DEPARTMENT OF MINES
SOUTH AUSTRALIA

DOLOMITE DEPOSITS - LOWER SOUTH EAST

Co: Grey

(HIGHWAYS & LOCAL GOVERNMENT DEPARTMENT)

by

R. K. Johns
Senior Geologist

Plan No.	Title	Scale
62-756	Lower South East - Dolomite and volcanic rock deposits	1 inch = 4 miles
	Locality Plan - Dolomitic Deposits - Lower South East, Hd. Caroline. H.&L.G. Dept.	4 inches = 1 mile
	Dolomite Deposit A, secs. 333 & 331, Hd. Caroline	1 inch = 40 ft.
	Dolomite Deposit B, secs. 334 & 333, Hd. Caroline	1 inch = 40 ft.

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13th November, 1962

DOLOMITE DEPOSITS - LOWER SOUTH EAST

HIGHWAYS & LOCAL GOVERNMENT DEPARTMENT

INTRODUCTION

Following a request from the Commissioner of Highways to report on the availability of road making material "similar to that in the existing quarry at section 715, hundred of Blanche or section 652, hundred of Blanche ..... in the area lying between the northern boundaries of the hundreds of Monbulla and Penola and the southern coastal boundaries of the hundreds of MacDonnell and Caroline," and "of at least 30,000 cub. yds. (solid measurement) of pink dolomite outcropping in section 334, hundred of Caroline, adjacent to Glenelg River Main Road No. 20," an inspection of the area was made in company with Geologist M.N. Hiern during the week ended October 5, 1962.

REFERENCES

Jack, R.L. (1923) Geol. Surv. S. Aust. Bull 10, pp. 44-45.

Sprigg, R.C. and Cochrane G.W. (1951) Gambier and Northumberland Geological Map (1 in. = 1 mile series)

Sprigg, R.C., Cochrane G.W., and Solomon M. (1951) Penola Geological Map (1 in. = 4 mile series)

Cochrane, G.W. (1952) a Mining Review 92, pp 71-78.

Cochrane, G.W. (1952) b " " 93, pp 117-121.

DOLOMITE OCCURRENCE

Tertiary bryozoal limestones (Gambier Limestone) occur in outcrop or at comparatively shallow depth over the greater part of the lower South East of the State. Dolomites have been developed in a number of areas by metasomatic replacement of these limestones in proximity to faults and a relation is inferred between dolomitization and volcanic activity (Cochrane, 1952b). There is a comparative absence of rock types intermediate in composition between limestone and dolomite - the contacts being generally

sharply defined. The dolomites are usually pink in colour, but may be white or yellow; they are of variable hardness and texture. Dolomitization does not appear to have stratigraphic significance and where bedding planes depart significantly from the normal horizontal attitude faulting is known or suspected.

The known occurrences have been described by Cochrane (1962 a and b) and the locations of most are shown on published geological maps (Sprigg, Cochrane and Solomon, 1951, 1952). Individual occurrences inspected are detailed below.

(1) Tantanoola

At Up and Down Rocks large deposits of hard pink and yellow brown dolomites have been quarried for the provision of ballast, over 200,000 cub. yds. having been quarried and crushed for this purpose. These deposits are held under lease and are being exploited by Australian Glass Manufacturing Company. Reserves are large.

(2) Burnda area

Cochrane has shown that pink and white dolomites occur as bedded replacements within bryozoal limestone adjacent to a major zone of faulting over an area of some 18 square miles north and south of the railway line near Burnda. Stone of variable hardness for building purposes has been worked from a number of shallow openings (Jack, 1923). Stone is at present being quarried for road construction from a deposit situated 2 miles east of Compton (sec. 715, Hd. Blanche) and formerly from quarries 6 miles further east adjacent to the Mt. Gambier - Penola road (sec. 652, Hd. Blanche) - at the latter soft bryozoal limestone constitutes the quarry floor.

The thickness and attitude of the dolomite bodies is unknown but they are likely to be very irregular; a bore drilled in sec. 294, Hd. Blanche penetrated 108 feet of red and grey dolomite under 34 feet of overburden.

Occurrences have been noted near Burnda in Hd. Blanche

sections 715, 729, 717, 721, 724, 726, 727, 180, 166, 165, 385, 148 and 149 while they extend under shallow cover to the northwes in an area reserved to pine forest. Dolomitized zones have also been noted near Mt. Salt and in the cliffs of Blue Lake.

(3) Hd. Caroline

A narrow dolomitized zone is traceable for a distance o: more than one mile along the Nelson Fault adjacent to the Mt. Gambier - Nelson road near the South Australia - Victoria border.

The dolomite is generally hard and dense, fine grained and crystalline and of pink or white colour, and it occurs in a number of irregular discontinuous lenses arranged en echelon within soft white flat lying Tertiary bryozoal limestone. Drag folding within the limestone is apparent adjacent to and on the southern side of the fault in sec. 324, Hd. Caroline. Dolomitization has in general resulted in a uniformly even textured recrystallized rock though occasional unreplaced shells were discerned.

The disposition of the various lenses is shown on the accompanying locality plan of this area. The two largest bodies of dolomite which might provide adequate material for road construction were mapped and are described below.

1) Deposit A

An irregular mass of dolomite outcrops strongly over the slopes of a rise north of the main road in secs. 333 and 331, Hd. Caroline. The boundaries shown are generally those separating hard dolomite from soft bryozoal limestone though these are occasionally masked by soil cover. In the walls of the sinkhole pink dolomite is exposed round the northern rim while white dolomite comprises the southern rim.

The attitude of the dolomite in depth is uncertain and to confirm continuity and to procure samples for aggregate tests it is proposed that the deposit be tested by diamond drilling at the four sites indicated as follows:

1) No. 1 depressed N 30°E at 20° - depth 90 ft.

2) No. 2 " " " " "

3) No. 3 " S 30°W at 30° - depth 100 ft.

4) No. 4 " " " " "

The volume of stone enclosed by these lines of holes to a floor of 75 ft. (the level of the floor of the sinkhole) without allowance for batters is 28,000 cub. yds. Development beyond these limits to the extent of the deposit as mapped and assuming vertical continuity at depth would double these reserves.

2) Deposit B

The irregular dolomitized mass of stone mapped adjacent to the road in sections 334 and 333, Hd. Caroline is physically similar to that described above though pink dolomite predominates. Isolated pods of dolomite are distributed about the main mass as in the above; the presence of a thin dolomitized shear and a chert breccia zone are noteworthy.

The areal extent is less than in deposit A, it is not as favourably situated topographically and it thus provides a less attractive quarry site.

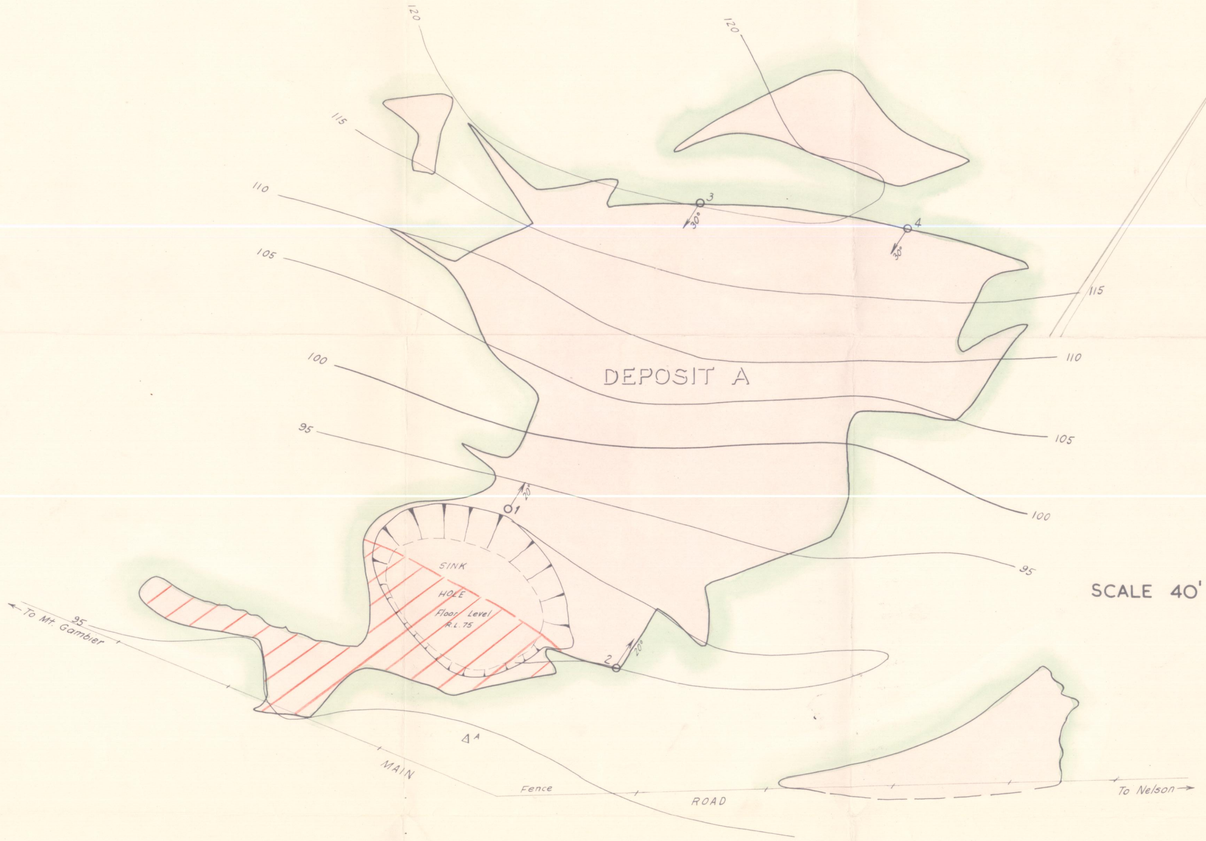
CONCLUSIONS

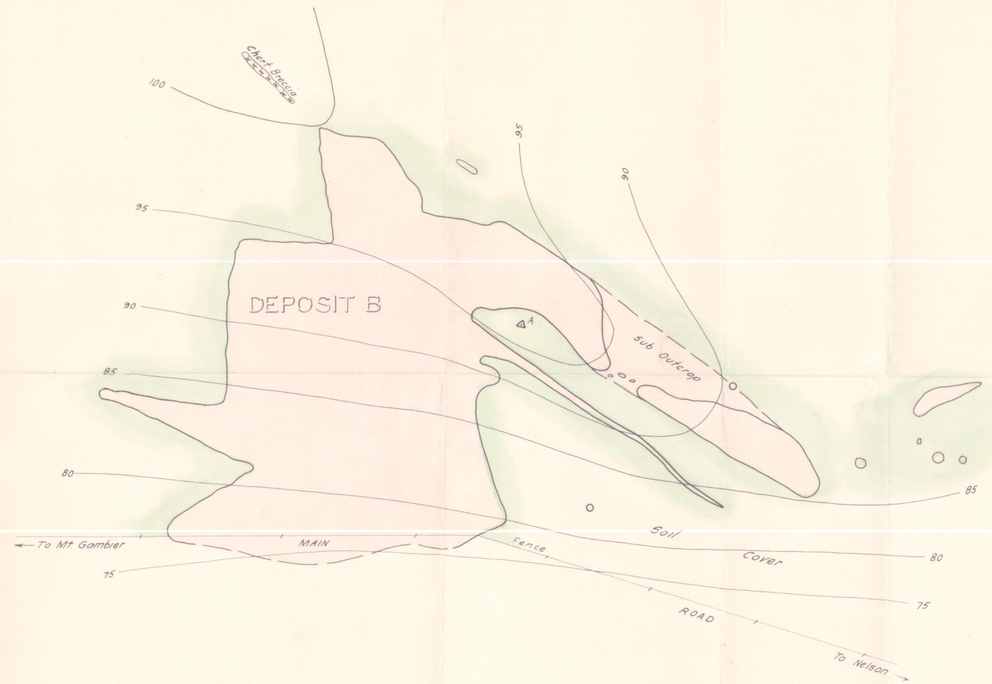
The known occurrences of hard rock suitable for road construction usage are shown on the accompanying plan - these include volcanic rocks and dolomites. The occurrence of dolomite is restricted to four main centres - Tantanoola, Burnda, Mt. Salt and near Nelson.

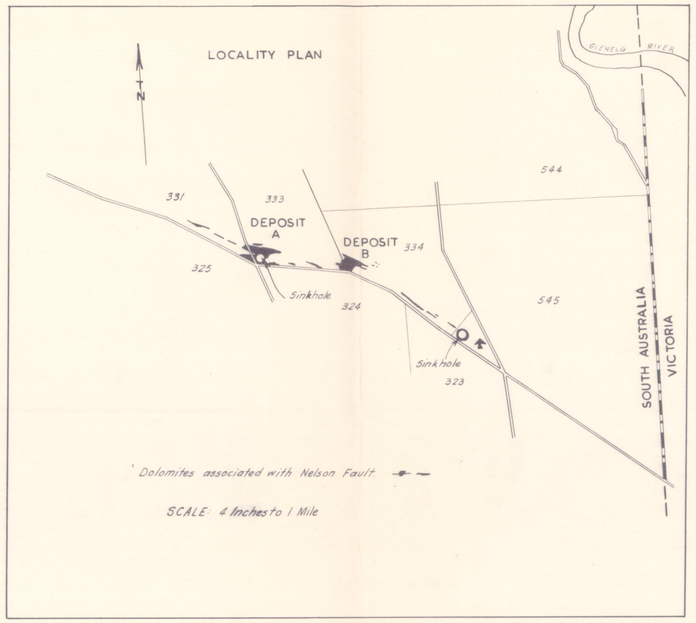
No natural high working faces would be available in the Burnda area but it is not unlikely that satisfactory pits could be established. Drilling is deemed to be advisable before any development is undertaken.

Deposits situated adjacent to the Nelson road have reserves in excess of 30,000 cub. yds. A quarry could here be readily established but the drilling of four holes (footage 380 f is recommended.

R. K. Johns
SENIOR GEOLOGIST



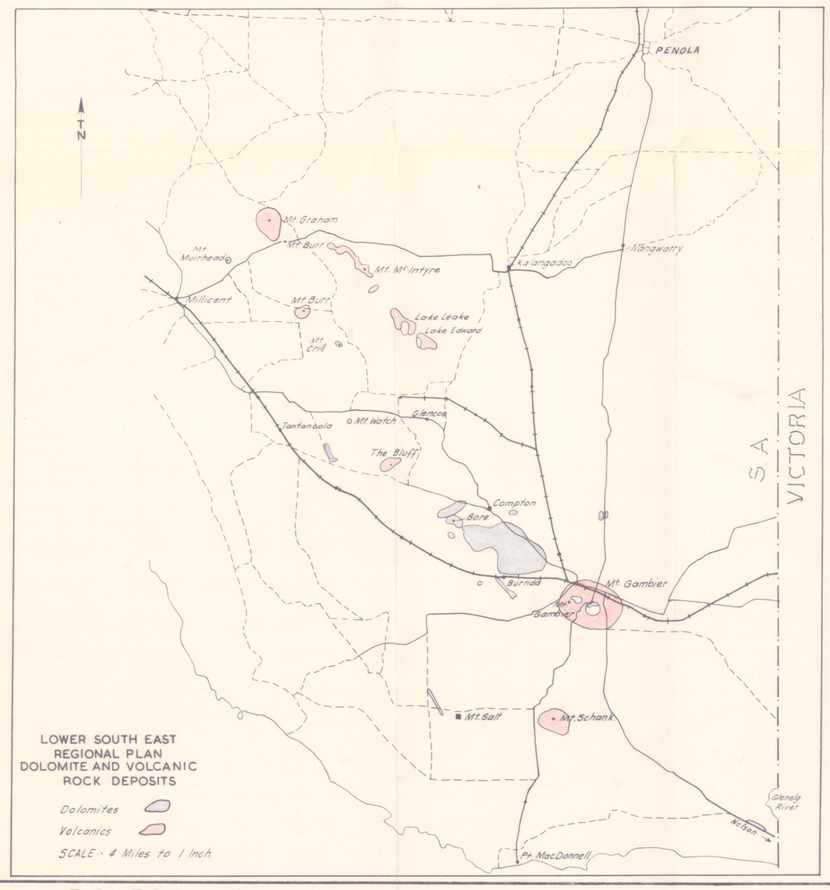




LEGEND

Tertiary
- Pink Dolomite
- White Dolomite
- Bryozoal Limestone
- Survey Station △A

Plane Table Survey arbitrary datum Station A
Table Surface = 100'. Table 42' above N.S.



LOWER SOUTH EAST REGIONAL PLAN
DOLOMITE AND VOLCANIC ROCK DEPOSITS

- Dolomites
- Volcanics

SCALE - 4 Miles to 1 Inch.

To accompany report by R.K. Johns

S.A. DEPT. OF MINES

LOWER SOUTH EAST DOLOMITE DEPOSITS
SECS. 331, 333 & 334 HD CAROLINE
H.&L.G. DEPT.

Associated Drawing	No.	No.	Amendment	Exd.	Date

Req. No.
D.M.
Compiled from

Approved	Passed		Scale :
		Drn. R.K.J.	62-756
		Tcd. A.O.W.	Kd 21
Director of Mines		Ckd.	
		Exd.	Date 13-11-62