



Division of Mines and Mineral Resources — Report 1990/37

Landslides at Blackwall and Rosevears Drive

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Blackwall

A small landslide has occurred on the edge of the road opposite 97 Blackwall Road. Here the road is located on the edge of the bank of the River Tamar, some 4–5 metres above water level. Apparently materials have been dumped over and onto the road batter which is steep (in excess of 30° degrees). Traffic was forced close to the road edge during excavations associated with drainage works. The extra load and possible vibrations from traffic may have caused the landslide.

There is a narrow strip of marshy vegetation at the base of the road batter before the river proper. This area is likely to contain silty materials which would have very low bearing capacity.

Possible remedial measures include constructing a berm at the foot of the road batter to provide further support to the road. The foundation materials for this berm are likely to be the silty material mentioned above. In the absence of further investigations, the stability of the berm must be considered questionable. Staged construction, allowing time for the silt to drain and consolidate, would appear to be necessary. Tertiary-age consolidated sediments are likely to occur at depth. If these are present at shallow depth excavation of the silty materials or displacement of them by dumping/placing large boulders at the base of the road batter may be possible.

An alternative solution is to construct a piled retaining wall. The piles could be placed closer to the edge of the road and through the existing road batter. The piles should be driven to a set preferably with their tips several metres below river level.

Rosevears Drive (retaining wall)

A hand-placed stone retaining wall located on the edge of the River Tamar on Rosevears Drive (502455 mE, 5422370 mN) has failed, with the lower portion of the wall having rotated outwards. Displacement has occurred over a length of about twenty metres.

Rosevears Drive

A landslide has disrupted the driveway to a property at 89 Rosevears Drive (501960 mE, 5423090 mN). The toe of the landslide appears to be at road level with the head scarp running across the width of the driveway to the property. The landslide has occurred in Tertiary-age sediments.

Rosevears Drive is located several metres above the level of the River Tamar at this location. The downslope road batter has been retained by a low stone and concrete wall located on concrete foundations at river level. The wall is well drained. A section of the batter has been grouted to road level which is approximately 3–4 metres above river level. The upslope road batter is retained by another low stone and concrete wall located on concrete foundations. This wall is also well drained.

Landslide movement is indicated by several factors. A panel has been removed from a boundary fence to provide the driveway access to the house. The amount of downward movement in the head scarp area can be gauged by the changes in level on the top of the fence from one side of the driveway to the other. The amount of downslope movement is indicated by the displacement of the low stone and concrete wall on the upslope road batter. Away from the landslide area, this wall is approximately one metre from the edge of the road seal. In the area where movement has occurred the wall is only about 100 mm from the edge of the road seal. The amount of upward displacement in the toe area is indicated by the thickness of the concrete foundations of the wall which are exposed.

The resident indicated that the landslide movement disrupted vehicular access to his house. A load of gravel was placed in the head scarp area of the landslide to restore access. This further loaded the landslide mass and movements have continued. Loading the head area of a landslide is not recommended.

The landslide does not appear to involve the roadway. The head is located on the upslope side of the driveway and the toe at the retaining wall on the upslope side of Rosevears Drive. Several remedial measures would appear appropriate. The landslide mass could be removed and replaced with free draining rubble. Large size boulders could be placed at road level and the road batter and slope restored with boulders and gravel. A careful analysis of the effect of undertaking this buttress-style remedial measure is needed. There is a risk that the imposed load could initiate instability in the area between the current landslide and the foreshore. The present stability of this area must be

regarded as doubtful given the drainage measures visible in the retaining wall downslope of the roadway.

An alternative remedial measure would be to construct a piled retaining structure near road level through the Tertiary-age consolidated sediments which comprise the landslide mass. These materials are also expected to underlie the landslide area. The piles could be located on the upslope side of the roadway and should be driven to a set, preferably with the tips near or below river level. The landslide mass may still need to be removed and replaced with free draining materials behind the piled structure.

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