Rpt.Bk.No. 68/21
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DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

MINERAL RESOURCES DIVISION

REPORT ON ROCK PRODUCT AND MINERAL RESOURCES
HAPPY VALLEY WARD
- District Council of Meadows -

by

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SUPERVISING GEOLOGIST
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DM.306/69

18th February, 1969

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HAPPY VALLEY WARD

- District Council of Meadows -

INTRODUCTION

An appraisal of rock product raw material resources in the Happy Valley Ward of the Meadows District Council is made herewith to assist the Extractive Industries Committee in definition of reservations in an area where subdivision for housing development is extending easterly from the Main South Road beyond Happy Valley Reservoir. The area under review lies within Hd. Noarlunga and is depicted on plan 69-102 with extractive industries raw material sources, actual and potential, indicated; quarry and pit limits are as located on 17th February 1968 when these were inspected.

GEOLOGICAL SETTING

Geomorphologically, the Happy Valley Ward is divisible into two sections; a near-flat, gently undulating and partially dissected tectonic trough veneered with Tertiary sediments that comprise the northeastern extremity of the Noarlunga Basin, separated from an uplifted fault block of greater elevation and relief by the Clarendon - Ochre Cove fault.

Broad geological subdivisions only are depicted on the geological plan and are based on more detailed mapping of Sprigg and Wilson (1954). Bedrock throughout the area comprises chiefly argillaceous rocks which comprise Torrensian shales, slates an phyllites with minor quartzites on the Clarendon Block and Sturtian Tillite and Tapley Hill Slate underlying the down thrown Eden Block.

A Tertiary veneer mantles the hill tops in the Flagstaff Hill-O'Halloran Hill locality and thickens to the

south towards the fault scarp. These sediments include fresh-water sands and clays of Pliocene age over remnants of lower Tertiary North Maslin Sands and Blanche Point Marls. They are generally unconsolidated and have been preserved from erosion in parts by a capping of laterite.

METALLIC MINERAL OCCURRENCE

The only disclosure of metallic minerals in the area appears to be that of silver-lead, discovered in 1890 in Sec.269. When the Mount Malvern mine ceased production in 1918 some 1,900 tons of ore (containing 55% lead and 20 ozs/ton silver) had been recovered from workings above the 380 ft. level. The most recent assessment of the mine is that of Summers (1955) who concluded that "no large tonnages of lode material remain to be mined. In the upper levels small lenses of ore may occur but no large tonnage can be expected."

ROCK PRODUCTS

Consolidated and unconsolidated natural rock materials which have been or are being recovered include building construction stone, quartzite for aggregate, weathered shales for manufacture of heavy-clayware products and sand for filling and for construction. None of these constitute major sources of supply to the civil construction industry nor have they great future potential.

Tapley Hill Slate

Laminated blue-grey ribbon slate was formerly quarried from several quarries at Tapleys Hill adjacent to the River Sturt, hammer dressed and used as a building construction stone. for residential purposes, a very large number of the older residences of Adelaide being builtwholly of this stone while

many others have used a considerable proportion as foundation and lower courses. Numerous churches and other public buildings have also been constructed of this material; an example of its use is to be seen in the base courses of St.Peter's Cathedral.

Reserves are virtually unlimited but there is no current demand and no production.

The slate from this formation proved to have pronounced bloating characteristics when kiln fired and could provide a source of lightweight aggregate should a demand arise (Olliver 1962, Madigan 1967).

Quartzites

Thin beds of quartzite which outcrop in the hills face near Chandlers Hill could provide a source of civil construction aggregate and small production has been derived from quarries located in Sections 676 and 682. The beds are thin, dip at a low angle and do not constitute sources of large reserves of easily won rock.

Sand

Tertiary sands are being recovered from several pits in the Happy Valley locality to provide filling material but it is generally too fine to provide a source of fine aggregate for construction purposes though there is minor production for the building industry.

(1) Secs. 514, 515, 529

A pit is being operated by All Purpose Sands Pty. Ltd. for production chiefly of filling sand. However, some of the output is screened and sold for use as aggregate and in plaster.

Boring of 28 auger holes by the Department of Mines has proved reserves in excess of 2 million cubic yards of fine clayey sand suitable for filling purposes, the recovery of which will entail disposal of 3/4 million cub. yards of overburden which is up to 15 ft. in thickness. The sand on these properties ranges up

to 74 ft. in thickness and comprises relatively clean and well sorted light yellow to brown sand, variegated red brown, orange and white clayey sand and sandy clay. The colour, grain size and clay contents vary laterally and in depth. The bulk of the sand is too fine and clayey for construction purposes though parts of the deposit (with clay contents of 4 to 20%) would fulfil building sand specifications for fine concrete aggregate by selective quarrying of the coarser, less clayey seams and separation of the fines, (Olliver, 1967).

Immediately east of the pit (in Sec.530) geological investigations along the route of the inlet tunnel to Happy Valley reservoir indicated up to 135 ft. of Tertiary sands.

(2) Sec. 432

Sand is being recovered by B.W. Matthews Pty. Ltd. from the crest of an elongated dune. Auger boring by the Department of Mines has outlined reserves of almost ½ million cub.yards of relatively clay-free sand suitable only for filling purposes, with a further 100,000 cub.yds. of clayey sand on the property. The deposit attains 55 ft. in thickness on the hill top but erosion has reduced this to only a few feet on the northern and southern boundaries (Tarvydas, 1966).

Shallow pits exist nearby (in Secs. 517 and 812) and mark the sites of previous operations. The approximate limits of these deposits where they extend easterly to the fault scarp are shown on the plan but thickness is unknown.

(3) Sec. 276

Three auger holes were drilled by the Department of Mines on behalf of the Corporation of the City of Mitcham to indicate up to 40 ft. of clayey sand on the eastern boundary of the section, the topmost 6ft. being fine white windblown sand. The deposit proved to be more clayey near the western boundary and only 6ft. in thickness (Olliver, 1964 (c)).

(4) Sec. 791

Auger drilling undertaken by the Department of Mines for

C.B. Yelland & Co. proved the occurrence of up to 16 ft. of clayey sand which would require washing to fulfil specifications for use in plastering and rendering. Because of the shallow depth and limited areal extent it was considered that it could not be economically worked (Olliver, 1961(b)).

(5) Sec. 459

Excavation of a pit up to 15 ft. deep by F.T. and B.I. Thomson has exposed relatively fine clean sand which is being used for filling purposes. Reserves are unknown.

Clay-Shales

Weathered-bedrock throughout the area constitutes a potential source of raw material for brickmaking and allied uses. Weathering of the parent rock to a depth sufficient to allow useful recovery is however, more or less restricted to those areas which have been lateritized during the late Tertiary and have escaped subsequent erosion. The only areas which have been tested by drilling by the Department of Mines include Secs. 500, 501, 511 and 512.

In Sec. 500 two quarries were opened by Rosewall Sand and Quarry Co. Ltd. (Olliver, 1961(a)) to provide a source of White Clay. The lower one was abandoned because the clay proved to be discoloured. Tapley Hill slates have weathered to white and various shades of brown, yellow, red and purple clay dependent on iron contents, samples were taken from these openings and other bulldozed trenches for ceramics investigations when Ellecton, Tilby and Ridge (1964) reported favourably on the suitability of the clay for manufacture of heavy-clayware products.

Subsequently a further quarry was opened in Sec. 501 where there proved to be a higher proportion of white clay and at the present time Brick Industries Ltd. are operating from this site and have developed a face over 50 ft. in height. Drilling of 21 holes in these sections proved that weathered shale ranged from 20ft. to 80ft. in thickness though their full

extent was not determined. In Sec. 501 reserves were estimated t be in excess of 1½ million cub.yds.; further drilling was required to asses reserves in Sec. 500 (Olliver 1964(a)). Over burden averages 23ft. in depth and comprises a thin veneer of Recent loam and Kunkar over Tertiary sands, clays and micaceous silts which are pebbly at the base.

On Secs. 511 and 512, immediately adjoining to the south, boring of 22 holes for S.A. Model Estates Ltd. proved existence of substantial reserves of weathered shale under cover of Tertiary laterite, sandstone, conglomerate and sand which attain 80 ft. maximum thickness.

Clay proved to exceed 60 ft. in depth but due to the sporadic nature of weathering processes the ratio of white, pale grey and cream to discoloured clay could not be predicted and reserves were not assessed. The suitability of the material for brickmaking was not determined (Olliver 1964(b)).

SUMMARY

At the present time in the Happy Valley Ward of the District Council of Meadows extractive industries are based on deposits of Tertiary Sand and clay shales derived from weathering of basement slates. Drilling has been undertaken by the Department of Mines to indicate reserves in prescribed areas, elsewhere these are not known.

The sand finds principal use as a filling material with minor consumption in the building industry. Reserves are limited.

White clay shales which have been recovered from one pit in the area are suitable for brickmaking and fabrication of heavy-clayware products. Reserves have not been fully determined.

Slate as a building construction stone and as a potential source of lightweight aggregate is plentiful but there is no current demand.

None of these rock products have unique properties or

qualities and are generally low priced commodities whose value is dependent chiefly on proximity to the Metropolitan Area.

RKJ:JB
18.2.69

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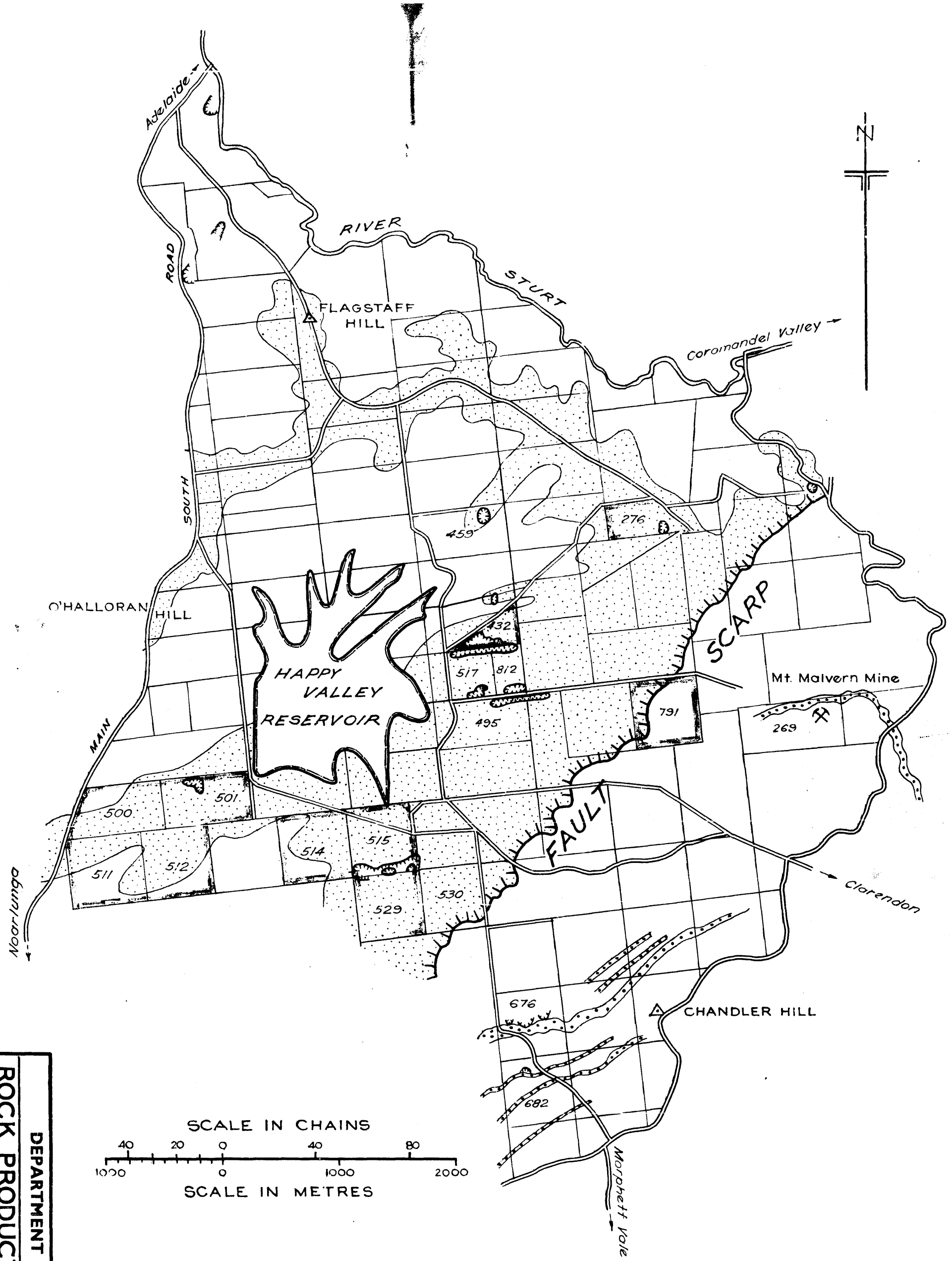

LEGEND

- TERTIARY — Gravel, sand: sandy clays; laterite.
- UPPER PROTEROZOIC — Argillaceous rocks (Slates, phyllites, tillite.)
- Quartzites, sandstones.
- Mine
- Quarry

SCALE IN CHAINS
40 0 40 80 120 160 200
2000 3000 4000

16

DEPARTMENT OF MINES — SOUTH AUSTRALIA

ROCK PRODUCTS & MINERAL RESOURCES
PT HD. OF NOARLUNGA
GEOLOGICAL PLAN
(D.C. OF MEADOWS - HAPPY VALLEY WARD)

MINERAL RESOURCES SECTION

Director of Mines

SUP GEOLOGIST

Drn. K.J

Tcd. E.B.T

Ckd. L.V.W.

Exd.

SCALE: 1 INCH = 40 CHAINS

69-102

Ho 9

DATE: 18 Feb '69