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## 27. LANDSLIP POTENTIAL OF C. S. GIBSON SUBDIVISION, DON SETTLEMENT, DEVONPORT

by W. R. Moore

On 9 October 1967, the proposed subdivision of C. S. Gibson's property, at the old settlement of Don, was examined for the likelihood of future landslips. Residential development is intended.

The subdivision and the surrounding area of approximately  $1\frac{1}{2}$  square miles was examined. The area extends from the present road between Devonport and Ulverstone, to the junction of Lodders Road and Don Heads Road and then from the Don River for approximately one mile.

The subdivision and its adjoining area comprise three topographic units:—

- (a) A terrace formed by basalt.
- (b) The slope down to the river flats.
- (c) The river flats themselves.

Basalt and the red clayey soil derived from it compose the 200-210-foot high terrace. An outcrop of deeply weathered basalt containing limonite is exposed on Cutts Road 40 yards from its junction with Lodders Road.

The slope to the N and NE is 90 feet high and is inclined at  $13^\circ$  near the lip of the terrace flattening to  $10^\circ$  at the base of the slope. Red soil, removed from the terrace by rain wash and soil creep, covers most of the slope which is thought to be the contact area of the Tertiary basalts and the underlying Permian siltstone. This contact outcrops SE of the subdivision of Don Heads Road where it follows the 'S' bend of the Don River.

The river flats have a gradual slope of  $4^\circ$ - $5^\circ$  on the subdivision but this flattens towards the Don River. The flats are composed of alluvium which forms a grey sandy soil.

In the past, no landslips appear to have occurred in the subdivision and adjoining areas to the N, along the terrace edge parallel to Lodders Road. The slope from the terrace is uniform having neither a sharp break in topography close to its edge nor the characteristic scar normally formed by the heel of a landslide. The river flats and lower sections of the slope are not hummocky as would be expected with the toes of landslips. No tension cracks were present along the terrace edge and in spite of recent heavy

rain no springs or seepages were observed on the slope or at its base. The only evidence of an old landslide on the subdivision is two arcuate lines, on the aerial photographs, which could have been formed by two heel scars from a very old landslide of which no other trace is now evident.

South of the subdivision well bedded Permian siltstone dips  $2^{\circ}$ - $3^{\circ}$  to the NE. With such low dips in the underlying rocks the contact between the basalt and the Permian rocks would be unlikely to form a gliding surface for future landslips in the subdivision area.

In the area adjoining the subdivision to the S, a steep SE and E slope overlooks the Don River. Along this slope, and particularly along its continuation to the S of the old Bass Highway, old landslips have occurred in the basalt, above the basalt contact (Burns, 1958). Near the present road, in the vicinity of the Don Bridge, recent landslips have occurred in the red soils derived from the basalt (Matthews, 1963).

In a stream valley N of the subdivision, where the Don Heads Road climbs to join Ladders Road, several small active landslips are present on the valley sides. Old landslips are apparent N of this valley along the W bank of the Don River.

When mapping the Devonport area, Burns (1963), considered most of the slopes flanking the W bank of the Don River, from half a mile S of the Don Heads railway bridge to Coal Miners Row two miles upstream, to be areas of mass earth movement. Burns includes the subdivision, and its surrounding area, in this zone.

The area of the subdivision appears to be stable but the areas to the S and N of it are not. Therefore the subdivision itself must be considered a potential landslide area. This should not preclude subdivision for a light type of building such as housing, if precautions are taken to keep water soakage to a minimum. All storm water and sullage should be piped or guttered to the level of the river flat. No septic tanks or soakage pits should be permitted on the terrace or slope, and a communal sewerage tank or package sewerage plant should be used for the subdivision and should be situated on the river flats.

### References

- BURNS, K. L., 1958.—Unstable Slopes and the Forth Pipe Line. *Tech. Rep. Dep. Min. Tasm.*, 3, pp. 122-135.
- , 1963-64.—Geological Survey Explanatory Report One Mile Geological Map Series K/55-6/29 Devonport. *Tasm. Dep. Min.*
- MATTHEWS, W. L., 1963.—Plan to accompany memorandum for Director of Mines to Public Works Department.