

Monitoring of Grooms Slip near Penguin: 1979–1993

by G. Benn

LOCATION

The landslide area is located between West Ulverstone and Penguin at approximately 425,100 mE; 5,447,220 mN. The movement affected a section of Lonah Road and the railway line adjacent to the road. Two survey lines were put in place in October 1979 to monitor this movement.

SURVEY LINES

Line 'A'

Line 'A' (0–145 m) was pegged every 5 m along the base of the railway embankment using treated pine posts approximately 60 cm long, with nails placed in the top, and driven to a depth of about 50 cm. The length of line 'A' was 145 metres. The locations of the survey lines are shown in Figure 1.

Movement was evident from the start of monitoring, and movement of the order of 800 mm was recorded by June 1983, the slip extending mainly from the 40–100 metre posts.

The line was re-pegged with steel pipe pegs one metre long, driven to a depth of about 60 cm, in November 1989.

Because the line had moved two metres by November 1989, the new pegs were now up the embankment by 2 m on the re-alignment, and this may be why there was little or no movement for 18 months (1991). The new re-aligned peg at 60 m was down the embankment a further 260 mm by May 1993, making a total cumulative displacement from 1979 of 2490 mm.

Date	Cumulative displacement from 1979	
By June 1986	1180 mm	
By June 1988	1270 mm	
By Nov 1989	2030 mm	Re-pegged
Nov 89 to June 1991	2030 mm	No movement
By May 1993	2490 mm	

The main movement changes on line 'A' were between 45 and 85 metres.

Line 'B'

Line 'B' (0–130 m) was also pegged in 1979. The line was approximately 10 m to the north of the railway line close to the foreshore embankment. This line was stepped back at the 90 m distance due to the shape of the foreshore. Pine posts were used as in line 'A'. Results of movements on Line 'B' (Peg 65 m) are:-

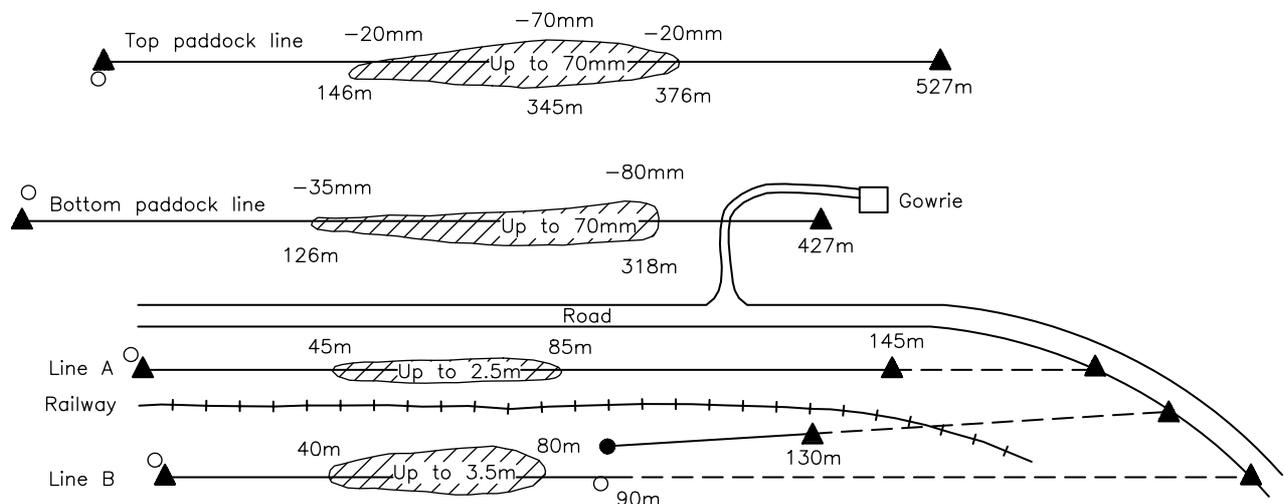


Figure 1.

<i>Date</i>	<i>Cumulative displacement from 1979</i>	
By Oct 1983	1830 mm	
By June 1986	2560 mm	
By July 1988	2719 mm	Slow movement
By Nov 1989	3000 mm	Re-aligned
By June 1991	3013 mm	Little movement
By May 1993	3500 mm	

The main movement changes on Line 'B' were between the 40 and 80 metre pegs.

A further two lines were placed in the paddock above the road adjacent to the slip in 1985. These lines were called:-

- Top Paddock line (0-527 m); and
- Bottom Paddock line (0-427 m)

From 1985 to 1993 downhill movements of the order of 70 mm were measured on both lines.

GENERAL NOTES

Problems were encountered with sheep rubbing against the stations of the top paddock line, in some cases giving an apparent uphill movement.

With the bottom paddock line problems occurred with cattle disturbing pegs, and some pegs being damaged by ploughing.

On the railway line (Line 'A') some pegs were affected, mainly in the early years, by the trains exerting pressure as they rounded a curve, near distances from 95 to 140 metres.

With the landslide monitoring studies the end pegs are always assumed to be in stable ground, and the results are therefore relative to this assumption.

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