

**TASMANIA DEPARTMENT OF MINES
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Inspection of a damaged house at Windermere

by W. R. Moore

At the request of the owners an inspection of a house and block on Windermere Road, about two kilometres from the East Tamar Highway junction, was carried out on 25 June, to try and establish the reason for the reported damage to the house.

The house is situated on a large block with a uniform slope of 6 to 7 degrees from Windermere Road to the River Tamar alluvial flats. Along the block's northern boundary is the steep southern bank of a small stream. This bank is approximately three metres high near the road and has a steep slope of 19 to 20 degrees to the river flat level. Even though this area was covered with heavy shrub and blackberries, no springs, seepages, moist areas, or earth bulging or small parasitic landslide failures were seen along this bank. Towards the river boundary of the block this bank declines rapidly in height and steepness and at the southeast end merges with the general slope of this block of 6 degrees.

In this area bordering the River Tamar there were no signs of soil heave, pressure ridges or springs, all of which would be anticipated if the movement present in the house was caused by toe upheaval from a landslide. No evidence was seen for any landslide movements on the slopes above the road at this locality.

The house is a single-storied low cottage with fibro-cement walls. The concrete of the outside foundation wall was cracked at only one place. The light wooden framed piles supporting the house all showed a small amount of downslope movement. The western wall, on the downslope side of the house, was slightly warped but not tilted from the vertical. No cracking of the fibro-cement was seen or reported by the owner.

The steps at the rear of the house had pulled away slightly from the house. Similar movement of the chimney was reported and this had become so cracked that it was pulled down.

All this cracking is considered to be minor, considering the age of the house, and the depth and type of foundations. The long wall on the upslope side of the house showed no sign of movement. This wall, and the side walls of the house, were vertical and not warped. The concrete paths were in excellent order with one minor crack and these have been laid for many years. The front concrete patio was also uncracked. No moisture was present beneath the house.

From the discussion with the owners it appears that the movements of doors and windows is seasonal and has been occurring over many years. The soil is a black organic clay (CH) which from field testing is highly plastic and no doubt expansive.

From this inspection no evidence for landslide movement could be found on the block or nearby areas. It is the author's opinion that the movements on the house are the result of expansive soil and clay subsoil causing seasonal movements in the house foundations, combined with a small amount of soil creep downslope. Although Windermere has a history of landslides, causing the destruction of one house to date, the area also has very expansive clay soils and subsoils which have badly cracked at least one house nearby. Both the destroyed house and the cracked house were on similar slopes on the lower side of Windermere Road.

To test the clay would require the drilling of two to three auger holes with soil testing of the clay samples collected. This investigation could cost \$150– \$200. Such an investigation does not appear warranted unless remedial measures to stop the movement are going to be undertaken. This would involve underpinning to a depth established by the investigation drilling. From other areas in Windermere this depth could be in excess of two metres. This work would need to be designed and supervised by a structural foundation engineer and use a competent builder.

For such a light and old house such remedial measures would over capitalise the house and in the author's opinion are not warranted. The value of this property is the block and its location, not the house. A future potential buyer would probably remove the cottage and replace it with a modern large home similar to those further along Windermere Road. As the owners are prepared to live with the problem, and have done so for many years, underpinning and investigation drilling are not recommended.

The movement of the house should be monitored and a survey set up along the road by the Department of Mines, as has been done at Beach Road, Legana where similar problems exist. Long-term monitoring is required to decide if the house and road are moving downslope because of a landslide or expansive soil movement combined with soil creep.

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