



Division of Mines and Mineral Resources — Report 1991/33

Investigations at a proposed subdivision at Legana

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An examination has been made of a proposed seven lot subdivision off Nobelius Drive at Legana. Three test pits were dug to examine subsurface conditions.

A surface examination indicates there would be little risk of unstable conditions affecting a house on lot 4 if it is built in the northwest corner of the lot and away from the sloping land (at least 20 m from the beginning of the steep slope).

A flattish area on the northwest corner of lot 5 is the favoured house site. This flat area may have been formed as a result of an old landslide movement or it may be an erosional feature. More definite old landslides are present on other parts of the lot. There is one recently active landslide about 100 m east of the favoured house site.

Test pits at the house site area suggest that the material underlying the general area is stiff and no seepages entered the pit to the depth excavated (see brief descriptions of the test pits). Pit 1 encountered mainly gravelly sand and clay. Material in pit 2 near a large tree was particularly dry and hard, the lower part of this pit being in clayey sediments. Pit 3, on a lower bench, penetrated sandy gravel near the surface before passing into dominantly clayey material which became stiffer with depth.

The area nearby is a proclaimed landslide area and if the A and B zones were extended across the adjoining boundary the house site on lot 5 would probably be in a B landslip zone. With particular care in development, it should be possible to build a house on the lot where test pits 1 and 2 were dug. The special building code

that applies to B landslip land should be followed as closely as possible. Any house should be sited as close as possible to the northwest corner of the lot and away from the slope to the lower bench where pit 3 was excavated. Drainage around the site should be excellent and water should not be allowed to accumulate at any point near the house. In particular a drain should be installed at the base of the slope near pit 3 as this area may allow water to pond. This area should be free draining.

Atterberg limits and linear shrinkage were determined for a clay sample from the pits with the results showing a liquid limit of 106, plastic limit of 27 and linear shrinkage of 21. It is likely that clay with these properties will have relatively low strength when wet and it is essential that the area around any house built should be kept as dry as possible. The clay sediments could be expected to have expansive properties and foundations should be designed to take this into account.

Septic tank effluent, household sullage and storm water should be dispersed at least 25–30 m away from the house site but not downslope of it. Seepages some 50 m downslope of the house site should be free draining and it may be necessary to install french drains into the area to ensure this.

In summary, a safe house site exists on lot 4 and with precautions (for drainage and excavations) it should be reasonably safe to build a house on the extreme northwest corner of lot 5.

[14 January 1991]

APPENDIX 1

Logs of drill holes

Pit 1

- 0 - 0.5 m Dark grey silty sand passing into lighter grey brown silty sand, some pebbly zones, roots, friable.
0.5 - 1.0 m Brown and light brown gravelly sand, fairly loose, only a little clay, damp.
1.0 - 2.5 m Brown and red gravelly clay to base, some grey clay zones (thin), softer zone about 1.7 m.
No seepages entering hole.

Pit 2

- 0 - 0.1 m Brown sandy soil, roots, dry.
0.1 - 0.3 m Quartz gravel with sand matrix up to 35 mm in diameter, dry.
0.3 - 1.1 m Light brown clayey sandy gravel, hard and dry.
1.1 - 1.4 m Brown, reddish (and a little grey) mottled clay, hard.
1.4 - 2.6 m Mainly grey (some red and brown) mottled clay, stiff, fractured. Breaks into angular fragments.
Hard to base of hole.
No seepage entering holes (sited near trees).

Pit 3

- 0 - 0.3 m Dark grey-brown gravelly soil, fairly dry, roots.
0.3 - 1.0 m Brown sandy gravel, some clay, moist.
1.1 - 1.9 m Brown and grey mottled clay, moist, fairly hard (thumb depresses a little).
1.9 - 2.75 m Grey fractured clay, some brown mottling. Moisture on fractured surfaces.
A little harder than above section.

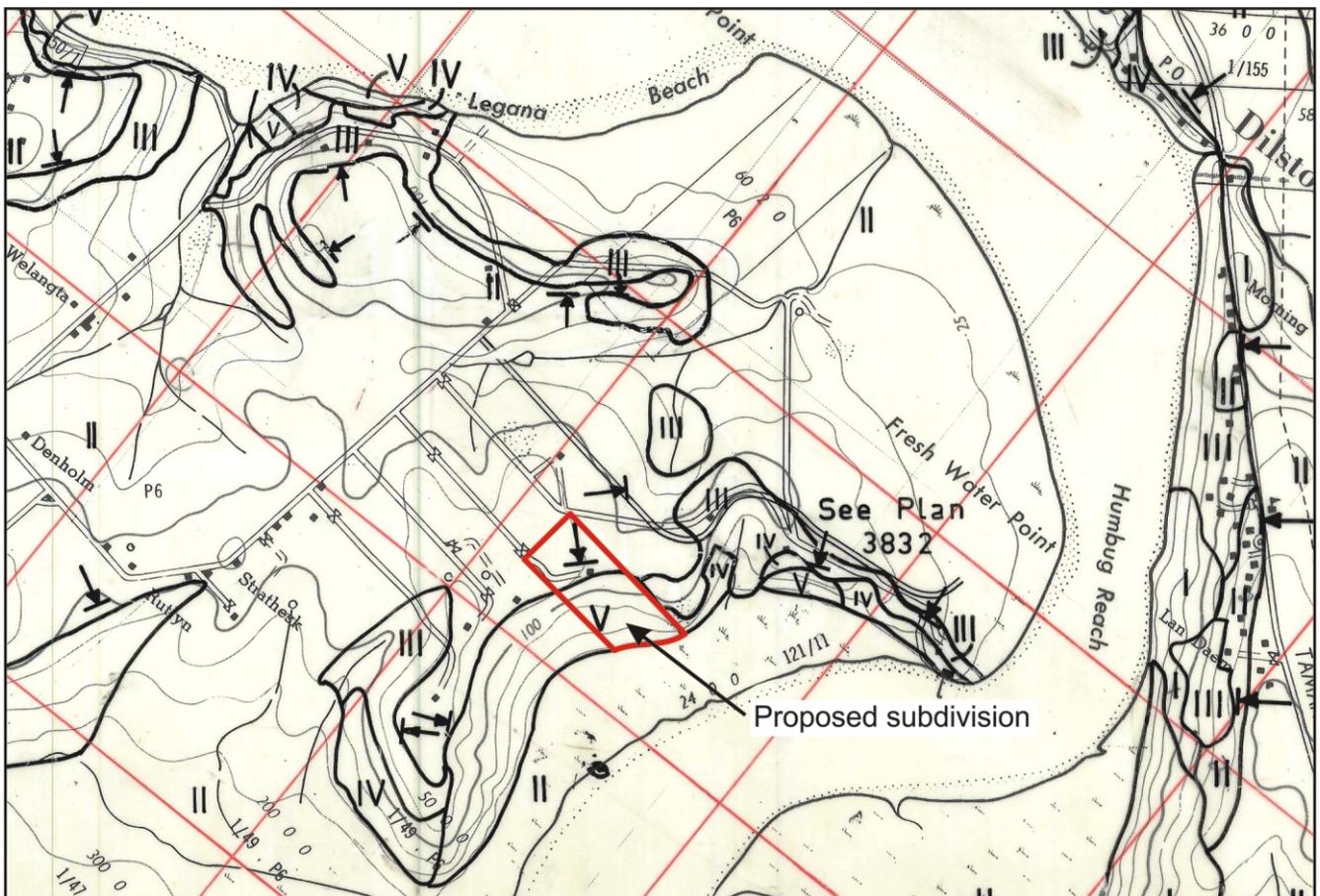


Figure 1
Location of proposed subdivision

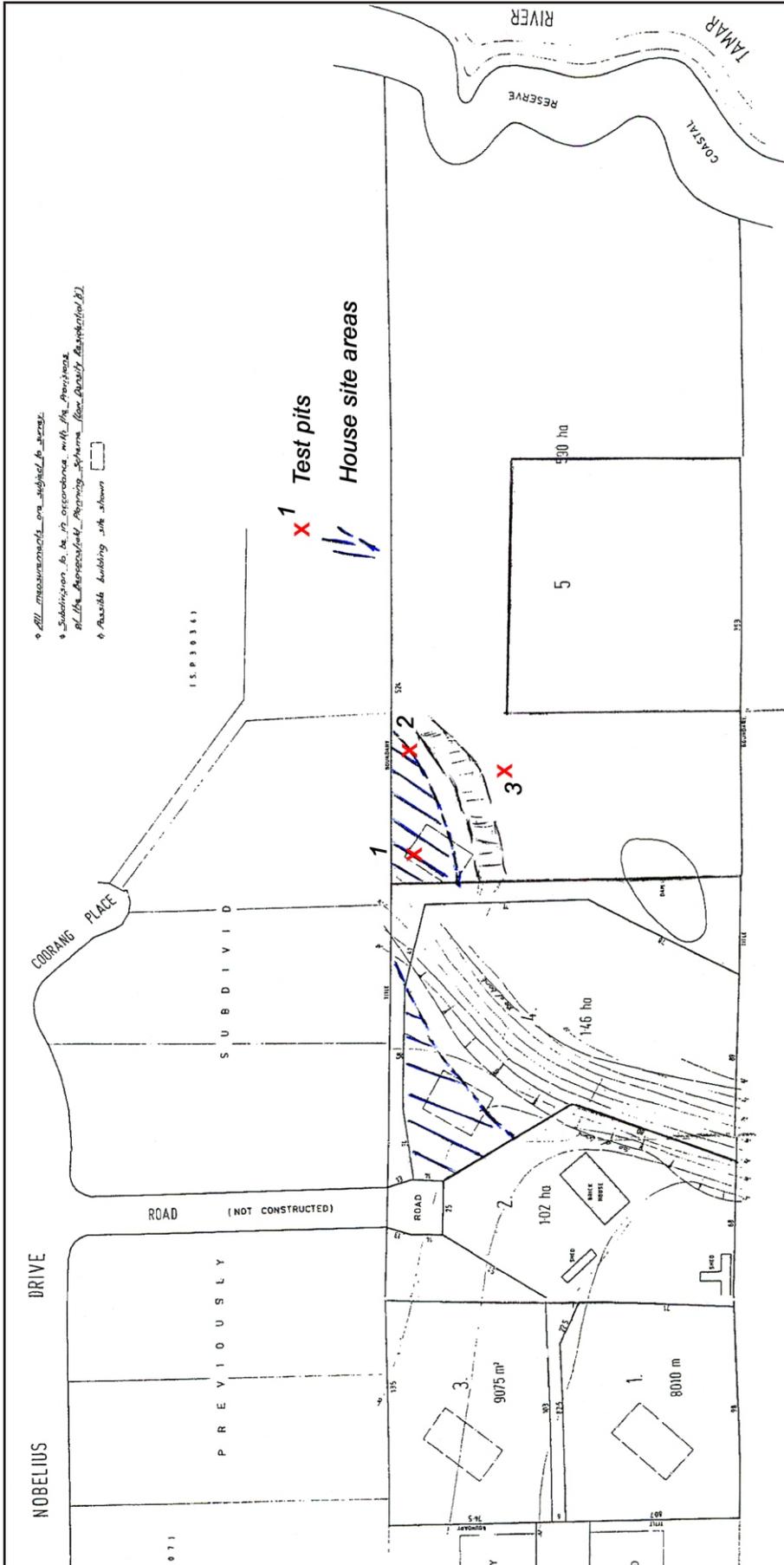


Figure 2
Location of test pits and house site areas.