

TR14-82-8A

19. Landslip, Lawrence Vale area, Launceston

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A landslip on the top side of Meredith Crescent in the Lawrence Vale landslip area was examined on 10 September 1969 following a request from the Launceston City Engineer. This area is well known as an unstable zone and is

the subject of numerous geological reports, notably those by Aitchison and Gill, and by Hughes. A number of houses have been destroyed in the area and the district is subject to the Lawrence Vale Landslip Act 1961.

The present slip consists of a wedge of Tertiary clay and sand, heavily charged with groundwater lying on the top side of Meredith Crescent, which has moved downslope to partially block the road. Along the edge of the road is a zone of heave and in order to maintain service, the toe of the slip has been trimmed back off the road several times. Numerous open tension cracks outline the head of the slip some 30-40 yd above the road. The tension cracks are water filled: small streams of water are emerging from some of these cracks, from the body of the slip material and from the toe of the slip. The main direction of movement is downslope onto Meredith Crescent but in addition to this, there appears to be some tendency for the slip to spread northwards. At present the slip is still active and the only factors preventing complete collapse are the embankment of Meredith Crescent and the small amount of cohesion remaining within the toe of the slip block. Several houses lie within the path of the slip on the lower side of Meredith Crescent and the road itself must be subjected to some stress by the movements to date. It is therefore clear that steps are necessary immediately in an effort to arrest further movement, to provide protection for nearby residents and to maintain road service.

The long history of earth movements in this area, together with the investigations which have taken place up to date, indicate that no single, simple solution can be applied to arrest the earth movements in this area permanently. At this time it appears advisable to concentrate efforts upon arresting the present movement before further damage occurs. Whilst the causes for the general instability of the area may be many and complex, the cause of the present slip is probably due to the following factors:

- (1) Previous movements in the area resulting in the formation of unstable sedimentary slices with inherent slip planes.
- (2) Above average rainfall over the past couple of winters and particularly this winter.
- (3) Surface cracking of the clay during the summer allowing infiltration of water into the slip mass during the winter.
- (4) Infiltration of water into the slip mass from unspecified groundwater sources.

RECOMMENDATIONS

(1) Efforts should be made to drain the unstable mass as quickly as possible. It is recommended that this be achieved by cutting two slots deep enough to intersect the slip plane, up the centre of the landslip. Toward the top of the slip connecting drains should cut in a herring-bone fashion to drain the water-filled tension cracks around the head of the slip and to intersect any water intake below the surface in that area. The drains could be put in by a backhoe or similar equipment and should be back filled with coarse free draining stone.

(2) If it is necessary to clean up the toe of the slip along Meredith Crescent the material removed should be replaced by a fill comprised of large blocks of stone so as to be completely free draining.

(3) In order to intersect the slip plane at the bottom of the slip it may be necessary to excavate beneath the present level of Meredith Crescent. If so, it will be necessary to provide a drain, having adequate fall, across Meredith Crescent to a safe outlet. Care should be exercised to ensure that this drain will not initiate movement down slope of the road.

(4) It will be necessary and prudent to close Meredith Crescent to traffic whilst the above works are being performed and it is desirable to keep the road closed until the effectiveness of the measures adopted are assessed.

(5) A close check should be kept on the area to observe signs of renewed downwards movement and lateral spreading so that adequate warning can be given if renewed movement endangers nearby property.

The present slip must be considered potentially dangerous and the steps suggested are those that can reasonably be taken quickly in an effort to arrest further movement. However, the general area of instability in this district is large and the factors promoting this condition are complex; these steps are therefore only designed to deal with the present movement and not as a cure for the whole area. The past history of movement in the area has not been one of sudden catastrophic movements. At this time, no such movement can be predicted. Nevertheless, the slip is a potential danger to nearby property and close vigilance is essential; any sign of collapse of the road embankment should be taken as sufficient cause to evacuate residents immediately downslope of the road.