Rept. Bk. No. 56/106 G.S. No. 2613 D.M. 523/63 HYD. NO. 1451

DEPARTMENT OF MINES SOUTH AUSTRALIA

REPORT ON DRAINAGE PROSPECTS

PART SECTION 1104, HUNDRED ADELAIDE

- TOWN PLANNER re N.P. COLE -

The property was inspected on 31st April by C. Bleys, Senier Geologist, and K.R. Warner, Geologist of the Geological Survey of Queensland.

REQUIREMENTS:

Advice on the prospects of disposing of domestic wastes on a proposed new subdivision.

LOCATION AND TOPOGRAPHY:

Situated about one mile west of Norton Summit the property occupies the crest and upper flanks of a south east trending ridge. The crest of the ridge lies between 1425 and 1500 feet above sea level, and the proposed subdivision extends about 100 vertical feet below the ridge top. The crest of the ridge is somewhat rounded, but slopes steepen abruptly on the flanks to an average gradient of about 1 in 3.

Average annual rainfall is not known accurately, but it is expected to be about 30 inches.

GEOLOGY AND HYDROLOGY:

Sandstone and slates of the Torrensian Series (Adelaide System) occur throughout the property, and dip generally easterly at about 10 degrees.

Quartzite with strong jointing system, which allows water to percolate downwards to the water table, would probably provide good drainage for individual lots by pits dug below the level of the clay horizon in the soil into the underlying quartzite. The situation in slates is somewhat different, as joint spaces are not so open, and particularly in the upper weathered section, are likely to be filled with clayey weathering products. The only adequate drainage in slate areas are bores of about 150 to 200 feet, to be used to drain clean effluent only, which are usually beyond the reasonable means of householders. Any attempt at surface or shallow sub-surface drainage by a householder in slate would affect the block immediately downslope. Although no evidence of slumps or landslips was observed, the waterlegging of the top soil as a result of inadequate drainage could be a direct cause of such movement. In the light of the above discussion the following suggestions are made:-

- (a) Blocks 1-5, 6-17, and 46-53 present no problem as there are no proposed blocks below them.
- (b) Blocks 18-24 are situated on quartzite, and if adequate sized pits are dug, drainage should not be difficult, provided that street run-off from the end of the cul-de-sac be drained, either by pipe or trench, eastwards between blocks 20 and 21.
- (c) Blocks 31-33 are situated such that a road exists downslope of them which would carry excess water away from settled blocks.
- (d) Blocks 25-30 present difficulties in drainage. Outcrop is scarce, but it is thought that at least some of the blocks lie on slate. The blocks are situated such that inadequate drainage on one block must inevitably affect those below, and the possible additive effects of several high blocks could prove very troublesome to the lowest. A reduction in the number of blocks is thought advisable. Block 27 should be eliminated, and the dividing fence between blocks 25 and 26 carried on to block 28. Blocks 28, 29 and 30 should then become one block.

(e) The intereffect of drainage on blocks 34-45 is difficult to establish, as (i) there is insufficient outcrop to accurately determine the geology, (ii) the proposed blocks have not yet been pegged, and known geology cannot easily be related to block boundaries, and (iii) numerous quarries in the area confuse the issue still further. Blocks 36, 37 and 39-44 are situated on quartzite, and adequate drainage by means of pits should be obtained. Blocks 34, 35 and 38 should be re-arranged to provide two blocks fronting the Government Road, along the ridge crest.

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CONCLUSIONS AND RECOMMENDATIONS:

Adequate drainage in areas of quartzite can be obtained by digging a trench through the soil and into the underlying rock. In areas of slate no economic method of complete drainage exists, and downslope blocks should be avoided.

C. BLEYS SENIOR GEOLOGIST

K.R. WARNER <u>GEOLOGIST</u> (GEOLOGICAL SURVEY OF QUEENSLAND)



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To accompany report by C.Bleys & K.Warner			
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S.A. DEPARTMENT OF MINES			
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