sheet (Gee *et al.*, 1968). The terrace is underlain by Quaternary sand and gravel with some clay. The slopes behind the terrace are underlain by basalt, basalt talus, Tertiary sediments and at some places Precambrian quartzite and slate. Tertiary basalt underlies the flatter ground above the steep slopes. Precambrian quartzite and slate occur along the shoreline and the terrace has probably been mainly cut into this material. Precambrian dolerite intrudes the Precambrian sediments at some places in the area but has not been noted within the subdivision.

DISCUSSION OF STABILITY

As much of the proposed subdivision is fairly flat land, there is little risk of instability in those areas. However, much of the steeply sloping land is unstable. On the eastern boundary of the area examined there are active slips affecting an area of 0.5-1 ha and further along the slope to the west there is a broad zone of large old slips (fig. 1). These slips have developed in weathered Tertiary basalt and talus and have probably been aided by the presence of Tertiary sediments underlying the basalt. There would be considerable risk associated with developing these areas as further movements could occur. The areas underlain by Precambrian rocks on the sloping land are unlikely to slip and where only a thin cover of basalt talus occurs there is also only a slight risk of instability. It is difficult to determine where Precambrian rocks are near surface on the lower slopes. It is therefore difficult to delimit zones within which development is risky. If test pits were dug with a back-hoe to 3-4 m in depth, subsurface materials and groundwater conditions could be inspected and this would allow a more accurate definition of the potentially unstable land.

CONCLUSIONS

Much of the land is flat or gently sloping and there is little danger of unstable conditions. Active and old slips occur on steeply sloping land and there would be considerable risk in developing these areas. Test pits should be dug to define these areas more accurately (particularly on the lower slopes).

REFERENCES

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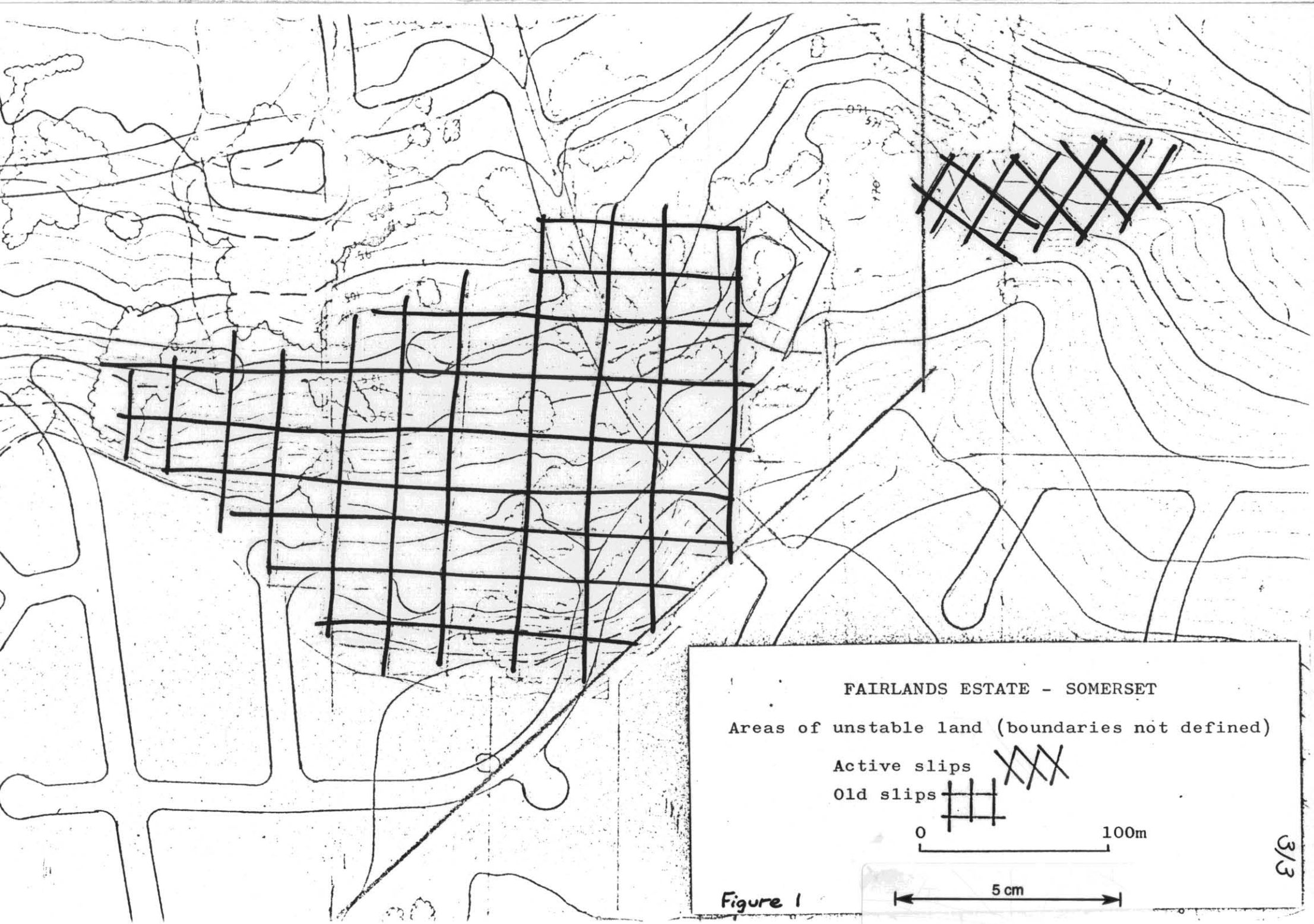
FAIRLANDS ESTATE - SOMERSET
Areas of unstable land (boundaries not defined)
Active slips
Old slips
0
100m
5 cm

Figure 1

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