UR1973_88

Further report on land stability at the J.T. Fieldwick Estate, Kayena, West Tamar.

C.J. Knights

The proposed subdivision [DQ917389] consists mostly of Tertiary sediments. In the higher parts these sedimentary rocks are overlain by basanitic dolerite.

Following the recommendations made in a previous report (Knights, 1973) 6 test pits were dug by back hoe, and left to stand for one to three hours.

LOGS OF TEST PITS

		Vane shear strength		
HOLE 1.	Depth 2-75 m. No seepage, sides of hole stood up well.	*Peak (kPa)*	*Residual (kPa)*	*Depth (m)*
Depth (m)				
0-0.3	Basalt topsoil.			
0.3-1.7	Stiff grey fissured clay. Clay along fissures is oxidised to a pink colour towards the surface.	144 90	28 25	1 1.6
1.7-2.05	Friable, pale coloured, damp sand.			
2.05-2.75	Stiff grey fissured clay.	90	28	2.1
2.75	Ironstone band.			
HOLE 2.	Depth 2.7 m. No seepage, sides of hole stood up well.			
Depth (m)				
0-0.2	Topsoil.			
0.2-1.6	Stiff grey clay with shiny fissures, often oxidised.	100	25	1
1.6-2.4	Stiff grey fissured clay	144	28	2
HOLE 3.	Depth 2.8 m. No seepage, sides of hole stood up well.			
Depth (m)				
0-0.3	Soft basalt soil.			
0.3-1.7	Disturbed pink and grey clays with basalt fragments.	90	28	1.4
1.7-2.6	Stiff grey and orange mottled clay.	144	25	2.5
2.6-2.8	Gradational boundary to grey fissured clay.			
HOLE 4.	Depth 2.4 m. Seepages below 1.5 m. The sides of the lower part of hole collapsed within a few minutes of excavation.			
Depth (m)				
0-0.5	Soft basalt clay grading into fissured			
0.5-2.4	orange-brown clay	43 43	14 14	1.5 1.75
HOLE 5.	Depth 2.6 m. No seepage, sides of hole stood up well.			

Depth (m)		*Vane shear strength Peak (kPa)*	*Residual (kPa)*	*Depth (m)*
0-0.3	Topsoil.			
0.3-2.0	Slightly fissured brown clay with ironstone pieces, clay becomes stiffer with depth.	90	42	1.5
2.0-2.6	Bright red, very stiff clays and ironstone pieces.	Vane would not penetrate.		

HOLE 6. Depth 2 m. Seepages at 1-1.5 m. Sides of hole stood.

Depth (m)	
0-0.3	Topsoil and basalt fragments.
0.3-3.0	Mottled red clay, including deeply weathered basalt talus.

STABILITY

Stiff fissured clay is noted for its high sensitivity, *i.e.* it has a high undisturbed strength, but low residual strength. In Lot 2 grey fissured clay appears to be undisturbed and overlies less sensitive brown clay.

On Lots 5 and 6 the surface relief and test pit information indicate that there is an old landslip, with a deep slip plane. Such a slip could be reactivated by household drainage or by disturbance from construction works. There is also the danger that surface material in this area is weaker, so that even if the main slip remains stable, small parasitic slips are likely to develop on the previously disturbed material.

RECOMMENDATIONS

Lot 1. A house may be situated as planned, effluent should be directed away from Lot 2.

Lot 2. A house may be situated as planned. It should be safe to allow another house in the lower part of this block as shown in Figure 1.

Lot 4. A house may be situated as planned. Effluent should be directed north or east.

Lots 5 and 6. These lots are unsuitable for building. A number of deep rooting trees should be left, or should be planted in this area. Deep rooting trees are known to help dry the clay and also to bind loose material.

Drainage is most important for the proposed subdivision of this block. Effluent should be distributed and not directed into one spot. However, it should be directed away from other houses. Clean water such as roof drainage should be piped directly into the river. Swimming pools must not be allowed.

The planting of trees should be encouraged.

The walls of cuttings over 1 m in depth should be supported.

REFERENCE

KNIGHTS, C.J. 1973. Land stability at the J.T. Fieldwick Estate, Kayena, West Tamar. *Unpubl.Rep.Dep.Mines Tasm.* 1973/85.

[26 November 1973]

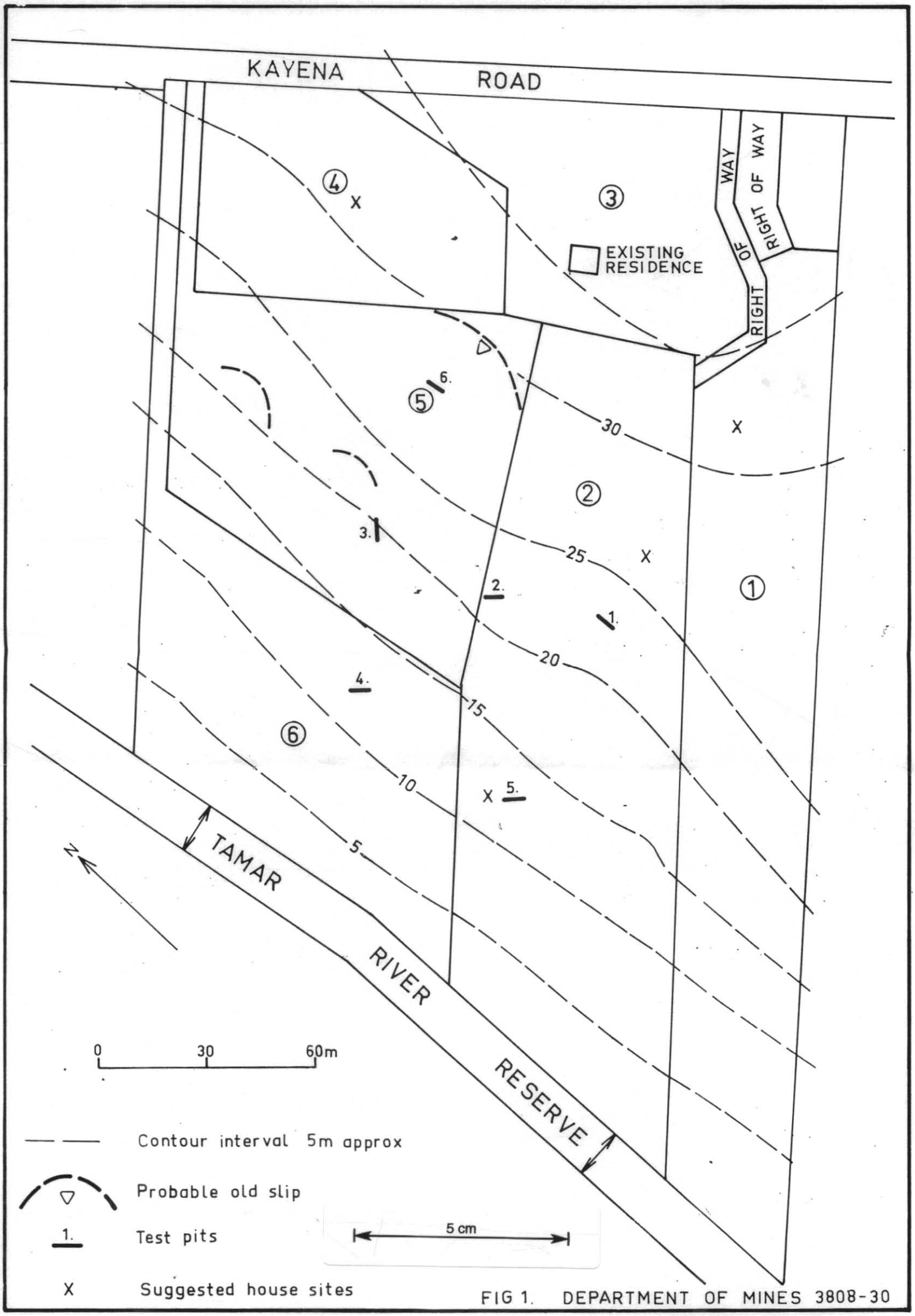

FIG 1. DEPARTMENT OF MINES 3808-30