DEPARTMENT OF MINES AND ENERGY
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SUBDIVISION OF LOWER ADELAIDEAN, WILLOURAN RANGES

GEOLOGICAL SURVEY

by

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ABSTRACT

The Arkaroola and Curdimurka Subgroups of the Callanna Group (late Precambrian) are defined respectively in the Arkaroola and Willouran areas.

The Curdimurka Subgroup is the uppermost of these subdivisions and comprises 4 700 m of sediments deposited in an evaporitic environment. The basal sandy sequence of the overlying Burra Group is named Emeroo Subgroup and is 4 000 m thick in the Willouran Range.

INTRODUCTION

This proposal for new nomenclature in the lower Adelaidean results from work by a number of authors over a long period. Mawson (1927) was first to use the term "Willouran Series" in reference to the early Adelaidean Burra and Callanna Groups west of Breaden Hill, Willouran Range. (Note: the term Willouran Ranges used here refers loosely to the Willouran Range proper and neighbouring ranges, SW of Marree).

In 1952 Sprigg restricted Willouran Series to the Adelaidean sequence below the Witchelina Quartzite. Later Thomson and Coats (1964) defined the rocks forming the Series as "Callanna beds", characterised by halite casts and volcanics, and correlated broadly with similar sequences in the Peake and Denison, Mount Painter and other regions. Mapping by Forbes (1967) and Preiss (1974) near Spalding, and by Murrell (1977) in the Willouran Ranges showed that sandy beds below the Witchelina Quartzite and its correlatives belong to Burra Group rather than upper Callanna Beds. Other contributors to the geology of the Willouran region

include Sprigg (1950), Webb, Horwitz and Coats (1963), Dalgarno (1966), Forbes, 1966, Ruker (1966), Fairburn (1969), Daly (1970), Carthew (1975) and Rowlands et al. (1980). More recently Thomson (1980) and Preiss (1980) have followed the suggestion of Murrell (1977) to upgrade "Callanna Beds" to Callanna Group.

New nomenclature formalised in this note is largely based on that proposed for the Callanna Group in its type area by Murrell (1977). Additional details of lithology are from Forbes (1980) and Preiss (unpublished field notes). Figure 1 shows general and more detailed location of sections. Table 1 shows proposed correlation with other regions.

CALLANNA GROUP

Although the type locality of the Callanna Group is in the Willouran Ranges, the lowermost Willouran units are better exposed and stratigraphically intact in the Mount Painter region. The suggestion of Thomson (1966, p. 223) that this basal sequence (Paralana Quartzite, Wywyana Formation and Wooltana Volcanics) be termed "Arkaroola Subgroup", modified from Mawson's 1949 "Arkaroola Series", is adopted here.

The two oldest units presented here occur within disturbed zones composed of megabreccia: stratigraphic relationships are thus uncertain, but they are tentatively referred to the Arkaroola Subgroup.

Black Knob Marble

Definition: Large blocks or dismembered beds of dark grey to white calcitic marble within megabreccia.

Synonymy: "Black Knob Marble" of Murrell (1977).

Derivation of name: Black Knob Hill, 27 km SE of "Callanna".

Map symbol: Bab.

Type section: Black Knob Hill, lat. 29°52', long. 137°41'.

Thickness: 25 m at type section, up to 100 m elsewhere.

Distribution: Willouran Ranges.

Lithology: Black carbonaceous calcitic marble, with phlogopite, smoky quartz and potash feldspar restricted to certain beds, chalcedonic nodules in some bedding planes.

Stratigraphic relationships: Occurs within megabreccia. Intruded by dolerite and thus may be older than Noranda Volcanics.

Age and Correlation: Early Willouran. Possibly equivalent to Wywyana Formation (Arkaroola Subgroup) and Coominaree Dolomite.

Noranda Volcanics

Definition: Basaltic volcanics low in the Callanna Group.

Synonymy: "Noranda Volcanics" of Murrell (1977).

Derivation of name: Site of Noranda Aust. Pty. Ltd. exploration camp near Boorloo workings 10 km SW of "Callanna" (Fig. 2,B).

Map symbol: Ban.

Type section: Noranda campsite; lat. 29°45', long. 137°59'.

Thickness: Possibly 80 m NE of Chintapanna Dam.

Distribution: Willouran Ranges.

Lithology: Amygdaloidal basaltic rock. Pillow structure near Chintapanna Dam (Radke, 1980).

Stratrigraphic relationships: Faulted contacts. Occurs within megabreccia or adjacent to Dome Sandstone.

Age and correlation: Early Willouran, probably below Dome Sandstone. Correlated with the Wooltana Volcanics (Arkaroola Subgroup) and Cadlareena Volcanics.

Curdimurka Subgroup (New Name)

Definition: This is proposed to refer to the upper part of the Callanna Group in the CURDIMURKA region, a little-disturbed, partly evaporitic sequence from Dome Sandstone to Boorloo Siltstone.

Derivation of name: Curdimurka railway siding (disused).

Map symbol: Bk.

Reference section: From a point 6 km SSE of "Callanna" northeasterly to a point 1 km W of Boorloo workings; lat. 29°46', long. 137°56' to lat. 29°45', long. 137°58'.

Thickness: 4 700 m in the reference section (Fig. 2,B).

Dome Sandstone

Definition: Prominent basal sandstone-siltstone sequence of the Curdimurka Subgroup.

Synonymy: "Dome Formation" of Murrell (1977) and Forbes (1980). Probably R2 unit of Rowlands et al. (1980, p. 62).

Derivation of name: The Dome (Dome Hill), 3 km SSE of "Callanna" station.

Map symbol: Bkd.

Type section: NE-dipping sandstone sequence forming low ridges 3 km SW of "Callanna". From lat. 29°44', long. 137°52' to lat. 29°43', long. 137°52' (Fig. 2,A).

Thickness: At least 1 480 m in type section. Thinner to the SE.

Distribution: Willouran Ranges.

Lithological sequence in type section:

Top: 79 m quartzite, very light grey, medium-grained, minor black lamination, poorly exposed on low ridge.

390 m (partly covered intervals) similar quartzite and sandstone, fine-to-coarse-grained, medium-to thin-bedded, with some cross-bedding, shale clasts. (Halite casts reported nearby by Murrell, 1977).

584 m sandstone and quartzite, mainly white-weathering and coarse-grained with channel cross-beds and pebbly and black hematitic layers (Whitehead, 1980; Collins, 1980).

115 m sandstone and quartzite, fine-to coarse-grained with some shale clasts.

Base: at least 300-450 m siltstone, shale, grey and light greenish; sandstone, partly calcitic or dolomitic, fine-to coarse-grained, thin-to medium-bedded with some black lamination, current bedding, mud cracks, ripple marks. Overall sand: shale: carbonate percentages - 87:12:1.

Stratigraphic relationships: In type section and generally elsewhere - lower boundary faulted against megabreccia, upper boundary conformable against Rook Tuff.

Age and Correlation: Possibly late Willouran.

Rook Tuff

Definition: Dark flaggy, fine-grained rocks, partly volcanic, between Dome Sandstone and Dunns Mine Limestone.

Synonymy: "Rook Tuff" of Murrell (1977), probably R3.1 unit of Rowlands et al. (1980, p.62).

Derivation of name: West Rook workings, NNW of Willouran Hill.

Map symbol: Bkk.

Type section: Dark, fine-grained rocks on SW side of ridge, 3 km SSE of The Dome; lat. 29°46', long. 137°56'.

Thickness: 42 m in type section; 15-60 m elsewhere.

Distribution: Willouran Ranges.

Lithology: In type section, very dark-weathering medium dark grey or light brownish flagstone, partly laminated. Near Rook workings contains partly tuffaceous grey shale, siltstone with thin reddish porphyritic tuff, possibly an ignimbrite (Whitehead, 1980).

Stratigraphic relationships: Lies conformably between Dome Sandstone and Dunns Mine Limestone.

Age and Correlation: Possibly late Willouran. No certain equivalents known from outside the Willouran Ranges.

Dunns Mine Limestone

Definition: Prominent, ridge-forming sandy carbonate sequence below the more silty Recovery Formation.

Synonymy: "Dunns Mine Formation" of Murrell (1977). Probably unit R3.2-4 of Rowlands et al. (1980, p.62).

Derivation of name: Dunns Mine, 6 km SE of The Dome.

Map symbol: Bku.

Type section: Ridges forming main divide 3 km SSE of The Dome, lat. 29°46', long. 137°56'.

Thickness: 334 m in type section, but less than 50 m to SE.

Distribution: Willouran Ranges.

Lithological sequence in type section:

Top: 26 m limestone, partly sandy, cherty, medium grey, beds up to 15 cm (Collins, 1980).

86 m limestone, sandstone, quartzite interbeds: light to dark grey, with scapolite-like, chlorite porphyroblasts; thin-to medium-bedded.

101 m sandstone, partly carbonate-rich, and carbonate, partly sandy, with minor sedimentary carbonate breccia, thin-to medium-bedded; limestone with shortite pseudomorphs and chlorite.

16 m shale, light and medium grey, thin-bedded.

68 m limestone, partly sandy and quartzite, mainly thin-bedded.

Base: 37 m quartzite, carbonate-rich, light grey, fine-grained; dolomite, partly calcitic and cherty, light brownish; thin-to medium-bedded; some platy, light-medium grey carbonate. Rowlands et al. (1980) report shortite ($Na_2Ca_2(CO_3)_3$) moulds and cauliflower chert (after evaporitic anhydrite nodules). Overall sand:shale:carbonate percentages - 36:5:59.

Stratigraphic relationships: Lies conformably between Rook Tuff and Recovery Formation, with intervention of megabreccia between top and base of Recovery.

Age and Correlation: Possibly late Willouran; may be equivalent to Rockwater Beds of the Peake and Denison Ranges (Ambrose et al., 1981, p.31), and possibly to the Wirrawilka Beds of the Worumba Anticline (Preiss, 1980).

Recovery Formation

Definition: A thick silty to sandy sequence between Dunns Mine Limestone and Hogan Dolomite.

Synonymy: "Recovery Formation" of Murrell (1977). Probably R4 unit of Rowlands et al. (1980, p.61).

Derivation of name: Recovery Creek, 5 km E. of "Callanna".

Map symbol: Bkr.

Type section: Plains and low hills 3 km SE of The Dome; from lat. 29°46', long. 137°56' to lat. 29°45', long. 137°57'.

Thickness: 2 217 m in the type section ; thins to the south.

Distribution: Willouran Ranges.

Lithological sequence in type section:

Top: 60 m quartzite, medium grey, greenish grey, very fine-grained, laminated, mud cracks.

374 m sandstone, fine-grained, and siltstone; grey, greenish grey, brownish, thin-to medium-bedded, lenticular bedding, mud cracks, ripple marks, shale clasts, halite and gypsum casts.

204 m similar sandstone and siltstone to that above with interbedded limestone and dolomite, yellowish, grey brownish; shortite pseudomorphs and micaceous porphyroblasts.

908 m siltstone, sandstone, quartzite, fine-to coarse-grained; grey, greenish grey, brownish, ripple marks, shale clasts, mud cracks, cross-bedding, lenticular bedding, load casts, halite and shortite casts.

529 m siltstone, carbonate (calcitic and dolomitic) and minor fine-grained sandstone; carbonate, grey, yellowish, brownish, thin and medium bedded, with shortite pseudomorphs and micaceous mineral; some covered intervals.

Base: 142 m poorly exposed sandstone, quartzite, grey, platy to flaggy, mud cracks, ripple marks, halite casts. Overall sand:shale:carbonate percentages - 38:45:17.

Stratigraphic relationships: Base is faulted against megabreccia and top conformably overlain by Hogan Dolomite.

Age and Correlation: Possibly late Willouran. Some resemblance to Nilpinna Beds or adjacent units in the Peake and Denison Ranges (Ambrose et al., 1981). May be equivalent to the lithologicallly similar Niggly Gap Beds of the Worumba Anticline (Preiss, 1980).

Hogan Dolomite

Definition: Characterised by poorly outcropping dolomite beds forming a plain between prominent narrow ridges of the lowermost and uppermost dolomite members.

Synonymy: "Hogan Dolomite" of Murrell (1977). Probably R5 unit of Rowlands et al. (1980, p.61).

Derivation of name: Hogan's Well (shown as 10 km ESE of The Dome on Pastoral Plan 12N).

Map symbol: Bkh.

Type section: Plain with marginal ridges 6 km ESE of The Dome; lat. 29°46', long. 137°58'.

Thickness: 645 m in type section.

Distribution: Willouran Ranges.

Lithological sequence in type section:

Top: 2 m dolomite, partly sandy, light yellowish; prominent low ridge.

10 m poorly outcropping sandstone, calcitic and dolomitic; sandy carbonate, green, yellow, brownish.

600 m poorly outcropping dolomite forming plain; partly sandy, calcitic, light brownish grey, pinkish-brown, yellowish, thin-to medium-bedded, rippled sandy lenses and layers, stromatolitic domes, wavy laminations, pale chert layers; possible interbedded shale, siltstone not exposed.

31 m dolomite, grey to dark grey, flaggy, dark chert layers, cauliflower chert nodules, and shortite pseudomorphs.

Base: 2 m dolomite, very pale brown-grey, medium-bedded, light grey chert, wavy ?stromatolitic bedding; prominent low ridge.

Overall sand:shale:carbonate percentages - 3:3:94.

Stratigraphic relationships: Lies conformably between Recovery Formation and Cooranna Formation.

Age and Correlation: Possibly late Willouran.

No certain correlatives outside the Willouran Ranges.

Cooranna Formation

Definition: A thick sequence of mixed lithology lying between the more distinctive Hogan Dolomite and Boorloo Siltstone.

Synonymy: "Cooranna Formation" of Murrell (1977). Probably BSl

and BS2 units of Rowlands et al. (1980, p.61).

Derivation of name: Cooranna Bore, 24 km NW of "Callanna".

Map symbol: Bkc.

Type section: Rounded hills 2 km WSW of the Boorloo workings; lat. 29°45', long. 137°58'.

Thickness: 781 m in the type section.

Distribution: Willouran Ranges.

Lithological sequence in type section:

Top: 94 m sandstone, fine-grained siltstone, partly dolomitic, grey-green, brownish, thin-bedded, fine cross-bedding, lenticular bedding, halite and ?gypsum casts.

135 m interbedded fine sandstone, siltstone and dolomite - sandstone, pale grey, pale brownish, light greenish grey, thin-bedded, lenticular bedding halite, shortite and gypsum casts, mud cracks; siltstone, partly dolomitic, light brown-grey, pale blue-grey, olive grey; dolomite, partly sandy, cherty, light brown-grey, weathering yellowish-orange, medium-bedded.

96 m interbedded calcitic carbonates, siltstone, fine sandstone, similar to the above, with shortite pseudomorphs.

68 m sandstone, siltstone, greyish, weathering brownish, greenish grey, flaggy, mud cracks, halite casts.

41 m siltstone, greyish.

202 m interbedded calcitic and dolomitic carbonates, siltstone and sandstone, grey, green-grey, light brown, light yellowish, thin-to medium-bedded, some wavy, slump and convolute bedding, fine cross lamination, mud cracks, halite and gypsum casts, micaceous porphyroblasts and shortite pseudomorphs.

95 m limestone and dolomite, partly cherty, yellow-brown; sandstone, light brownish, greenish-grey, fine-grained, flaggy, mud cracks, ripple marks, halite and ?gypsum casts.

47 m sandstone, quartzite, light grey, brown or greenish, partly calcitic, fine-grained with lenses of medium-grained sandstone; halite casts in darker-weathering lower part.

Base: 4 m quartzite, beds up to 13 cm, mud cracks, ripple marks. Overall sand:shale:carbonate percentages 43:36:21. Rowlands et al. (1980) report shortite pseudomorphs and cauliflower chert in this sequence.

Stratigraphic relationships: Lies conformably between Hogan Dolomite and Boorloo Siltstone.

Age and Correlation: Possibly late Willouran. May be partly equivalent to Duff Creek Beds of the Peake and Denison region (Ambrose et. al., 1981), and perhaps to part of the Arkaba Hill Beds (Mount, 1980) of the Arkaba Diapir and Worumba Anticline.

Boorloo Siltstone

Definition: A distinctively layered dark siltstone and dolomite sequence at the top of the less disturbed beds of the Callanna Group.

Synonymy: "Boorloo Siltstone" of Murrell (1977). Probably BS3 to BS5 and WU3 to WU5 units of Rowlands et al. (1980, p.62).

Derivation of name: Boorloo Creek, 8 km E. of The Dome.

Map Symbol: Bkb.

Type section: Hilly country west of Boorloo workings and immediately west of a megabreccia mass; lat. 29°45', long. 137°58'.

Thickness: 519 m in the type section.

Distribution: Willouran Range.

Lithological sequence in type section:

Top: 153 m alternating carbonate and grey, green-grey siltstone, minor sandstone - dolomite and limestone units up to 18 m thick, medium grey, dark brown to orange weathering, sandy laminae,

flaggy to medium-bedded, ?tepee structure.

106 m siltstone, light to dark grey, brownish and greenish-grey, thin-bedded.

45 m quartzite, fine-grained, partly laminated, beds up to 20 cm.

170 m siltstone, partly calcitic, very dark grey, platy to flaggy.

10 m dolomite, silty dolomite, grey, thin-bedded.

Base: 35 m siltstone, partly carbonate-rich, dark-grey, mud cracks, ripple marks, ?gypsum impressions.

Overall sand:shale:carbonate percentages 9:74:17.

Rowlands et al. (1980) observed tepee structures and cauliflower chert nodules.

Stratigraphic relationships: Lies conformably on Cooranna Formation; upper contact against megabreccia.

Age and Correlation: Possibly late Willouran. May be partly equivalent to Duff Creek Beds of the Peake and Denison region (Ambrose et al., 1981), and perhaps to part of the sequence from Arkaba Hill Beds to Worumba Dolomite Beds of the Worumba Anticline.

BURRA GROUP

Emeroo Subgroup (upgraded from Emeroo Quartzite).

Definition: Emeroo Subgroup is proposed for the basal arenaceous sequence of the Burra Group, and corresponds to Mawson's (1947) "Emeroo Range basal rudaceous and arenaceous sediments".

Derivation of name: Emeroo Range, southwest Flinders Ranges.

Map symbol: Bo.

Type section: East of "Emeroo" H.S., Emeroo Range.

Thickness: 1 300 m.

Top Mount Sandstone Beds

Definition: Sandy sequence forming the basal part of the Burra Group in the Willouran Range.

Synonymy: "Top Mount Sandstone" of Murrell (1977) extended downward to faulted junction with Callanna Group.

Derivation of name: Top Mount Well, ESE of Mount Norwest, 33 km SW of "Callanna".

Map symbol: Bot.

Type section: Wattle Creek, downstream from Upper Wattle Well, 3 km NE of Kingston Dam; lat. 29°55', long. 137°58'. Subsidiary section E of Rook workings has more sandy basal facies.

Thickness: 744 m in the type section; approximately 1 000 m E of Rook workings.

Distribution: Willouran Range.

Lithological sequence in type section:

Top: 44 m siltstone, dark grey, finely lamianted, platy, with minor interbedded flaggy sandstone and grey dolomite.

81 m quartzite, sandstone, minor grey siltstone, grey dolomite and limestone; thin to medium-bedded.

35 m prominent quartzite, minor shale and calcitic carbonate; thin-to medium-bedded. Minor dark lamination (tourmaline).

30 m siltstone, sandstone and dolomite, flaggy to platy; mud cracks, halite and shortite casts, valley.

25 m prominent quartzite, medium-to coarse-grained, thin-to medium-bedded, wavy lamination, mud crakcs. Pits after shortite are common in this unit throughout the Willouran Ranges.

314 m fine-grained dolomite marble, shale, siltstone, sandstone, quartzite, generally poorly outcropping, thin-to medium-bedded; wavy lamination, ripple marks, mud cracks,

lenticular bedding, ?tepee structures, occasional halite casts.

102 m quartzite, siltstone, shale; platy to medium-bedded, black lamination (tourmaline) mud cracks, ripple marks.

108 m siltstone, shale, greenish-grey, light greyish, laminated, thin-bedded with minor dolomite; partly covered interval.

Base: 5 m dolomite, talcose in some areas, yellowish-brown, partly quartzitic. Overall sand:shale:carbonate percentages - 50:29:21.

Stratigraphic relationships: Lower boundary faulted against brecciated Callanna Group. Conformably overlain by Willawalps Formation.

Age and Correlation: Probably earliest Torrensian in age; may be equivalent to part of River Wakefield Subgroup or Rhynie Sandstone.

Willawalpa Formation

Definition: Quartzite and siltstone sequence below the Witchelina Quartzite.

Derivation of name: Willawalpa Creek, 10 km ENE of Kingston Dam, near Mt. Nor'West outstation.

Map symbol: Bol.

Type section: Near Wattle Creek, upstream from Upper Wattle Well, from lat. 29°55', long. 137°58' to lat. 29°55', long. 137°59'.

Thickness: 2 242 m in type section.

Distribution: Willouran Range. Probably also SW of Cadnia Hill, about 34 km W of "Callanna".

Lithological sequence in the type section:

Top: 96 m sandy siltstone and sandstone, thin-bedded to flaggy; mud cracks.

68 m quartzite, very pale brownish, thin-to medium-bedded, cross-bedding, ripple marks, shale clasts.

677 m partly coarse-grained quartzite, sandstone, siltstone, with minor dolomite, limestone; siltstone and carbonates medium and dark grey; thin-to medium-bedded, wavy lamination, ripple marks, shale clasts, mud cracks, current lineations, lenticular bedding.

113 m quartzite, medium-to coarse-grained, thin-to medium-bedded, cross-bedding, ripple marks.

71 m sandy siltstone and fine sandstone, platy to flaggy, lenticular bedding.

130 m partly coarse sandstone, partly dolomitic, sandy siltstone; flaggy, shale flakes, mud cracks, ripple marks.

969 m partly coarse sandstone, quartzite, siltstone, shale, limestone, dolomite; dolomite partly stromatolitic, dark; siltstone partly black, thin to medium-bedded, lenticular bedding, slump structure, cross-bedding, ripple marks, mud cracks, wavy bedding, shale clasts.

75 m partly coarse sandstone, dark dolomite, sandy shale; platy to flaggy, lenticular bedding.

15 m sandstone, pale weathering, coarse-grained, rounded grains, medium-bedded, ripple marks, cross-bedding.

Base: 28 m sandstone, silty and fine sandstone, lenticular bedding, wavy lamination.

Overall sand:shale:carbonate percentages - 65:28:7.

Stratigraphic relationships: lies conformably between Top Mount Sandstone Beds and Witchelina Quartzite.

Age and Correlation: Probably early Torrensian. May be equivalent to River Wakefield Subgroup, Fountain Spring Beds and Opaminda Formation.

Witchelina Quartzite

Definition: Ridge-forming quartzite-shale sequence below the Skillogalee Dolomite.

Synonymy: "Witchelina quartzite" (Sprigg, 1950), "Witchelina Quartzite" (Forbes and Coats, 1963), "Copley Quartzite" (Murrell, 1977).

Derivation of name: Witchelina Station

Map symbol: Bow

Type section: Old Norwest Gorge, Willawalpa Creek, 12 km SSE of Willouran Hill, lat. 29°52', long. 138°2'.

Thickness: 1 200 m at type section; thins to NW.

Distribution: Willouran Ranges

Lithologies: Feldspathic (plagioclase, microcline) quartzite and sandstone (64%), very light grey, and black or dark grey shales (36%). Sandstones well-sorted, fine-grained, with ripple marks, clay galls; mud cracks more common close to base. Shales silty or sandy toward base but black, finely laminated, more pyritic toward top. Idiomorphic authigenic pyrite in both shale, sandstone. Early-formed shortite sand crystals in some sandstones. Four sandstone units exceed 30 m thickness and together aggregate nearly 500 m. Remainder of sequence dominated by shales in ratio 3:2.

Stratigraphic relationships: transitionally overlies Willawalps Formation and overlain by black shale of Skillogalee Dolomite.

Age and correlation: early Torrensian. Lithologically equivalent to upper Copley Quartzite (Parkin and King, 1952), Wortupa Quartzite, Yednalue Quartzite and Bungaree Quartzite.

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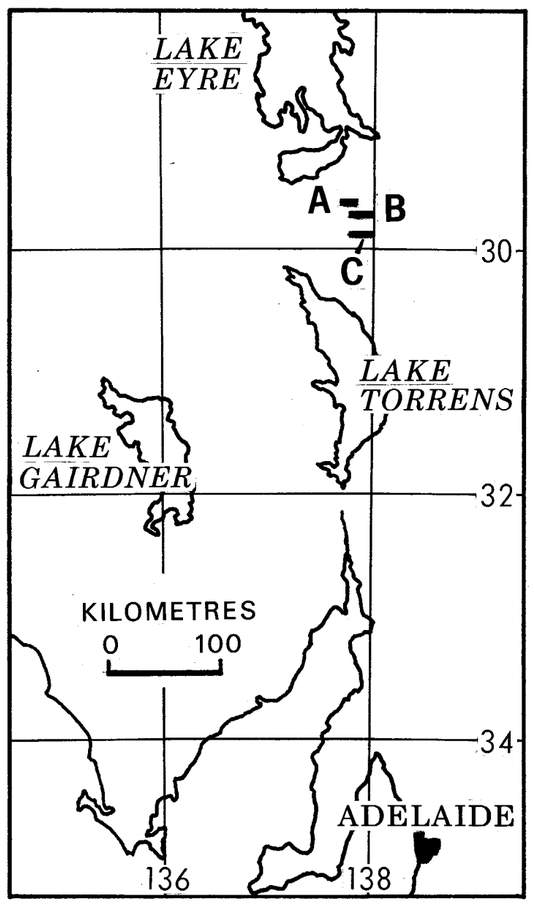
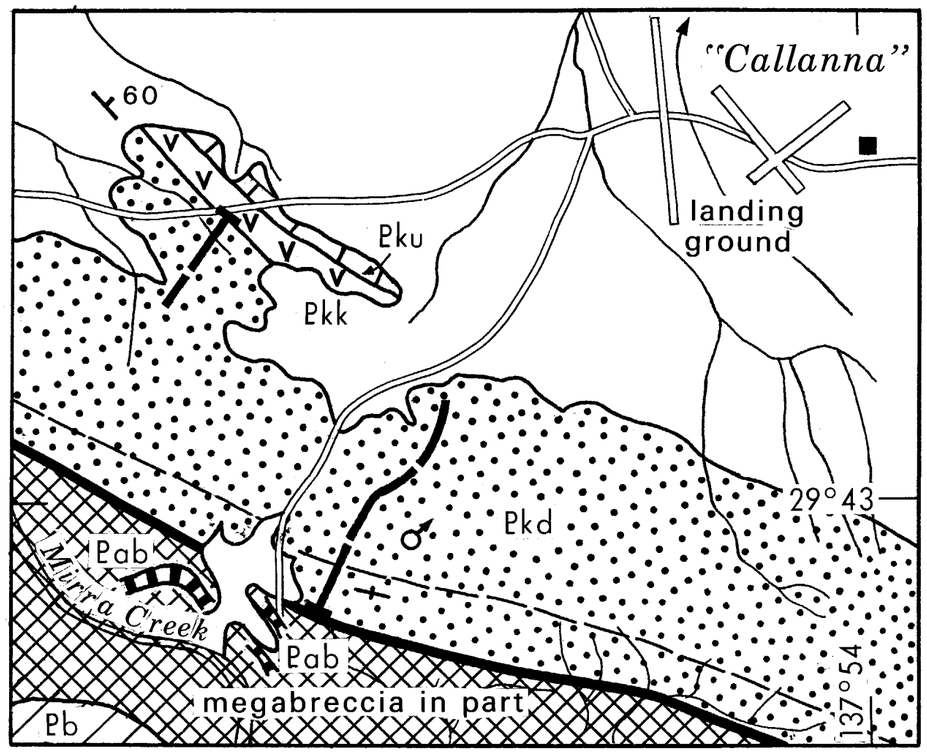
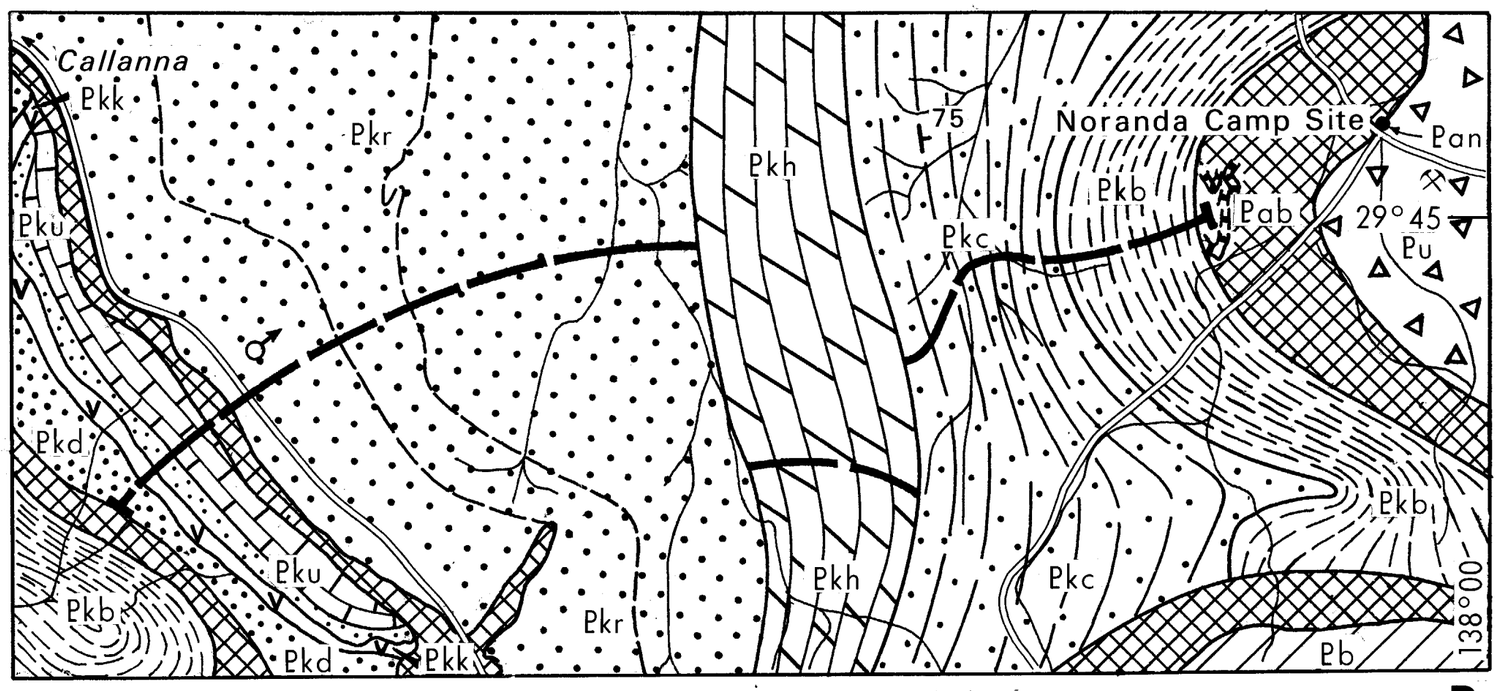
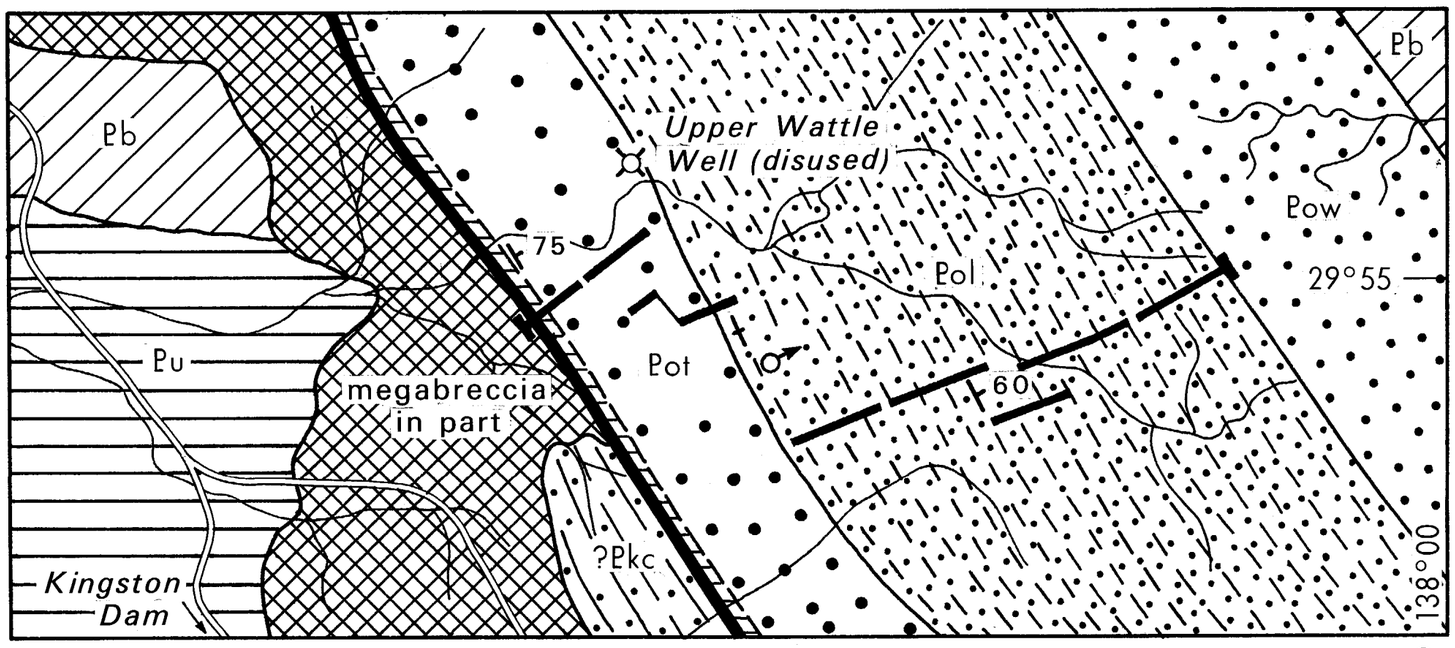




DOME SANDSTONE **A**



CURDIMURKA SUBGROUP **B**



EMEROO SUBGROUP **C**

UMBERATANA GROUP

Diamictite _____ Pu

BURRA GROUP undifferentiated _____ Pb

Emeroo Subgroup

Witchelina Quartzite _____ Pow

Willawalpa Formation _____ Pol

Top Mount Sandstone Beds _____ Pot

CALLANNA GROUP

Curdimurka Subgroup

Boorloo Siltstone _____ Pkb

Cooranna Formation _____ Pkc

Hogan Dolomite _____ Pkh

Recovery Formation _____ Pkr

Dunns Mine Limestone _____ Pku

Rook Tuff _____ Pkk

Dome Sandstone _____ Pkd

Arkaroola Subgroup

Black Knob Marble _____ Pab

Noranda Volcanics _____ Pan

Megabreccia or crush zone _____

Fault _____

Section Line _____

Strike and dip of bedding _____ 60

Vertical bedding _____

Facing of bedding _____

Boorloo copper workings _____

KILOMETRES

0 1 2 3

Drn T.E.

81—436 S.A. Department of Mines and Energy

PROPOSED CORRELATION OF LOWER ADELAIDEAN SEQUENCES

SUBDIVISION OF LOWER ADELAIDEAN, WILLOURAN RANGES

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

COMPILED B.F.
DRAWN S.R.
DATE 26/5/81
CHECKED
SCALE
C.D.O.
DATE
PLAN NUMBER S1554 4

TABLE 1

AGE	PEAKE & DENISON RANGES	BARRIER RANGES	MOUNT PAINTER REGION	WILLOURAN RANGES	WORUMBA ANTICLINE	MID-NORTH REGION
TORRENSIAN	BURRA GROUP: EMEROO SUBGROUP: Mount Margaret Qte. Fountain Spring Beds. Unnamed siltstone ? Murrana Beds	hiatus	BURRA GROUP: EMEROO SUBGROUP: Wortupa Quartzite Opaminda Formation Blue Mine Conglomerate Woodnamoka Phyllite Humanity Seat Formation	BURRA GROUP: EMEROO SUBGROUP: Witchelina Quartzite Willawalpa Formation Top Mount Sandstone Beds	BURRA GROUP: EMEROO SUBGROUP: Yednalue Quartzite RIVER WAKEFIELD SUBGROUP: Unnamed siltstone Wirreanda Dolomite Beds	BURRA GROUP: EMEROO SUBGROUP: Bungaree Quartzite RIVER WAKEFIELD SUBGROUP Rhynie Sandstone
WILLOURAN	CALLANNA GROUP: CURDIMURKA SUBGROUP: Duff Creek Beds Nilpinna Beds Warloan Beds Rockwater Beds ARKAROOLA SUBGROUP: Cadlareena Volcanics Coominaree Dolomite Younghusband Conglomerate.	hiatus POOLAMACCA GROUP: Wilangee Volcanics Boco Formation Christine Judith Conglomer. Lady Don Quartzite	CALLANNA GROUP: hiatus ARKAROOLA SUBGROUP: Wooltana Volcanics Wywyana Formation Paralana Quartzite	CALLANNA GROUP: CURDIMURKA SUBGROUP: Boorloo Siltstone Cooranna Formation Hogan Dolomite Recovery Formation Dunns Mine Limestone Rook Tuff Dome Sandstone ARKAROOLA SUBGROUP: Noranda Volcanics Black Knob Marble	CALLANNA GROUP: CURDIMURKA SUBGROUP: Worumba Dolomite Beds Waraco Limestone Kirwan Siltstone Arkaba Hill Beds Niggly Gap Beds Wirrawilka Beds ARKAROOLA SUBGROUP: Unnamed volcanics	CALLANNA GROUP: CURDIMURKA SUBGROUP: River Broughton Beds
PRE-ADELAIDEAN	PEAKE METAMORPHICS	WILLYAMA COMPLEX	MOUNT PAINTER COMPLEX			

Observed stratigraphic relationship.
Inferred stratigraphic relationship.
Observed unconformity.