

**TASMANIA DEPARTMENT OF MINES  
UNPUBLISHED REPORT 1985/80**

## **Inspection of Lot 5, Ambrose's Subdivision, Windermere**

*by W. R. Moore*

An inspection of Lot 5 of Ambrose's subdivision at Windermere was made on 28 June 1985. The landowner has located his house on the toe of an old landslide and then dug foundations for the house without approval from the Council. The site is clearly in a Zone IV landslide zone (old landslide), although the owner believed he had located the house outside the landslide area, as the bench on which it was sited had a low slope. The owner also thought he was in Class III (potential landslide area) if he built a certain number of metres from Windermere Road, information he claimed to have been told by Lilydale Council officials when he purchased the block.

The owner contacted the Department and it was realised from this discussion that the house had been inadvertently sited on the Class IV area on the lowest and possibly youngest toe bench of the old landslide. Departmental geologist W. L. Matthews visited the site and confirmed that the house site was in the Zone IV area and collected a clay sample for soil testing. The following week A. Telfer, a research student working for the Department of Mines on landslides, mapped the morphology of the landslide on Lot 5 and collected two samples from an alternative house site in the Class III area. This site was located an adequate distance from the road for sullage disposal. These sites and the morphology are shown on Figure 1 and the soil test results are given in Appendix 1. Unfortunately time did not permit shear box testing to be undertaken but enough clay samples have been collected on Ambrose's subdivision to know that the angle of friction and effective cohesion of the clay are low.

The department wrote to the landowner expressing concern about the slope stability of his chosen site, although the owner had difficulty in appreciating, as his site was almost flat, why it was considered more unstable than the steeper Class III area on his block. The new morphology map of the block reduced the area of Lot 5 zoned Class III on the original subdivision plan by approximately one half. Two frontal lobes of the toe of the landslide are located on lot 5 and are well preserved, and any house site in the Class III area would be located extremely close to these lobes. If the old landslide was to become reactivated movement would most likely occur in this toe area, which would destroy a house if it was sited where the owner wished to build or in the alternative Class III area.

It appears that the difference of landslide risk between the Class III and Class IV sites was minimal, with the landslide risk being uncomfortably high at both. There appears to be no justification in forcing the owner to build in an alternative area on the basis of slope stability, especially in view of the costs already incurred in digging the foundations. Therefore the compromise suggested was that the owner be allowed to retain his house site in the Zone IV area but that all the stormwater and septic tank overflow would be piped off the site and the septic tank overflow be transferred to the Class III area.

It was stressed to the owner that this lot was in a high landslide risk area and drainage was the key to the future stability of the site. As the house is to be built on an old landslide area (Zone IV), the provisions of the 1978 Building Regulations, Division 5, are recommended.

All stormwater and all drains should be located so that they can be easily inspected for future leakage. On this site the next toe upslope from the house should not be touched or excavated. As many trees as practical should be planted on the site, the driveway to the house site be adequately drained and any cut into any of the slopes be kept to minimum height. If a swimming pool is to be located on this site it should be an above ground type so that any leakage can be observed.

Any wet areas or small seepages on the higher benches, as well as the lowest house site bench, should be drained. If drainage of the toe of the old landslide can be achieved and maintained, the risk from landslide can be reduced to acceptable levels. It is the maintenance of this drainage system over a long period of time that is the cause for concern to the engineering geologist. If a change of ownership of the house occurs the new owners should be made aware of the importance of maintaining the drainage system.

It is also recommended that a foundation engineer be used to design the foundation slab. This is not because of the high landslide risk of the site but because of the expansive properties of the clay, which has a linear shrinkage value of 25%.

*[29 July 1985]*

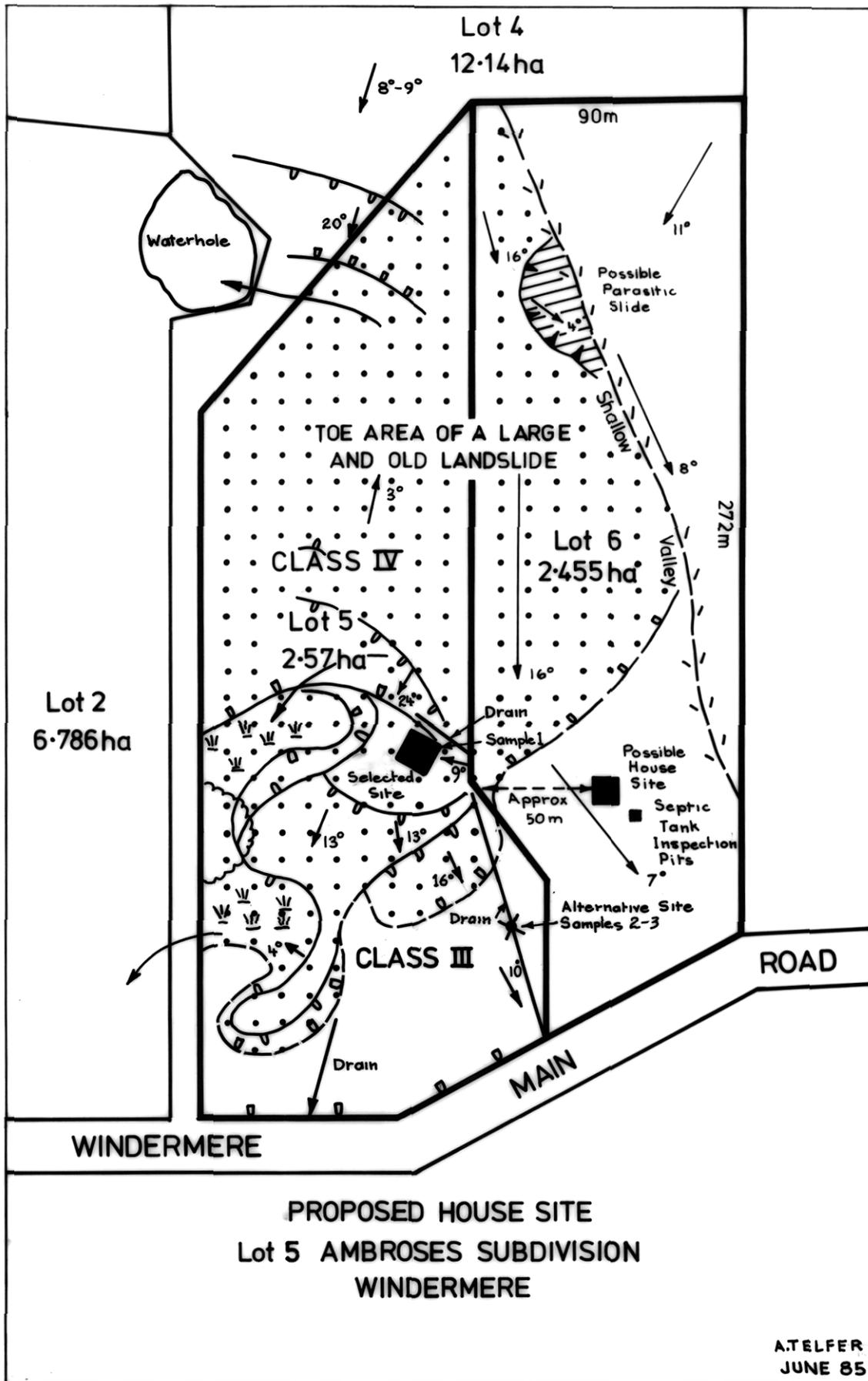


Figure 1

## APPENDIX 1

### Soil testing results, Lot 5, Ambrose subdivision, Windermere

**Sample 1:** Collected by W. L. Matthews, 14 June 1985

**Location:** Bottom of foundation trench for house, Zone IV landslide area

<i>Moisture content</i>	<i>Liquid limit</i>	<i>Plastic limit</i>	<i>Plasticity index</i>	<i>Linear shrinkage</i>
58%	136	31	105	24%

#### ***XRD of fines (<2 micrometres)***

Montmorillonite	70–75%
Kaolinite	20–25%
Goethite	0.5%

**Samples 2 & 3:** Collected by A. Telfer, near drain, Zone III landslide area

<i>Sample No.</i>	<i>Depth (m)</i>	<i>Moisture content</i>	<i>Liquid limit</i>	<i>Plastic limit</i>	<i>Plasticity index</i>	<i>Linear shrinkage</i>
2	1.0	39%	123	28	95	24%
3	2.5	38%	105	27	78	22%

#### ***XRD of clay fraction (<2 micrometres)***

<i>Sample 2:</i>	Montmorillonite	65–70%,	kaolinite	30–35%
<i>Sample 3:</i>	Montmorillonite	70–75%,	kaolinite	25–30%