

1977/40. Investigation of road movement at Strickland Avenue.

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A section of Strickland Avenue traverses steep valley slopes above a deeply incised section of Hobart Rivulet [EN215493]. The road is subject to tension cracks and progressive road failure.

GEOLOGY

The underlying rock is Permian siltstone overlain by a thick mantle of talus. There is a strong downslope component of dip in the Permian rocks which indicates that they are cambered downslope. One section of rock is particularly fractured because of a geological fault which cuts across the valley.

Talus is mixed and variable, with siltstone derived talus overlain by talus derived predominantly from dolerite. Much of the talus comprises large blocks of rock with minor fine matrix, but particularly near the fault line the talus is mostly a matrix of small siltstone fragments and clay.

SLOPE MOVEMENT

Sections of the road show damage to half the pavement width and there appears to be progressive movement down the very steep slope toward the rivulet. As the road has been constructed by the cut and fill method, it is not possible to distinguish between movement of the fill, and movement of the original talus slope.

Hobart Rivulet is eroding parts of the toe of the slope and some downslope creep of the talus is inevitable. To a large extent the ground is held by tree roots and in places, this is very impressive, especially where the thick roots of two very big, dead eucalypts can be seen binding the talus together on a vertically eroded face. Of the smaller trees, some are upright, some are bent and some have been uprooted. There is generally a poor downslope cover of vegetation where road failure is most evident.

DESCRIPTION OF ROAD SECTION, EAST TO WEST

The eastern drain pipe marked on Figure 1 is blocked and needs cleaning.

Between the eastern end of the fence, and the next drain the heel of the slope movement is close to the fence but does not cut the road. This section is well vegetated.

The next drain issues its water onto an unprotected slope. In time this may cause significant erosion.

West of this drain the road is failing, and the slope below the road is poorly vegetated. The lower part of this slope is not so steep and it should be amenable to having tree trunks lain on it, and planting of saplings.

Between the road failure and the conduit pipe is a relatively stable and well vegetated slope. At the base of this section there are large fallen tree trunks which have provided natural protection against stream erosion.

West of the conduit pipe are two large, dead trees, on either side

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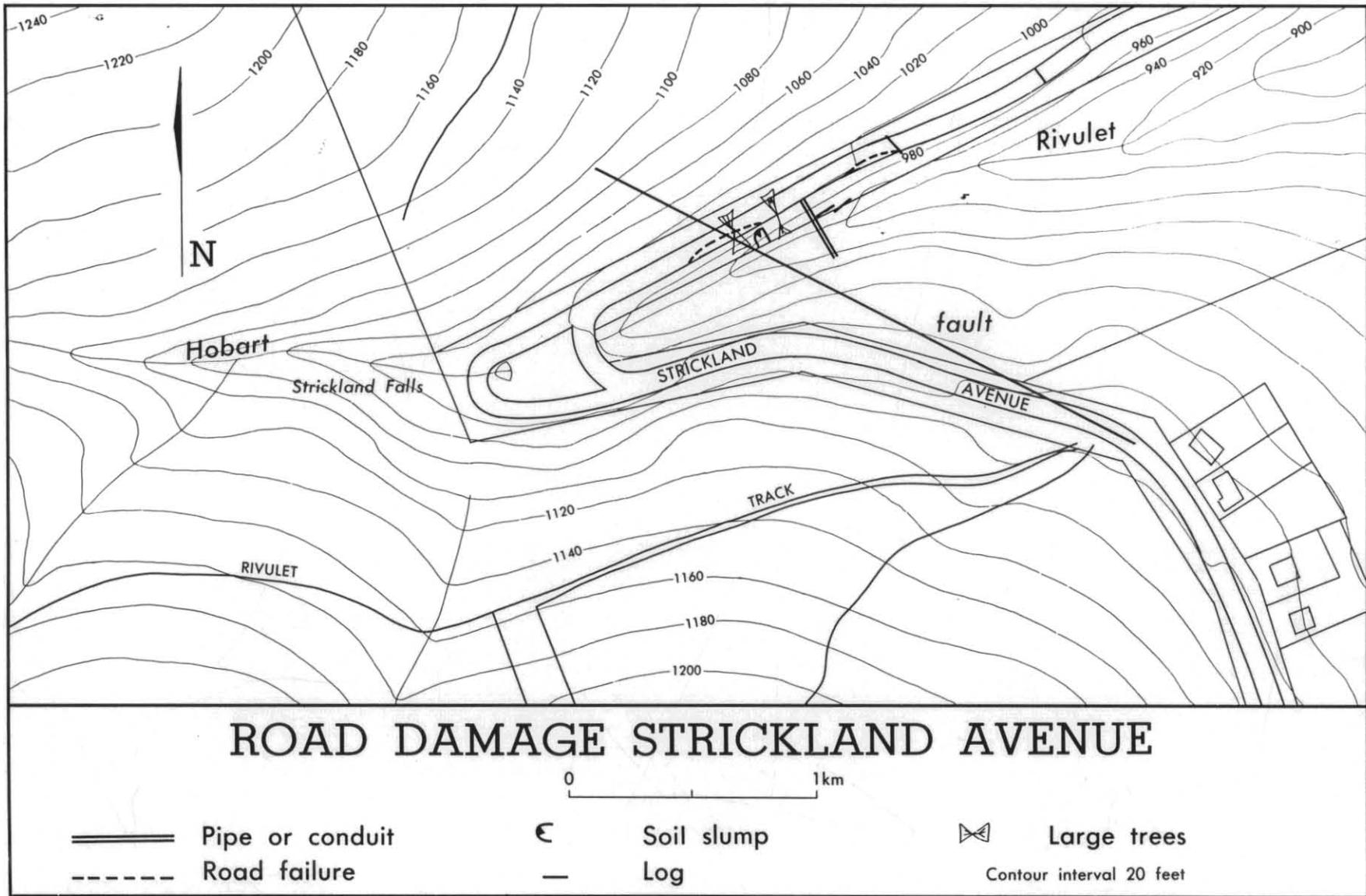
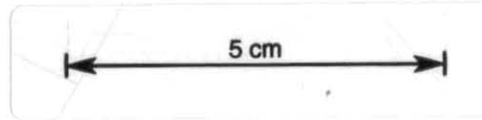


Figure 1.



of a slump failure. Roots of these trees are stabilising the slope, but their great weight when blown by wind must be transmitted to the roots stressing the ground. Should one of these trees be blown down and its roots torn up, it would cause severe disturbance. These trees should be lopped to a low level, leaving the roots intact.

The slump failure between the trees probably marks the transit of the geological fault. There is rapid toe erosion by the stream at the foot of the slump and some protective measures are required.

Above the slump and to the west, the road is failing. Downslope of the western end of the failure the slope is very steep with only thin vegetation cover.

REMEDIAL MEASURES

It is inevitable that some downslope creep should occur, but this movement can be lessened by the following measures.

A priority must be to lop the two large trees. This will not be easy, but it should be carefully supervised to ensure that the roots are not damaged and that the surrounding soil and vegetation is disturbed only minimally.

Where vegetation is sparse the slope should be protected against erosion and vegetation encouraged. This may be achieved by laying tree trunks down exposed sections of the slope and planting with local bush saplings.

A drain constructed along the bottom side of the road or the top of the slope, will lessen slope wash and soil saturation. As the drain would need regular inspection and repair, it would have to be a lined, open drain.

Sections of the slope, particularly below the active slump, need to be protected against stream erosion, particularly during flood. This may be done by binding bundles of sticks back onto the base of the slope, or by constructing a toe protecting wall or boulder pile, or by constructing groins to divert the channel flow.

There should also be a lined protective channel from the road culvert to the stream.

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