DEPARTMENT OF MINES AND ENERGY

GEOLOGICAL SURVEY

SOUTH AUSTRALIA

REPORT BOOK 91/99

EARLY LATE EOCENE AGE FOR LIMESTONE WITHIN LACUSTRINE SEQUENCE AT KAROONDA

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Biostratigraphy Branch

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LOCATION:

General location: 4 km south-east of Wynarka
Mapsheet: 1:250,000 PINNAROO;
1:100,000 Moorlands
Borehole: MBT-12
Unit no.: 6827-004-SW-01633

SAMPLE DATA:

Depth: 156.9m
Type of sample: Core
Lithology: White bryozoal limestone
RS no.: 6827 RS 213

STRATIGRAPHIC INFORMATION:

Stratigraphic unit: Buccleuch Group
Geological Province: Murray Basin
Age: early Late Eocene

RESULTS:

A foraminiferal fauna of mainly robust, benthonic species was recovered from MBT-12. Most of the foraminifera in this sample have sustained damage to surface ornamentation, probably due to abrasion while being reworked and transported from the original site of accumulation. Despite this, diagnostic species can still be clearly identified. The presence of *Halkyardia* sp. cf. *H. bartrumi* together with *Crespinina kingscotensis*, *Maslinella apmani* and *Astergerina adelaidensis* indicate an early Late Eocene age.

The environment of deposition must have had sufficient water depth and circulation to allow a coarse bryozoal limestone to form. This is sandwiched between Olney Formation lacustrine sediments and suggests that a transgressive pulse or a relative rise in sea-level occurred within a mainly regressive sedimentary event. The former is probably the Tortachilla Transgression of McGowran & Beecroft (1986). While the

components of the limestone observed in MBT-12 have been transported from the original site of accumulation, the presence of limestone within a lacustrine sequence is evidence that this transgression extended as far as Karoonda at this time.

Lindsay and Bonnett (1973) found glauconitic marl of early Late Eocene age within Olney Formation lacustrine sediments at Waikerie and interpreted it as part of Buccleuch Group. Brown and Stephenson (1991) have viewed occurrences of Late Eocene marine influence outside of the Buccleuch Embayment as equivalents, mainly because the lithologies at the type section cannot be identified at these locations. However, the limestone at Karoonda is regarded as part of the Buccleuch Group because the unit is extremely variable even adjacent to the type section.

REFERENCES:

Brown, C.M. & Stephenson, A.E. 1991. Geology of the Murray Basin, Southeastern Australia. Bureau of Mineral Resources. Bulletin, 235.

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Mc Gowran, B. & Beecroft, A.S. 1986. Neritic, Southern extratropical Foraminifera and the Terminal Eocene Event. Palaeogeography, Palaeoclimatology, Palaeoecology. 55:23-34.