Land stability, Ambleside subdivision, East Devonport

W.L. Matthews

PART 1. EXAMINATION OF THE AMBLESIDE SUBDIVISION.

Pitt and Sherry, Consulting Engineers of Devonport requested a discussion be held with the developers of Ambleside subdivision concerning some blocks or parts of blocks which it had been suggested in previous reports, should not be developed. Plans with block outlines are shown in Figure 1.

LAND STABILITY

Part or all of Blocks 141, 142, 139, 23 and 24 are underlain by clay and sandy clay which overlies weathered dolerite. The land surface is steep to fairly steep in the vicinity of these blocks and possible slip areas occur to the south on steeply sloping ground. For this reason, it was suggested that the steeply sloping areas should not be included in the development because unstable conditions could develop. Two test pits were excavated recently on the north-east side of Block 23 which indicated a considerable depth of clay and deeply weathered dolerite on or near steep slopes. Therefore, there seems no reason to change the boundary of the land regarded as potentially unstable from that shown on a previous plan with regard to Block 23. The boundary of the land that it is recommended should not be developed for housing is shown on the plan (fig. 1).

An error was made in the location of a previous test pit (test pit 10) in relation to some survey pegs, it being some 60-80 feet west of the point shown on a previous plan. Because of the material in this pit, it was suggested that Block 13 should not be developed for housing. However, on correcting the location of this test pit, it is apparent that part of Block 13 would not be covered by this area regarded as potentially unstable and two test pits have been dug to determine whether part of the block could be safely developed. Test pit 1 encountered clay and sandy clay over weathered dolerite and test pit 2 encountered weathered dolerite that could not be excavated with a back-hoe at shallow depth. On the basis of these two test pits, the area of Block 13 regarded as having some risk of instability, is shown on the plan (fig. 1).

TEST PIT SECTIONS

Block 23

Test Pit 1

Depth (ft)	*Description*
0 - 2.5	Sandy soil with limonite nodules
2.5 - 5.0	Clay with iron oxide staining

Test Pit 2

0 - 2.5	Sandy soil with limonite nodules
2.6 - 5.5	Brown clay
5.6 - 9.0	Very weathered dolerite

Block 13

Test Pit 1

Depth (ft)	*Description*
0 - 2.6	Sandy soil
2.5 - 5.6	Plastic clay
5.6 - 7.0	Sandy clay
7.0 - 8.0	Weathered dolerite, some unweathered centres.

Test Pit 2

0 - 1.5	Soil and unweathered dolerite boulders
1.5 - 3.0	Brown clay
3.0 - 4.0	Weathered dolerite with many unweathered centres

PART 2. FURTHER EXAMINATION OF AMBLESIDE SUBDIVISION

Pitt and Sherry, Consulting Engineers of Devonport requested a further inspection of the subdivision after the main development work had been completed. Roads, drains and a sewerage system have been installed and parts of the area have been cleared of trees. Three houses have been built on the subdivision.

Two seepages were noted in the subdivision, one near the northern boundary and the other in the middle of the subdivision not far from the only dolerite outcrop. It is expected that these seepages will affect more extensive areas of land during winter and should be drained. Draining of other areas that would be subject to water accumulation should also be undertaken.

Care should be taken with the development of steeper blocks, in particular several blocks near the entrance to the subdivision (namely Blocks 15, 15 and 17). Excavations or drainage around the houses built on these blocks should be such that surface water can escape quickly from the area. In other parts of the subdivision, the landsurface is not so steep but the same principles should be applied in all areas.

It was suggested that two areas be excluded from development as they are relatively steep and underlain by clay and sandy clay. These areas are discussed in Part 1 of this report. There still appears to be some risk associated with the development of these areas.

PART 3. EXAMINATION OF LAND AT AMBLESIDE

Mr N. Lester of Lester and Franks, Surveyors of Devonport, requested advice on the stability of land owned by Mr T.J. McCall of Devonport. The land is situated on steeply sloping ground north of the recent subdivision and east of River Road.

GEOLOGY

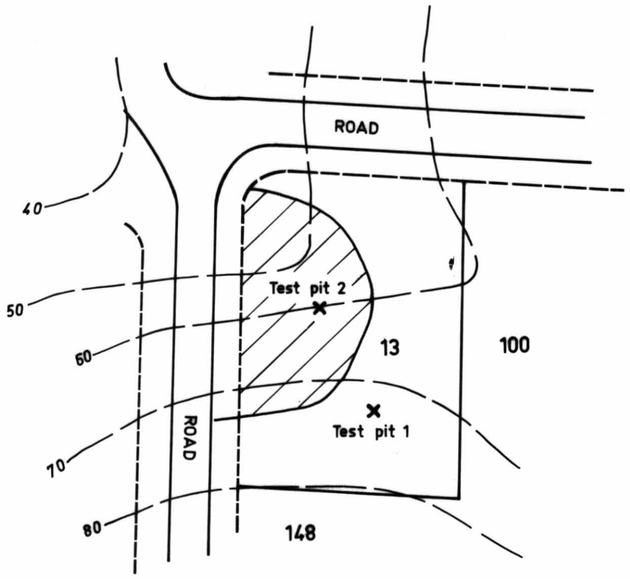
Dolerite boulders can be found at several points on the property and also on slopes above the property. It is apparent that the dolerite is deeply weathered as on the subdivision to the south. Weathered Tertiary basalt occurs towards the top of the slope.

DISCUSSION OF LAND STABILITY

No definite slips, either active or old, occur on the land examined. One or two area where there are changes in slope on Lot 1 could represent very old slips but they could also be due to differential weathering and erosion of the dolerite. Apart from a large seepage on the southern boundary the area appears to be dry.

The property has particularly steep areas at some locations, parts of Lot 2 reaching angles of about 25°. In view of the steep nature of the area and the apparent deep weathering of the dolerite, more information on the subsurface material should be obtained before any assessment of the likely stability of the area could be given. It would be useful to obtain information on how deep the weathering of the dolerite has extended, the degree of weathering and also to determine the presence or absence of subsurface water or moisture in the weathered material. Four test pits in positions marked on the plan (fig. 2) dug with a back-hoe to about 12-14 would allow this information to be obtained.

[14 June 1972]
[27 November 1972]



AMBLESIDE SUBDIVISION

0 60 120 180 Feet

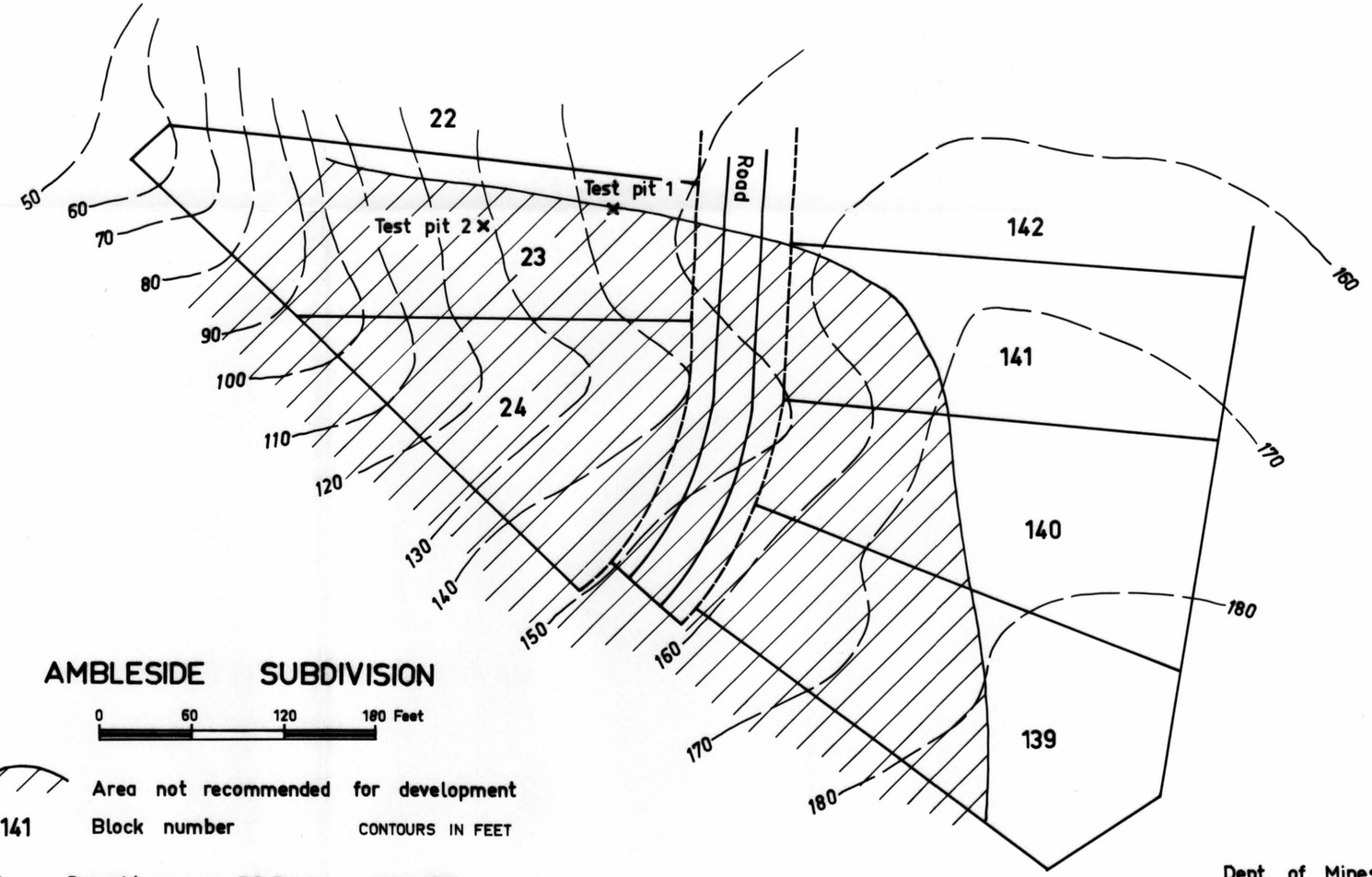
5 cm

Area not recommended for development

13 Block number

Contours in feet

N approx.



AMBLESIDE SUBDIVISION

0 60 120 180 Feet

Area not recommended for development

141 Block number

CONTOURS IN FEET

GEOLOGIST : W.L. MATTHEWS Draughtsman : T.R. Bellis June 1972

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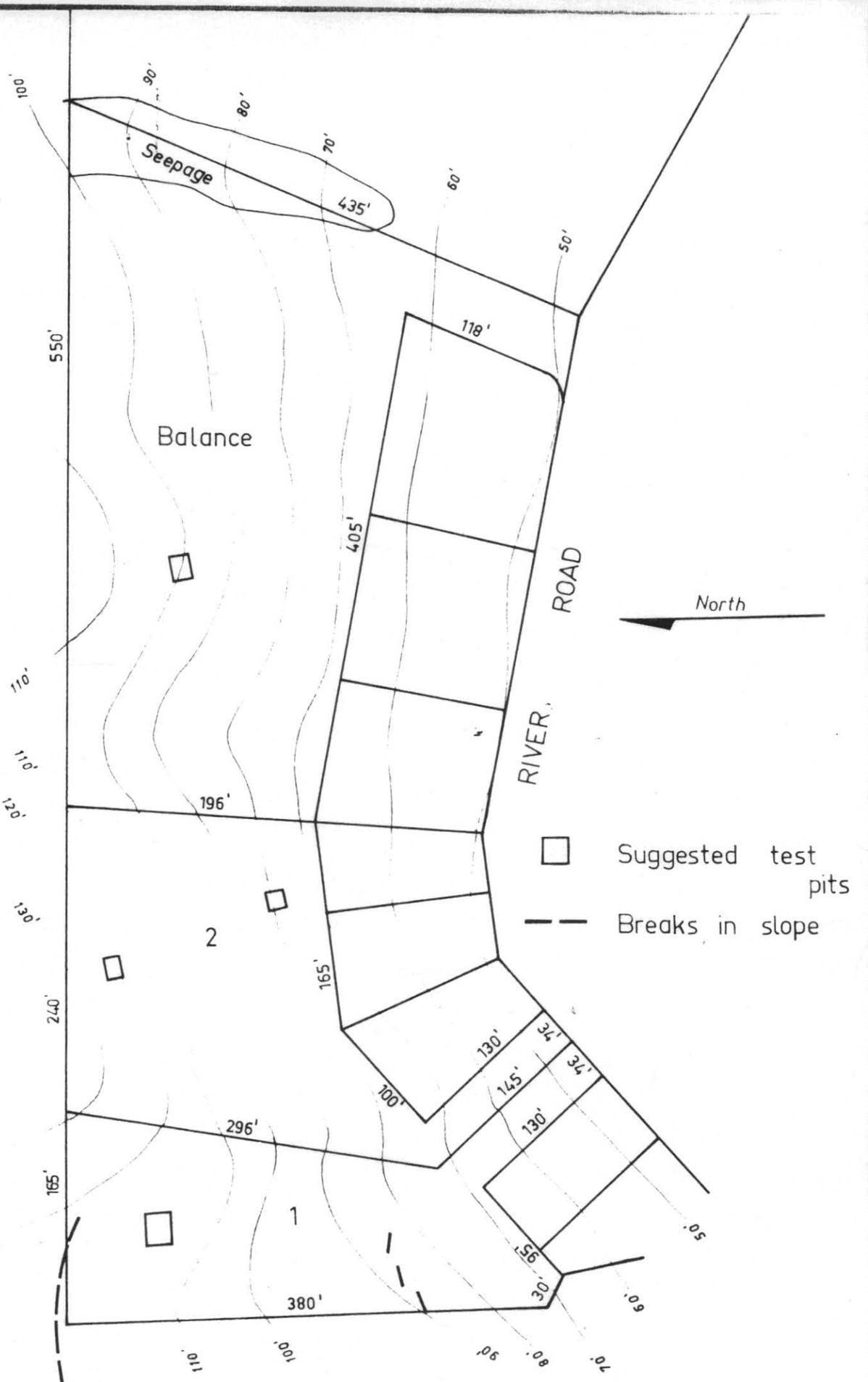

T. J. McCall's Subdivision, River Road Ambleside, East Devonport

0 100 200 Feet

Geologist W.L. Matthews

Drawn : T.R. Bellis, November 1972

Department of Mines

5 cm

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