Section

Rept. Bk. No. 60/105
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D.M. 435/65
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DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

ENGINEERING AND SOILS GEOLOGY SECTION

REPORT ON SITE INVESTIGATION
PROPOSED HOUSING SUBDIVISION - BELAIR
Part Section 890, Hundred Adelaide

by

R. D. Steel
Assistant Senior Geologist

and

J.A.C. Painter
Geologist

26th May, 1965

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REPORT ON SITE INVESTIGATION
PROPOSED HOUSING SUBDIVISION - BELAIR
Pt. Section 890, Hundred Adelaide

INTRODUCTION

The request to investigate the site of a proposed housing subdivision at Belair, Section 890, Hundred Adelaide, was received in a letter dated 24th March, 1965, from the Town Planner's Office.

The site was inspected on 11th May, 1965, in company with Mr. D.H. Stapledon, Senior Geologist. A preliminary reconnaissance plan has been prepared ([redacted]) which from surface observations only, delineates areas of rock in outcrop or at shallow depth, from areas of deeper soil cover.

RESULTS OF INVESTIGATIONS

The area consists of a series of ridges trending roughly N - S, separated by gullies. Over the top or southern half of the subdivision, the ridges and gully depressions have more gentle gradients, the gullies being entrenched at most 20 feet below the ridge crests.

Most of this portion of the estate is covered by a generally unknown depth of red-brown or grey-brown clayey soil with occasional stoney float.

The lower slopes, generally below RL.930' have much steeper grades and gullies are entrenched up to 50 feet below the ridge crests near the bottom of the estate. The crests have surface gradients between 1 in 6 to occasionally 1 in 2 whilst the gully slopes may be locally as steep as 1 in 1 (45°).

Rock is generally present in outcrop or at shallow depth over most of this southern portion. Where exposed at the surface the rock is a fine grained slate or phyllite of Proterozoic age, striking roughly E-W with a shallow northerly dip. It is characterized by a very prominent cleavage, trending NE-SW with steep ($40-70^{\circ}$) easterly dips.

The main outcrops are confined to bands of harder material several feet thick, separated by softer more highly weathered zones, generally covered by a veneer of soil.

CONCLUSIONS

The upper slopes are mainly soil covered to a generally unknown depth, however exposures on the road cutting at the top of the estate, show that the mantle is between 2 and 5 feet deep, and consists of a surface dark grey silty loam horizon, underlain by red-brown sandy clay over moderately to highly weathered slate bedrock. Rock fragments ranging from a fraction of an inch up to several feet in size are present in irregular abundance throughout the profile.

There is no obvious surface expression of slope instability in this area, however, experience with soils in similar environments has shown that soil creep can occur on grades as steep as some of those on this part of the estate, especially if the natural surface is disrupted by road cuttings or other excavations.

Rock is present either in outcrop or at shallow depth over most of the northern portion of the subdivision, and where exposed is generally slightly to moderately weathered. Shallow skeletal soil profiles overlie the softer and more weathered bedrock horizons, on the ridge crest areas.

Road batters or other excavations cut into these areas should be stable at fairly steep angles, however in certain circumstances e.g. on the eastern ridge slopes, batters may have

to be cut at angles shallower than the rock cleavage.

The gully sides are in places very steep (up to 1:1 (45°)) and show a number of small soilslip scars, indicating that the soil mantle has been subject to some past instability. The possibility of soil movements is greater on the western gully slopes, where the surface is generally subparallel to the rock cleavage.

An unknown depth of red-brown clay with assorted rock fragments (probably less than 6 feet) is present in some parts of the gully floors. The gullies are natural drainage channels and are proposed for drain easements. Some scouring of the alluvial clay deposits in the gully floors may occur during periods of excessive precipitation, hence easements should be founded upon the underlying rock.

It is understood that all allotments will be served by a common sewer drain to dispose of effluent from individual properties.

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