

UR1974-64

A landslip in basalt soil at East Devonport.

P.C. Stevenson

A landslip in soil on a steep northward facing slope 150 m south of Brooke Street and between Mary and Caroline Streets [DQ478412] was examined on 31 July 1974.

The slope (about 18°) forms the seaward margin of a basalt plateau about 30 m high.

The slip is 36 m wide (along the contour), about 15 m long (downslope), and is centred about 40 m east of Mary Street.

A previous history of slipping is not obvious although a small hump 0.4 m high at the foot of the slope looks like an old overturned turf roll and is just below the present toe.

The heel scar is about 0.35 m high and translation has been vertical at the heel and obliquely outward along the side shears. The slip is currently active and water is standing in the surface cracks. A graben has formed in the upper part of the slipped zone, but there is little evidence of heave at the toe, which is only marked by a small turf roll. The maximum depth to the slip surface is estimated as 2-3 m.

Two new houses stand on the slope west of and about 40 m uphill from the slip. Traces of a ditch are cut across the top of the slope, possibly a catch drain. There is no obvious immediate cause for the failure, and the drain has neither helped or hindered.

Grass in the slip area is markedly green and a concentration of water as a slight spring is possible.

A soil section on Caroline Street about 80 m to the east shows:

<i>Description</i>	<i>Thickness (m)</i>
Red soil, mantling the slope.	0.8
Red clay	3-4
Pink clay	1
Brown highly weathered tuffaceous basalt sand.	

The pink clay is highly plastic and is relatively impervious compared with the materials above it, and it seems likely that groundwater would be forced out by it. This situation could be the cause of the slip and the origin of the spring mentioned above.

The slip does not appear to have other than natural causes, and the recent very high rainfall is of course mainly responsible. The activity may be expected to subside as the rocks dry out and is not likely to spread laterally. Uphill from the slip, the slope is oversteepened and stressed, and soil erosion will increase to compensate for this. No threat exists to the houses upslope at the moment, but the catch drain might usefully be cleaned and maintained. Draining of the surface cracks will aid stabilisation but subsurface drains do not appear necessary.

This slope is one of the steepest soil slopes in the area, and provides a guide to the expected stability of similar slopes nearby. Rock slopes, as for instance at Tarleton Street, are more stable.

[12 August 1974]