UNCLASSIFIED

DEPARTMENT OF MINES

SOUTH AUSTRALIA

GEOLOGICAL SURVEY OF ROAD METAL DEPOSIT ON SECTION 680, HUNDRED OF WILLUNGA, COUNTY ADELAIDE

LOCATION:

In the Hundred of Willunga, Section 680 lies half a mile from the Sellicks Hill Hotel along the old Sellicks Hill road.

INTRODUCTION:

At the request of the Highways and Local Government Department the limestone deposit on Section 680, Hundred of Willunga, was surveyed by the writer. A topographic survey with a theodolite was made by M. B. Langsford (Surveyor and Draftsman, Dept. of Mines).

PLANS: (MISSING)

A locality plan and a topographic plan of the deposit on Section 680 accompany this report. The topograph plan is on a scale of 100' to the inch, with a contour inter of 20'.

TOPOGRAPHY:

Section 680 lies on the lower slopes of a steep escarpment, which to the south-west forms the cliff coastline on the southern side of Aldinga Bay. Numerous streams have cut steep sided valleys in the escarpment. One such valley is followed by the Old Sellicks Hill road which leaves the main Aldinga - Myponga road at the Sellicks Hill Hotel. The old Sellicks Hill road is the eastern boundary of Section 680. The western boundary is a fence separating the Section from Section 732.

Within Section 680 a depression lies between a low

rise on the northern part and a central steep ridge. This ridge rises to the south-west, reaching an altitude some 250' above the depression. On the north-eastern end of the ridge a small quarry has been opened from the road. This is some 70' long and 60' wide, with a maximum face height of 30'. On the north western side of the ridge is the main quarry. This is 180' long and the same distance wide. The maximum height of face is 65'. The quarry has an even floor and there are only small amounts of scree material at the face. Access to this quarry is by a track which leaves the Old Sellicks Hill road at the intersection of the northern boundary fence.

GEOLOGY:

The rocks are well exposed at the surface except in the depression where the outcrop of a less resistant horizon is obscured by soil cover.

The Cambrian Archaeocyathinae Limestones outcrop over much of Section 680. They are grey dolomitic limestones; massive and homogeneous varieties occur as well as the laminated, somewhat nodular, ribbon limestone type. The massive limestone is frequently rich in Archaeocyathinae.

These rocks strike north-east to south-west, dip at angles between 60-80° to the south-east and are overturned to the north-west.

The lower boundary of the Archaeocyathinae Limestones lies just east of the roadside quarry on the north-eastern side of the central ridge (see plan). The massive dolomitic limestones give way to a sequence of alternating limestones and shales which becomes progressively more argillaceous. The rocks structurally below, but stratigraphically above the Archaeocyathinae Limestones are exposed in a small roadside quarry on Section 727 (see plan). These rocks are pale grey fissile shales.

ESTIMATION OF RESERVES:

The dolomitic limestones of the northern and central parts of Section 680 should make good road metal. The rocks are fresh, fine grained, compact and tough. There is little visible shearing and the dominant joint planes follow the bedding. The zone of surface decomposition is less than a foot deep, below this the rock is fresh and compact. The shales above and below the limestone would be unsuitable for road metal because they are soft, fissile and argillaceous.

In the central area limestone could be quarried along the strike from the existing quarries at the northern end of the ridge. Working from the main quarry (floor at 590') would yield some 880,000 cu.yards with an additional 220,000 cu.yards if worked from the level of the smaller roadside quarry (floor at 570'). The volumes are for solid stone after the removal of 1' of soil and decomposed rock cover and allow for a 10% wastage in quarrying. The south-eastern margin would be a 60° batter whose top follows the margin of the Archaeocyathinae Limestone outcrop. If quarried from the 570' level the north-western face would maintain a height of not less than 20' by following the 590' contour (see plan). Benching methods of quarrying would be necessary as the south-western end of the ridge is 190 - 210' above the northern floor levels.

In the northern area of Section 680 and the adjoining part of Section 727 limestone could be quarried by working south-westwards (along the strike) from near the Old Sellicks Hill road. The north-western margin of such a quarry would be the limestone - shale contact (see plan). To the south-east the land falls so that quarry faces would be low. A quarry with its floor at 520' and with faces not less than 20' high would yield some 160,000 cu. yards of solid stone (after removal of 1' of soil and decomposed rock cover and allowing for a 10% wastage in quarrying).

Thus the reserves of stone are:-

1.	Central Area 590' level	880,000	cu. yards
	" " 570' "	220,000	" "
2.	Northern " 520' "	160,000	" "
	Total ..	1,260,000	" "

CONCLUSIONS:

Good quality road metal is obtainable from the limestone deposit of Section 680, in the Hundred of Willunga.

In the central area of the Section, working along the strike of the rocks from the existing quarry floor at 590' would yield some 880,000 cu. yards of stone. An additional 220,000 cu. yards would be gained by working from the 570' floor level of the smaller quarry. In either operation benching would be necessary as in the south-west the ridge rises to over 180' and 210' above the 590' and 570' levels respectively.

The northern part of Section 680 and the adjoining part of Section 727 has a reserve of some 160,000 cu. yards of stone suitable for road metal. Working with a floor at 520' the walls would not be more than 45' high so that benching would be unnecessary.

Thus the reserves of stone are:-

Central area	590' level	880,000	cu. yards
	570' "	220,000	" "
Northern "	520' "	160,000	" "
	Total ..	1,260,000	" "

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DT:BR
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