VR1974-34

Stability of land at Fairlands Estate, Somerset.

W.L. Matthews

The Housing Department is developing land in the Fairlands Estate, [DQ005560] in the south-west part of Somerset. The land slopes at moderate to steep angles and a possible landslip was noted during early work within the subdivision. An examination of the stability of the area was requested.

GEOLOGY AND RELIEF

Most of the subdivision is on north-facing slopes which rise from a marine platform to a dissected basalt plateau. The marine platform extends to 8-10 m above sea level and the basalt plateau rises to about 75 m above sea level in the vicinity of the subdivision.

The rock types in the area consist of Precambrian quartzite and slate, Tertiary gravel, sand and clay and deeply weathered Tertiary basalt. The rock units of Tertiary age were deposited on an uneven surface so that contacts between them and the older rocks occur at widely differing elevations from place to place. In the vicinity of the subdivision, basalt and sediments appear to extend to the level of the marine platform whereas to the east and west they are apparently in contact with the Precambrian rocks at higher levels. Weathered basalt soil has moved downslope and covers the contact, making it difficult to determine its position accurately. In an excavation for a road which cuts diagonally through the subdivision, clay and clayey gravel are exposed and basalt crops out at lower levels nearby, suggesting that there are at least two basalt flows separated by sediments.

DISCUSSION OF STABILITY

Landslips are a common feature along the North-West Coast where weathered basalt and unconsolidated sediments occur on fairly steep slopes. Within the proposed subdivision, there are a number of strong seepages which are common in landslip areas. A Housing Department engineer recognised a possible landslip near the middle of the area being developed but preliminary road excavations had disturbed the area when inspected. In the north-west portion of the land, for which plans for development have not so far been made, there are old landslips and one fairly recent slip. Within the area being developed there are a number of features which could be the result of old landslips. A large arcuate feature lies above the exposure of clay and clayey gravel.

CONCLUSIONS AND RECOMMENDATIONS

The portion of the subdivision that occurs on the marine terrace (Area A, fig. 1) could be safely developed except perhaps for areas close to steep slopes. Landslips that might develop on these slopes could extend down and affect part of the flatter land.

The north-west portion (Area B) of the subdivision should not be developed because of the presence of definite old slips and one fairly recent slip.

Much of the middle portion of the subdivision (Area C) should only be developed after detailed subsurface investigations have indicated there is no risk of landslips occurring in this zone. These investigations should include drilling and tests of the strength of the materials obtained.

Parts of the eastern portion (Area D) of this subdivision could be safe to build on subject to the results of some test pitting. It is possible that the older rocks occur further up the slope in this area and they are not

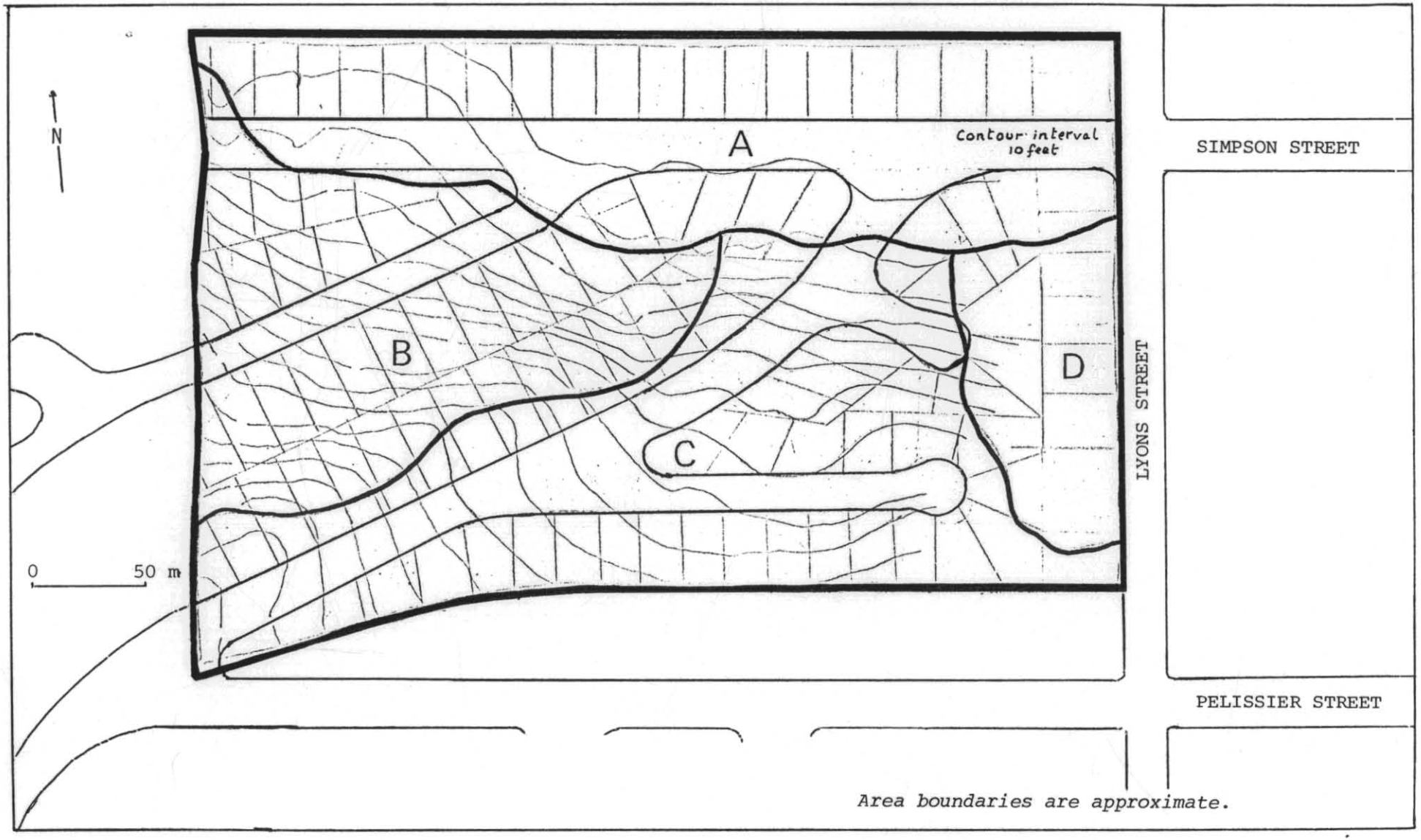

Figure 1. *Part of Fairlands Estate, Somerset.*

5 cm

usually subject to landslip. If there is no danger of material slipping from above, then this area could be safely developed. Test pits to 3-4 m or bedrock would determine whether Precambrian rocks occur in this area.

If any of these areas are developed, the seepages that occur within or near them should be drained so that water is not allowed to accumulate in the soil.

[24 April 1974]