DEPARTMENT OF MINES

SOUTH AUSTRALIA

BIOSTRATIGRAPHY DIVISION

NEW AND REVISED STRATIGRAPHIC NOMENCLATURE FOR THE WILLUNGA EMBAYMENT

- PROPOSED QUARTERLY NOTE -

by

Barry J. Cooper

Rept.Bk.No. 77/67
G.S. No. 5889
D.M. No. 584/67
Biostrat. No. 12/77

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The Willunga Embayment contains the best known Cainozoic outcrops in the St. Vincent Basin. Stratigraphic units were first proposed for this classic area by Reynolds (1953). A different stratigraphic nomenclature was proposed by Crespin (1954) (Fig. 1).

Recent drilling in the Willunga Embayment concurrent with stratigraphic studies indicates that a revision of the stratigraphic units is timely. The purpose of this note is to document the proposed changes which will be discussed in detail in a forthcoming publication, but are briefly described here to enable other stratigraphers to make use of this terminology.

The suggested changes to stratigraphic nomenclature in the Willunga Embayment are compared with the units of Reynolds and Crespin in Figure 2. Contrary to Reynolds, the author believes that the basal sands of the Cainozoic succession should be included in one formation. However, two members are recognised, corresponding to Reynolds' North Maslin Sands and South Maslin Sands. The Tortachilla Limestone is limited to the Polyzoal Limestone Member of Reynolds (1953) as recommended by Buonaiuto (1977). The Blanche Point Formation is not a "marl" or a "limestone" in all known sections, consequently it is not referred to as such. The stratigraphic limits of the Port Willunga Formation and Chinaman Gully Formation are now well known so they are no longer referred to as "Beds".

The following new names have been approved by the Central Register of Stratigraphic Nomenclature, Canberra.

GULL ROCK MEMBER (new name)
of the Blanche Point Formation

Origin of Name: From Gull Rock, a small rock stack adjacent to Blanche Point on the east coast of Gulf St. Vincent.

Type Section: Typical Gull Rock Member occurs in the coastal cliffs along Maslin and Aldinga Bays about Blanche Point. It is 11 m thick.

Discussion: The Gull Rock Member is proposed to encompass the Late Eocene Blanche Point Banded Marl Member of Reynolds (1953). Lithologically the unit consists of tough dark grey fossiliferous chert bands interbedded with friable spicular calcareous clays. The silicification differentiates Gull Rock Member from surrounding beds of Blanche Point Formation.

ALDINGA MEMBER (emended herein)
of the Port Willunga Formation

Type Section: Stratotype Aldinga Member outcrops along the coast of Aldinga Bay from Chinaman Gully to Aldinga Creek, and south of Aldinga Creek to the old Port Willunga jetty. It is 15 m thick.

Discussion: The term "Aldinga Limestone" was used by Crespin (1954) in a way synonymous with the Port Willunga Formation. Here it is proposed to restrict use of the name to the basal part of Port Willunga Formation beneath the occurrence of chert nodules (Lindsay, 1967; Daily et al., 1976). Lindsay (1970) referred to this basal part as the "Aldingan unit" as it represents that part of the Port Willunga Formation included at the top of the Aldingan Stage. Lithologically the member consists of variable shelly and bryozoal clays, silts, sands and limestones. At the type section the Aldinga Member of the Port Willunga Formation is underlain by the non-calcareous Chinaman Gully Formation (Reynolds, 1953) and is succeeded by the Ruwarung Member defined herein. Stratotype Aldinga Member is Late Eocene in age (Lindsay, 1967).

RUWARUNG MEMBER (new name)
of the Port Willunga Formation

Origin of Name: From Ruwarung, an aboriginal name meaning brackish-water place. Ruwarung refers to the springs originating in the Port Willunga Formation along the coast of Aldinga Bay between Aldinga Creek and Snapper Point. Name supplied courtesy G. Pretty, South Australian Museum.

Type Section: The type section of the Ruwarung Member occurs in the coastal cliffs of Aldinga Bay between Snapper Point and the mouth of Aldinga Creek. The stratotype is 16 m thick.

Discussion: The Ruwarung Member is proposed for that part of the Port Willunga Formation characterised, and differentiated from surrounding units, by the occurrence of chert nodules. The chert nodules are interbedded with bryozoal limestone, silts, clays and sands (Lindsay, 1967). The unit was informally called the "siliceous unit" by Lindsay (1969, 1970). It is Oligocene but not latest Oligocene in age.

PIRRAMIMMA SAND MEMBER (new name)
of the Port Willunga Formation

Origin of Name: The stratotype of the proposed unit is close to the Pirramimma Vineyards and Winery, which can be entered from Communication Road, McLaren Vale.

Type Section: Typical Pirramimma Sand occurs in S.A.D.M. Observation Bore WLG42 (State No. 697017402) located adjacent section 174, hundred Willunga (Noarlunga 1:50 000 sheet G.R. 275360982). The stratotype occurs above 51.5 m in the borehole (Fig. 3) although soil cover prevents outcrop of the unit. Pirramimma Sand also occurs between 34 m and 73 m in Willunga Bore WB-1 (Glaessner & Woodard, 1956; Lindsay, 1966), and is known to occur in several private bores in the McLaren Vale-Willunga area.

Discussion: The Pirramimma Sand is proposed for the marginal sandy facies of the Port Willunga Formation in the Willunga Embayment. The member has not been positively recognised in outcrop and is a lateral equivalent of the calcareous members of the Port Willunga Formation outcropping along the coast of Aldinga Bay. Lithologically Pirramimma Sand is a poorly consolidated fine quartz sand (greater than 75% quartz) with localised calcareous and ferruginous cementation. In the type section (Fig.3) the Pirramimma Sand Member overlies the Aldinga Member and there is sharp upward lithological change from richly fossiliferous, calcareous silt and sand of the latter to the sparingly fossiliferous quartz sand of the former at the contact. Pirramimma Sand may have an age extending from the Late Eocene to the Early Miocene. The stratotype has an Oligocene and Early Miocene age.

22nd June, 1977

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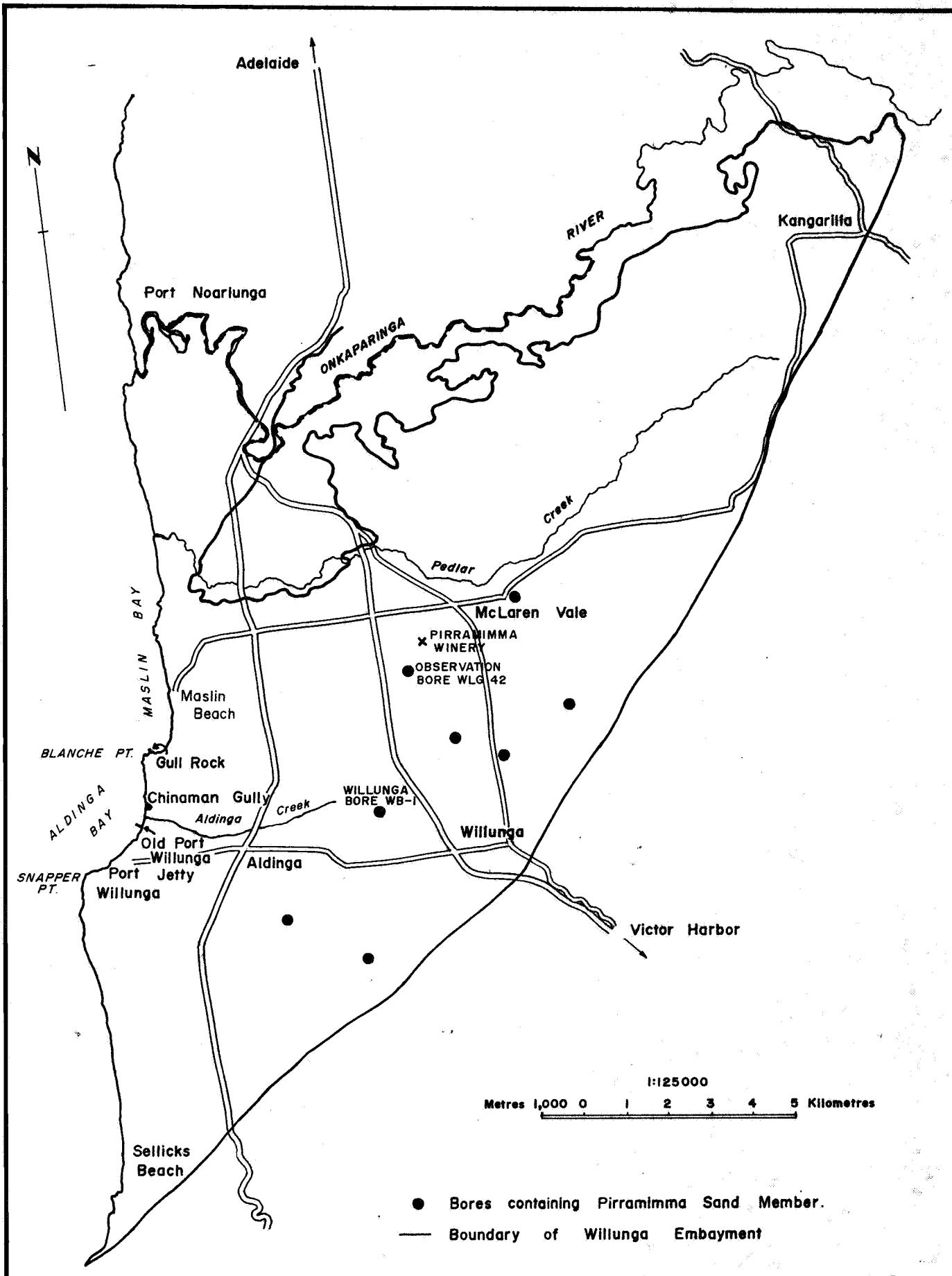

FIG. 1

	DEPARTMENT OF MINES—SOUTH AUSTRALIA	SCALE 1:125 000
COMPILED: B. Cooper	WILLUNGA EMBAYMENT	DATE: 29th JUNE 1977
DRN: T.E. CKD.	LOCALITY PLAN	PLAN NUMBER: S 12573

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REYNOLDS, 1953		CRESPIN, 1954	THIS REPORT	
PORT WILLUNGA BEDS		ALDINGA LIMESTONE	PORT WILLUNGA FORMATION	Pirramimma Sand Member
				Ruwarung Member
				Aldinga Member
CHINAMANS GULLY BEDS		?	CHINAMAN GULLY FORMATION	
BLANCHE POINT MARLS	Blanche Pt. Soft Marl Member	BLANCHE POINT LIMESTONE (NOARLUNGA LIMESTONE)	BLANCHE POINT FORMATION	
	Blanche Pt. Banded Marl Member			Gull Rock Member
	Blanche Pt. Transitional Marl Member			
TORTACHILLA LIMESTONES	Glauconitic Limestone Mbr.		TORTACHILLA LIMESTONE	
	Polyzoal Limestone Member			
SOUTH MASLIN SANDS		MASLIN SANDSTONE	MASLIN SANDS	South Maslin Sand Member
NORTH MASLIN SANDS				North Maslin Sand Member

FIG. 2

STRATIGRAPHIC NOMENCLATURE OF WILLUNGA EMBAYMENT (EOCENE, OLIGOCENE & MIOCENE)

DEPARTMENT OF MINES—SOUTH AUSTRALIA

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DRN: T.E.

CKD:

DATE: 29th JUNE 1977

SCALE:

PLAN NUMBER: S 12574

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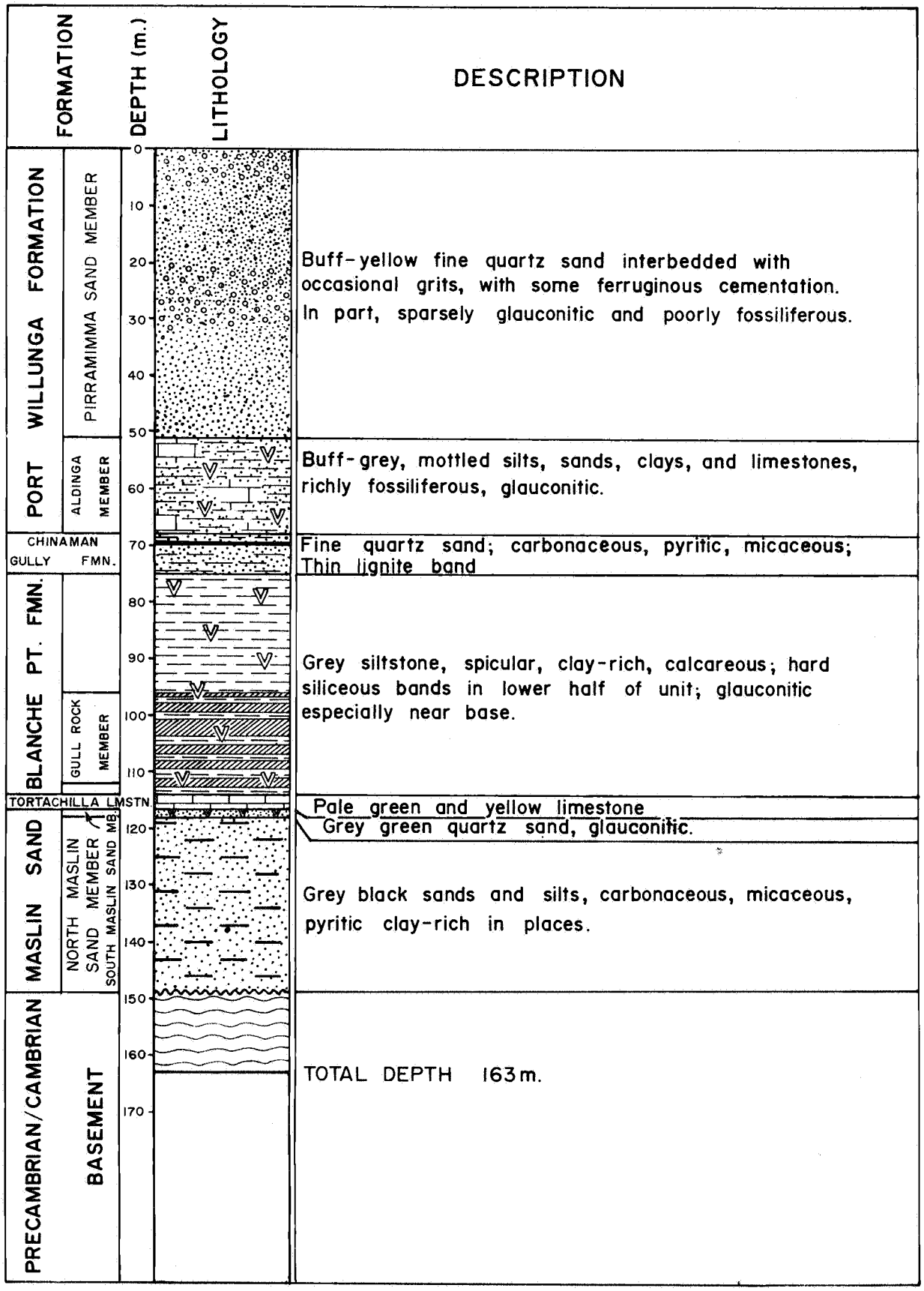

FIG. 3

	DEPARTMENT OF MINES—SOUTH AUSTRALIA	SCALE
COMPILED: B. Cooper	OBSERVATION BORE WLG 42	DATE: 28th JUNE 1977
DRN: T.E. CKD.	TYPE SECTION OF PIRRAMIMMA SAND MEMBER OF PORT WILLUNGA FORMATION	PLAN NUMBER S 12575

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