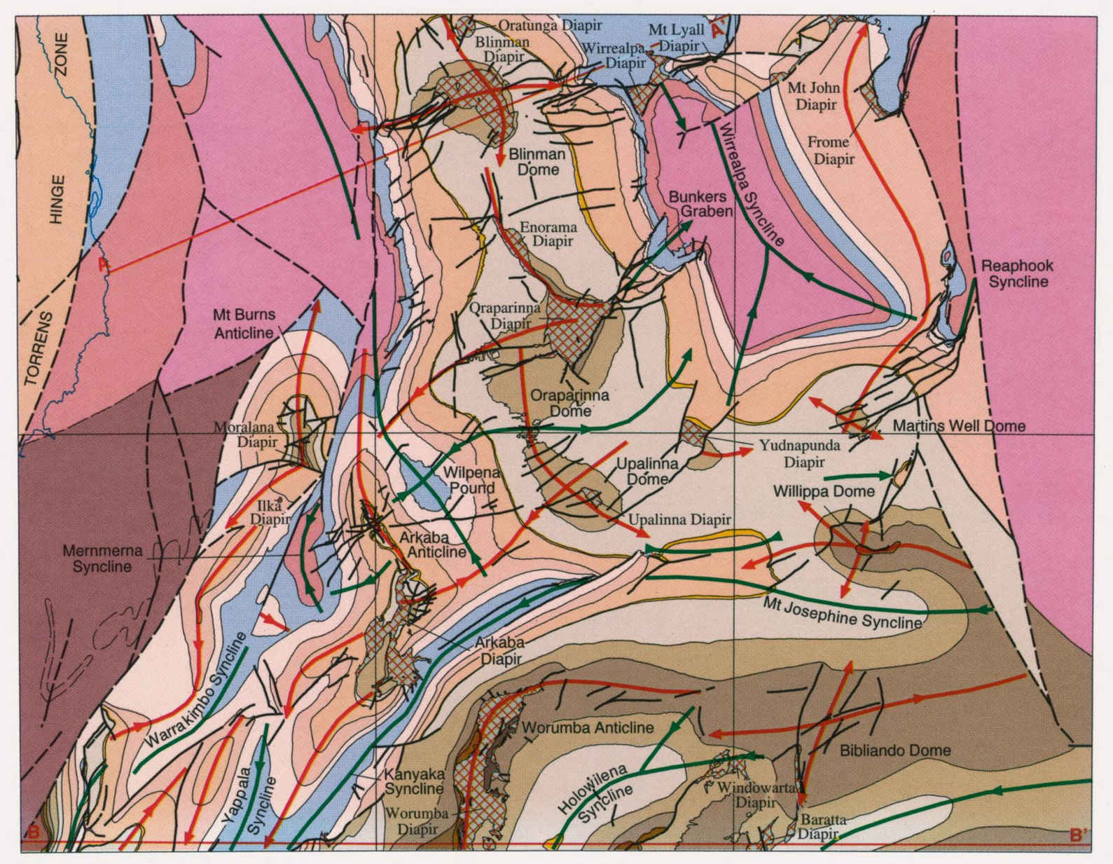
PARACHILNA

GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT OF PRIMARY INDUSTRIES AND RESOURCES SA

PRE-MESOZOIC STRUCTURAL SKETCH



SCALE 1:1 000 000

Cambrian
- Middle Cambrian: Lake Frome Group
- Early Cambrian: Wirrealpa limestone and Billy Creek Formation
- Hawker Group

Adelaidean to Cambrian: Undifferentiated

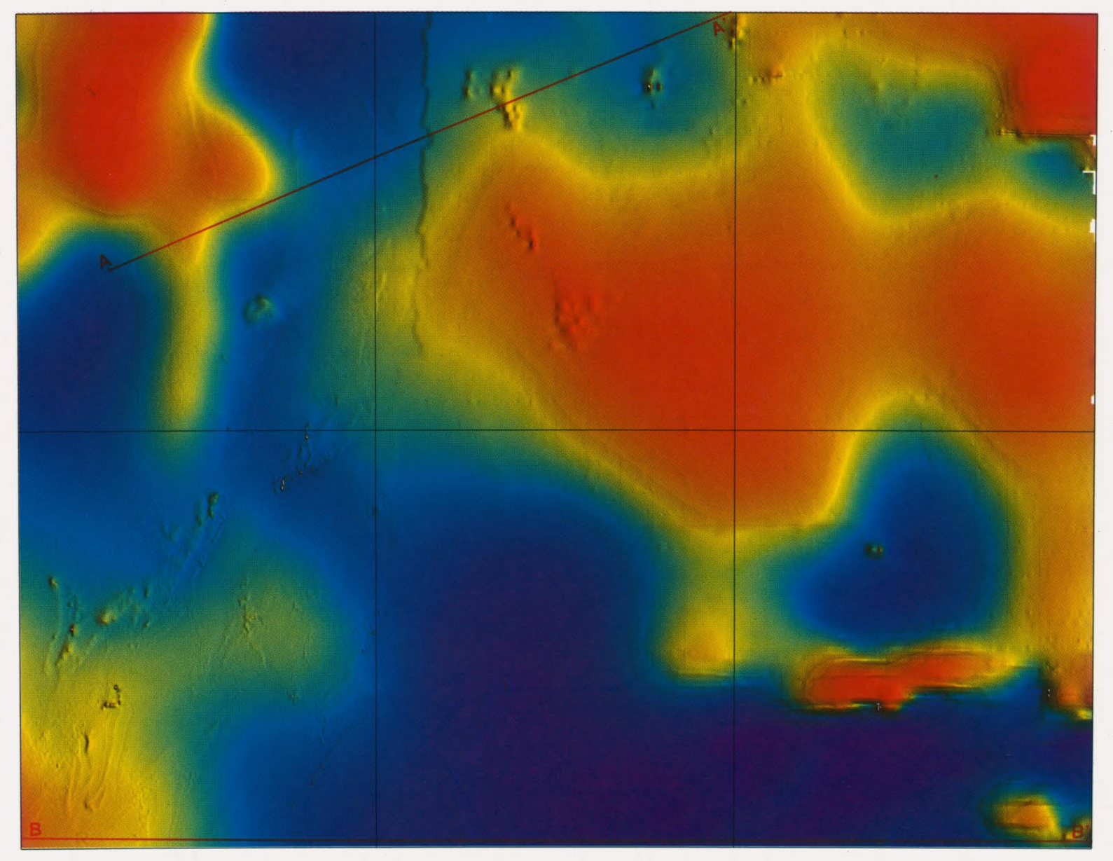
Adelaidean
- Late Marinoan: Pound Subgroup
- Wonoka Formation and Bunyeroo Formation
- Mid-Marinoan: Sandison Subgroup
- Early Marinoan: Yerelina Subgroup
- Upalinna Subgroup

Adelaidean
- Late Sturtian: Nepouie Subgroup
- Mid-Sturtian: Yudnamutana Subgroup
- Late Torrensian: Saddleworth Formation - Auburn Dolomite
- Mid-Torrensian: Mundallio Subgroup
- Early Torrensian: Emeroo Subgroup
- River Wakefield Subgroup
- Late Willouran: Curdimurka Subgroup

Diapiric breccia and enclosed xenoclasts. Inferred age of multiple intrusions: Torrensian to Cambrian

- Syncline, showing direction of plunge
- Anticline, showing direction of plunge
- Geological section A A'
- Geological boundary; generally disconformable
- Geological boundary interpreted from magnetics
- Fault
- Inferred fault

TOTAL MAGNETIC INTENSITY IMAGE



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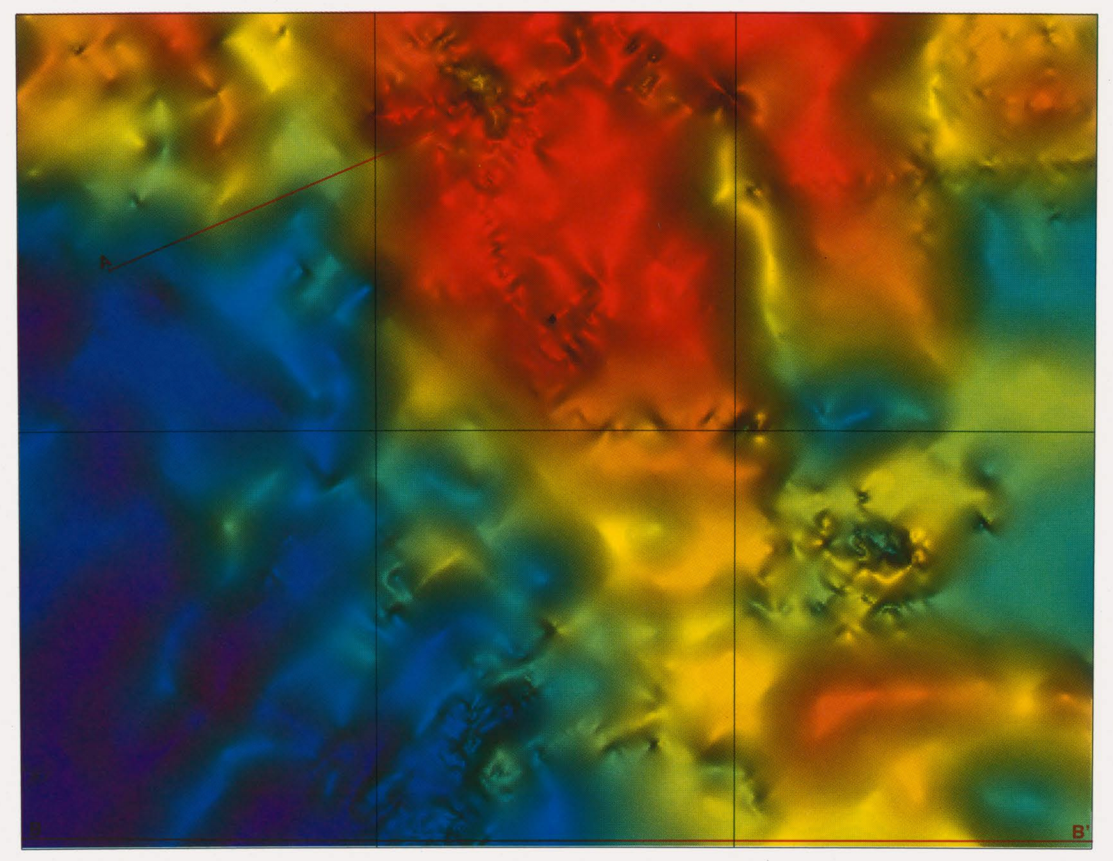
n Tesla: 3140 3800 4460 5120 5780 6440

The Total Magnetic Intensity Image has been compiled using aeromagnetic data from the Department of Primary Industries and Resources SA (South Australian Exploration Initiative, 1994,1995) and the Bureau of Mineral Resources (now Australian Geological Survey Organisation) 1965.

Aeromagnetic data has been merged, gridded and image processed by the Mineral Provinces Branch of the Department of Primary Industries and Resources SA.

BOUGUER GRAVITY ANOMALY MAP



SCALE 1:1 000 000

Milligals: -41 -32 -22 -12 -3 6

The Bouguer Gravity Anomaly Map has been compiled using gravity data from the Department of Primary Industries and Resources SA State Gravity database.
Gravity data have been gridded and image processed by the Mineral Provinces Branch, Department of Primary Industries and Resources SA.

MAP REFERENCE

GEOLOGICAL BOUNDARY		RELIEF FEATURES	
OBSERVED		SAND DUNE	
INFERRED		TRIANGULATION STATION	△
UNCONFORMITY		IDENTIFIED POINT (ELEVATION IN METRES)	•645
FAULT		SPOT HEIGHT	•256
OBSERVED		HYDROGRAPHIC FEATURES	
INFERRED		LAKE	
FAULT OR MONOCLINAL FOLD		CLAYPAN, SALTPAN	
BEDDING		EPHEMERAL STREAM	
VERTICAL		FLOODPLAIN	
INCLINED	25	WATERHOLE	W.H.
TREND OF BEDDING		SPRING	
TYPE SECTION		BORE, WELL	B, W
GEOLOGICAL SECTION	A A'	DAM	
EXPLORATION DRILLHOLE		CULTURAL FEATURES	
STRATA SEQUENCE (THICKNESS IN METRES)	Q-T 165 Ꞓf 45	HIGHWAY	
MINE	⚒	SECONDARY ROAD	
MINERAL OCCURRENCE	×	TRACK	
COPPER Cu / BARITE Ba		RAILWAY	
GOLD Au / MANGANESE Mn		POWER TRANSMISSION LINE	
IRON Fe / ASBESTOS Asb		FENCE	
LEAD Pb / COBALT Co		UNDERGROUND PIPELINE	
SILVER Ag / NICKEL Ni		BUILDING	
ZINC Zn / ARSENIC As		LANDING GROUND	

SECOND EDITION compiled by P. Reid, B.Sc. (Hons) and W.V. Preiss, Ph.D. from geological mapping by C.R. Dalgarno, M.Sc. and J.E. Johnson (FIRST EDITION) with contributions from Departmental mapping, Company reports and University theses.

R.S. Robertson, B.Sc. (Hons), Acting Manager, Geological Survey Branch.

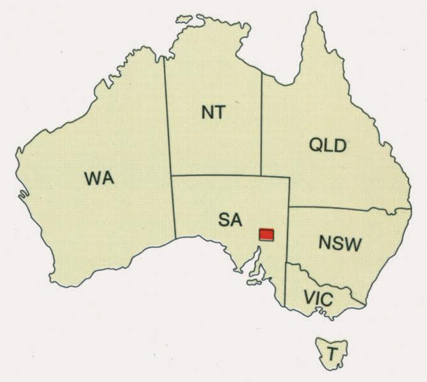
Topographic detail based on TOPO_250K GEODATA (source scale 1:250 000) supplied by Australian Surveying and Land Information Group (AUSLIG), ACT with amendments by Department of Primary Industries and Resources SA.

Cartography by Spatial Information Services, Primary Industries and Resources SA. Generated from SA_GEOLOGY database. Digital data available from Department of Primary Industries and Resources SA.

D.R. Mutton, Chief Executive, Department of Primary Industries and Resources SA.

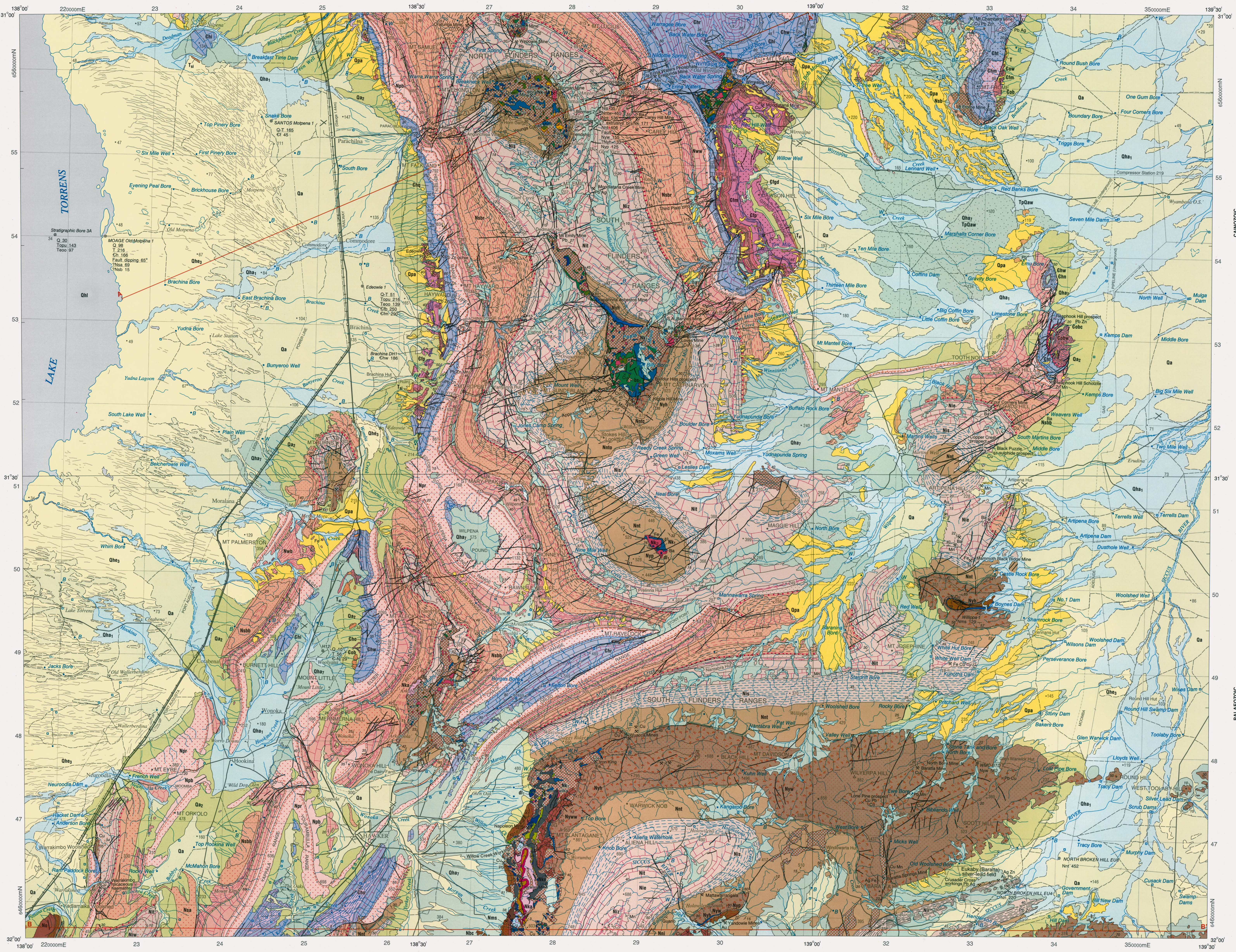
The Hon. R.G. Kerin, M.P., Deputy Premier, Minister for Primary Industries, Natural Resources and Regional Development, South Australia.

Published 1999.



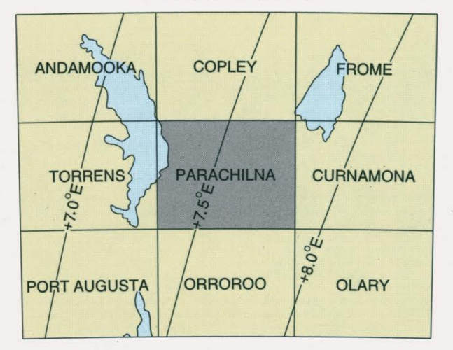
AUSTRALIA 1:250 000

SA GEOLOGICAL ATLAS SERIES SHEET SH 54-13



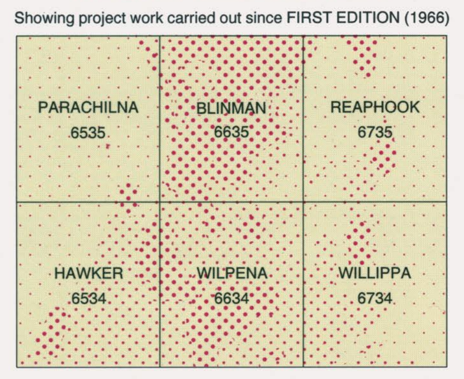
INDEX TO ADJOINING SHEETS

Magnetic Declination 1992



INDEX TO 1:100 000 SHEETS

Showing project work carried out since FIRST EDITION (1966)



- Detailed field mapping.
- Interpretation of aerial photography with local field checking.
- Interpretation of satellite imagery with minor field checking.

SCALE 1 : 250 000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

Copies of this map can be obtained from the Department of Primary Industries and Resources SA, Adelaide, or the Australian Geological Survey Organisation, Canberra, ACT.

Printed for the Geological Survey of South Australia as a contribution to the Geological Map Series of the Commonwealth.

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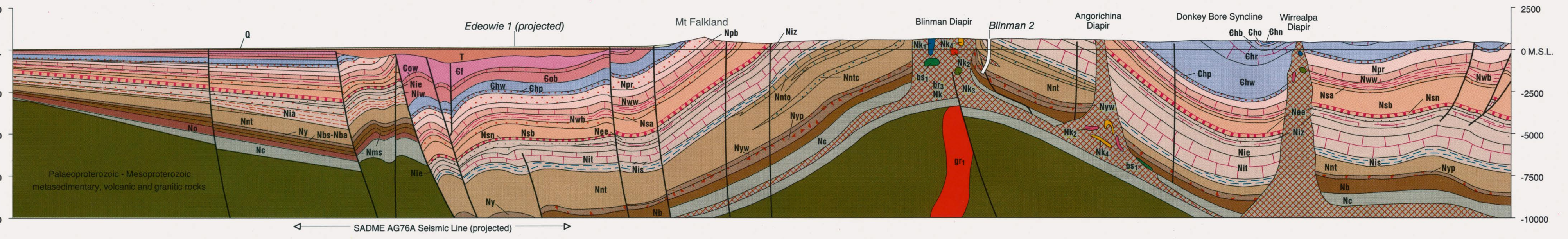
CUSTOM PRESS
ADELAIDE

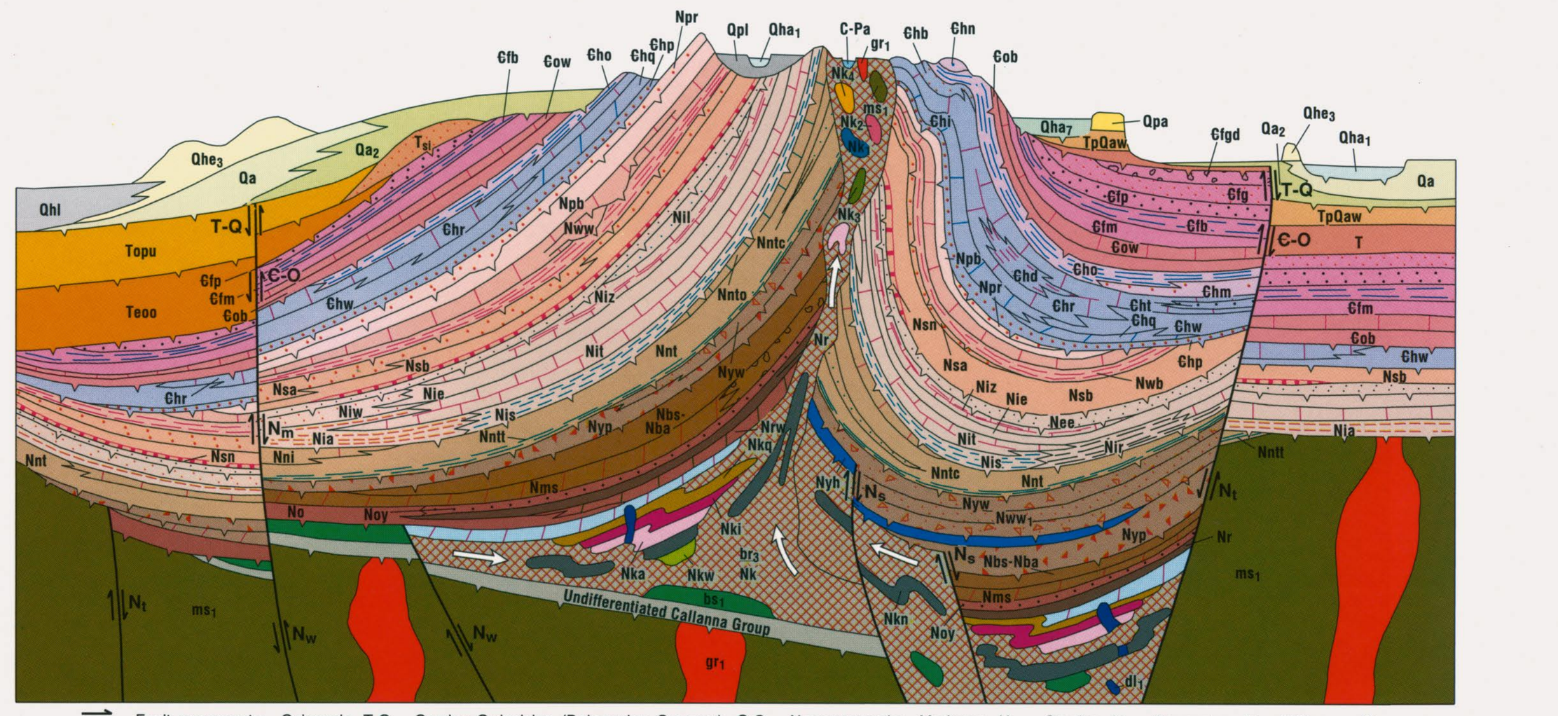
SECTION A-A'

V/H = 1/1

Note: Quaternary units not shown



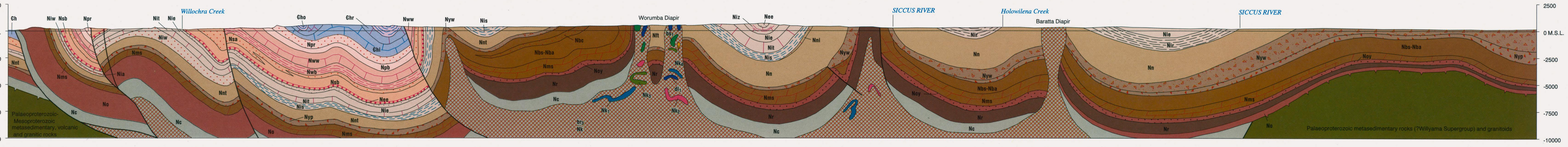
ROCK RELATION DIAGRAM



SECTION B-B'

V/H = 1/1

Note: Cainozoic units not shown



SECOND EDITION 1999

REFERENCE

CAINOZOIC

QUATERNARY — HOLOCENE

- **Qhl** Lake deposits: Gypseous clay, saline silt and quartz sand.
- **Qha₁** Modern stream alluvium and high-level terrace flood deposits; Cobbles, gravel, sand, silt and clay; usually bouldery near ranges; mostly unconsolidated but may contain incipient soils.
- **Qha₇** Low-angle scree and talus deposits: Unconsolidated angular rock fragments, grit, sand and silt. Usually clast-supported on slopes; commonly within or flanking ranges and higher level gravels.
- **Qha₇ TpQaw** Scree and talus deposits overlying Willawortina Formation.
- **Qhe₃** Aeolian quartz dune sand and sand spreads: Pale yellow to ochre-red, unconsolidated, mobile longitudinal and locally transverse dunes. Age uncertain, probably mid- to late Holocene.

PLEISTOCENE-HOLOCENE

- **Qa** Alluvium: Cobbles, gravel, sand, silt and clay; red-brown, often poorly sorted. Consolidated and dissected terrace and distal fan deposits; may have incipient soil horizons, often with gibber spreads and gypseous materials.
- **Qa₂** Alluvial fans: Flanking bedrock outcrops, consolidated but not cemented, with incipient to strongly developed soil horizonation. Poorly sorted, bouldery to gravelly; proximal to source. Older fans are larger and dissected.

PLEISTOCENE

- **Qpl** Lacustrine deposits: Brown to olive-green, finely laminated calcareous silt, fine-grained sand and mud. Playa-lacustrine deposit found in palaeovalleys.
- **Qpa** High-level piedmont gravels: Cobble to gravel deposits with coarse-grained sand matrix, forming remnant sheets 1-5 m thick on dissected palaeo-erosional surfaces emanating from the Flinders Ranges highlands. Usually poorly sorted; weakly to moderately cemented by clayey gypsum and/or calcrete.

PLIOCENE-PLEISTOCENE

- **TpQaw** **WILLAWORTINA FORMATION:** Calcareous, silty to sandy clay and medium-grained sand grading to boulder deposits near ranges. Piedmont slope deposit.

TERTIARY

- **Tsi** Silcrete, undifferentiated: Grey to buff-coloured micro- to cryptocrystalline silica horizons; both massive groundwater and massive to columnar-vuggy pedogenic forms developed in older sandy to silty, rarely cross-bedded and conglomeratic substrates, possibly equivalent to upper Eyre Formation.
- **T** Tertiary sediments, undifferentiated: Grey, subrounded silt and rare sand, partly carbonaceous, with basal polished siliceous pebble conglomerate. Case-hardened pebbly calcareous sand and silt near Grindstone Range. May include Eyre Formation equivalents.

OLIGOCENE-MIOCENE

- **Topu** **NEUROODLA FORMATION** (subsurface only): Green, grey to black, argillaceous and white calcareous mudstone; basal carbonaceous clay rich in shell fragments and ostracods.

EOCENE

- **Teoo** **COTABENA FORMATION** (subsurface only): Fluvio-lacustrine, partly carbonaceous, fine to coarse-grained sand, silt, clay and lignite.

CARBONIFEROUS-PERMIAN

- **C-Pa** **ALPANA FORMATION:** 3 m thick lower lodgement till of faceted, polished and striated clasts with a strong north-south fabric, overlain by 17 m of probable proglacial sand with small pockets of gravel and lonestones. Sediments preserved in a palaeovalley eroded into bedrock.

PALAEOZOIC — CAMBRIAN

MIDDLE CAMBRIAN — LAKE FROME GROUP (Ꞓf)

- **Ꞓfgd** DAWSON HILL MEMBER: Well-rounded quartz-arenite pebbles and cobbles concentrated in channels and down planar foresets.
- **Ꞓfg** **GRINDSTONE RANGE SANDSTONE:** Cross-bedded mature quartz arenite with minor feldspar and upward-decreasing traces of volcanic lithic clasts. Trilobite tracks and mudcracks in basal sandstone.
- **Ꞓfp** **PANTAPINNA SANDSTONE:** Red and white feldspathic, medium-grained sandstone with minor micaceous siltstone and shale: planar and trough cross-bedding; occasional heavy-mineral laminae. Basal beds contain trilobite tracks and rare ooid grainstones; bioturbated beds and large ripple bed forms occur higher up.
- **Ꞓfb** **BALCORACANA FORMATION:** Repetitively bedded red and green micaceous siltstone-shale-carbonate cycles with pencil-thin chalky limestone bands and laminated or stromatolitic carbonates 0.2-1 m thick. Ripples, cross-bedding, mudcracks, halite casts; trilobite tracks are common.
- **Ꞓfm** **MOODLATANA FORMATION:** Micaceous siltstone, shale, arkosic fine to medium-grained sandstone and minor cryptalgal carbonate; tabular cross-bedding common with occasional scour channels. Siltstone generally planar to ripple-bedded with mudcracks, evaporite casts and trilobite tracks. Metadoxidid trilobites occur near the top.

EARLY CAMBRIAN

- **Ꞓow** **WIRREALPA LIMESTONE:** Lime mudstone and wavy bedded to nodular limestone in a calcareous, silty matrix. Skeletal, peloid and oolitic beds are subordinate, but calcimicrobe buildups are prominent at a number of localities. Cryptalgal laminae, stromatolites and columnar thrombolites are common; trilobites and brachiopods occur close to the base.
- **Ꞓob** **BILLY CREEK FORMATION:** Red siltstone and sandstone. (Ꞓo)
- **Ꞓobe** EREGUNDA SANDSTONE MEMBER: Fine-grained, current-lineated and cross-stratified greyish red arkose with minor interbedded shale and siltstone.
- **Ꞓobn** NILDOTTIE SILTSTONE MEMBER: Ripple laminated, coarse-grained greyish red siltstone with minor shale and fine-grained sandstone; abundant ripple marks, halite casts and desiccation cracks.
- **Ꞓobw** WARRAGEE SILTSTONE MEMBER: Evenly to ripple-laminated, cyclic red-green shale and dolomite near the base followed by red shale and siltstone; tuff bands. Emuellid trilobites are abundant at several levels.
- **Ꞓobd** EDEOWIE LIMESTONE MEMBER: Planar to wavy laminated, platy dolomite mudstone with peloidal sandy limestone and tuff.
- **Ꞓobc** COADS HILL MEMBER: Conglomerate with cobbles of Bendieuta Formation in very coarse-grained sandy matrix; feldspathic sandstone; ripple-laminated sandstone, siltstone, shale and burrow-mottled and stromatolitic limestone; 12 or more tuff bands.

MORALANA SUPERGROUP — HAWKER GROUP (Ꞓh)

- **Ꞓhn** **NARINA GREYWACKE:** Khaki-green, flat to ripple-laminated, silty to medium-grained feldspathic sandstone. Reworked shale clasts, limestone chips and coarse, well-rounded quartz granules appear sporadically; carbonate interbeds are rare.
- **Ꞓhm** **MOOROWIE FORMATION:** Prograding reef complexes of near-shore shale and siltstone, shelf margin oolite and reef limestone, all cut by high-energy erosional channels. Tabulate corals, archaeocyaths and calcimicrobes of Middle to Late Botomian age.
- **Ꞓho** **ORAPARINNA SHALE:** Khaki-green silty shale becoming calcareous upwards. Abundant limestone concretions commonly contain fossil fragments.
- **Ꞓhb** **BUNKERS SANDSTONE:** Thin basal sequence of flat to ripple-laminated, silty fine-grained quartz sandstone overlain by planar to trough cross-bedded, medium-grained quartz sandstone. Trace fossils occur at several levels but body fossils are rare.
- **Ꞓhr** **MERNMERNA FORMATION:** Dark grey, fine-grained, nodular to mottled, well-bedded limestone and shaly limestone. Slumped turbidite couplets of lime silt and mud in lower part grade up to dominantly grain-flow deposits. Allochthonous blocks of lithified platform limestone up to 15 m diameter in the Donkey Bore Syncline. Upper Mernmerna Formation is transgressive with a lower onlapping lag of coarse-grained sand and occasional dolomitised pebbles, passing up into dark grey nodular lime mudstone.
- **Ꞓht** **BENDIEUTA FORMATION:** Planar to trough cross-bedded, coarse-grained, sparingly fossiliferous quartz sandstone, ooid-peloid grainstone and fenestral limestone. Intensively burrowed calcareous sandstone beds in middle part.
- **Ꞓhd** **MIDWERTA SHALE:** Grey-green shale and calcareous shale, minor nodular limestone.
- **Ꞓhw** **WILKAWILLINA LIMESTONE:** Light to dark grey, massive, bedded lime mudstone, wackestone and isolated archaeocyath-*Renalcis* bioherms; shelly fossils. Deeper facies include archaeocyath-sponge buildups flanked by mottled lime mudstone. High-energy bioclastic grainstone in shallower marine environments. Disconformity at top of lower Wilkawillina Limestone is solution sculptured forming enlarged fractures, karst collapse breccias and possible calcrete profiles; surface is capped by conspicuous red crust up to 0.1 m thick but is absent south of the Chace Range, where only a flooding surface is present.
- **Ꞓhi** **WIRRAPOWIE LIMESTONE:** Dark grey, laminated to mottled lime mudstone and fine-grained limestone with thin tongues of cross-bedded oolite, and numerous stromatolite, columnar thrombolite, and archaeocyath-*Renalcis* bioherms.
- **Ꞓhq** **WOODENDINNA DOLOMITE:** Well-bedded, mudcracked, stromatolitic and oolitic, silty dolomitic mudstone, with abundant quartz-sand interbeds in lower half. Lithoclast gravel trains near Wirrealpa Diapir.
- **Ꞓhp** **PARACHILNA FORMATION:** Upward-fining suite of sandstone and siltstone with minor carbonate interbeds. U-shaped dwelling burrows of *Diplocraterion* typifies basal units. Ripple marks, thin brown shale laminae and desiccation cracks are common in the lower bioturbated beds.

PROTEROZOIC — NEOPROTEROZOIC (ADELAIDEAN)

MARINOAN — HEYSEN SUPERGROUP — WILPENA GROUP — POUND SUBGROUP (Np)

- **Npr** **RAWNSLEY QUARTZITE:** Mature, medium-grained sandstone with intervals of trough cross-bedding and wavy, disrupted cryptalgal lamination; planar and cross-bedded sandstone.
- **Npre** EDIACARA MEMBER: Comprises from base up: Massive channelised sandstone; massive amalgamated sandstone with deformed contacts; laminated siltstone and fine-grained sandstone; interbedded siltstone and fossil-bearing sandstone; concretionary cross-bedded sandstone. Disconformable base; thickness ranges from 100 to 300 m in erosional palaeo-valleys.
- **Nprc** CHACE QUARTZITE MEMBER: Mature, white, flat-bedded quartzite, often with wavy disrupted cryptalgal lamination; similar in appearance to upper Rawnsley Quartzite; sharp to disconformable base.
- **Npb** **BONNEY SANDSTONE:** Red micaceous siltstone and sandstone parasequences with cross-bedding, ripple marks, mud-clasts and mudcracks; rippled and cross-bedded medium-grained sandstone near middle of sequence.
- **Npbp** PATSY HILL MEMBER: Two prominent limestone-sandstone parasequences consisting of cryptalgal laminated grey limestone or wavy to swaley cross-stratified limestone, grading up to thickly bedded oolitic calcarenite with stromatolitic bioherms followed by reddish, micaceous sandstone. Sharp or erosive base.
- **Nww** **WONOKA FORMATION:** Storm-dominated mixed carbonate-siliciclastic sequence. Lower unit consists of interbedded maroon mudstone and sharp-based, fine-grained calcareous and dolomitic sandstone (tempestites), commonly with sole marks, graded bedding, combined-flow ripples and hummocky cross-stratification. Middle unit is finely laminated reddish calcareous mudstone with varying proportions of thinly bedded cyclic, micritic limestone. Upper unit is finely laminated green siltstone, medium to thickly bedded limestone and calcareous sandstone (tempestites) with planar bedding, hummocky cross-stratification and climbing ripples. *Palaeopascichnus* trace fossil near top. (Nw)
- **Nwww** WEARING DOLOMITE MEMBER: 1-2 m thick, highly condensed cyclic 20-30 mm green-purple event-bed shale grading to dolomicrite which forms hardgrounds. Dolomicrite is often partly to completely reworked. Base is generally sharp.
- **Nwb** **BUNYEROO FORMATION:** Brick-red shale with thin, light green bands and reduction spots; upper half commonly grey-green. 10-30 mm thick layer with subrounded fragments of felsic volcanics occurs ~60 m above base (interpreted bolide impact layer, attributed to impact at Lake Acraman in the Gawler Ranges).
- **Nwbc** WILCOLO SANDSTONE MEMBER: Thin pebbly lag sandstone or massive coarse-grained to pebbly, cross-bedded channelised sandstone of fluvial to shallow marine origin. Transgressive, with disconformable base.

SANDISON SUBGROUP (Ns)

- **Nsa** **ABC RANGE QUARTZITE:** White, heavy-mineral-laminated cross-bedded quartzite with ripple marks, mudcracks and mud clasts. Prograding, diachronous, shallow marine sequence which commonly consists of four or five upward-coarsening cycles capped by orthoquartzite.
- **Nsb** **BRACHINA FORMATION:** Red-brown and grey-green siltstone and sandstone.
- **Nsbb** BAYLEY RANGE SILTSTONE MEMBER: Thinly bedded siltstone and sandstone with current ripples, planar tabular cross-bedding and herring-bone cross-bedding, arranged into several upward-shallowing, upward-coarsening cycles ~5 m thick.
- **Nsbr** MOORILLAH SILTSTONE MEMBER: Laminated to massive, reddish, coarse-grained siltstone; commonly with prominent banding. Base marked by a 10 m thick scarp-forming fine-grained sandstone.
- **Nsbl** MOOLOOLOO SILTSTONE MEMBER: Drab olive-green micaceous siltstone overlying lower red sandstone.
- **Nsn** **NUCCALEENA FORMATION:** Laminated to well-bedded, pink, cream to buff-yellow, fine-grained dolomicrite. Cyclic purple shale interbeds in upper part. Disconformable base.

YERELINA SUBGROUP (Ne)

- **Nee** **ELATINA FORMATION:** Red-brown, medium-grained arkosic sandstone and red, pebbly, sandy siltstone of glacial origin. Lower slumped sandstone with common granule trains; a middle siltstone with dropstones and common interbeds of dropstone diamictite, and an upper ripple cross-laminated sandstone and current reworked diamictite. Cobble to boulder-sized clasts, occasionally glacially smoothed and striated; clasts of altered basalt, dolerite, crystal tuff and dolomite. Disconformable base.

UMBERATANA GROUP — UPALINNA SUBGROUP (Nl)

- **Nil** **YALTIPENA FORMATION:** Channel-forming, red-brown, swaley cross-stratified, intraformational limestone with sandy beds and diapiric detritus, fining upwards to parallel-laminated calcareous red-brown siltstone. Where preserved, top of sequence grades to a medium to coarse-grained, feldspathic sandstone with abundant wave and current ripples, herring-bone cross-bedding, rain drop impressions and mudcracks. Irregular basal disconformity, with possible karst developed in places along the Trezona Range.
- **Niz** **TREZONA FORMATION:** Cycles of laminated greenish grey calcareous shale and siltstone grading to pale red and grey, fine-grained stromatolitic, oolitic and intraclastic hash breccia limestone.
- **Nie** **ENORAMA SHALE:** Laminated grey-green and minor red shale, silty shale and rare fine-grained sandstone. Poorly outcropping in valleys.
- **Nit** **ETINA FORMATION:** Cycles of thick, grey, oolitic and stromatolitic limestone with intervening grey-green siltstone. Limestone is commonly sandy with trough cross-bedding. Contains diapir-derived pebble conglomerates near the Enorama Diapir.
- **Niw** **WILMINGTON FORMATION:** Red-brown micaceous siltstone with fine sandstone interbeds becoming common in upper part.
- **Nia** **ANGEPENA FORMATION:** Finely laminated red-brown to purple siltstone with mudcracks; dolomitic interbeds in lower half. Erosional base.
- **Nis** **SUNDERLAND FORMATION:** Grey-green calcareous siltstone and fine to medium-grained sandstone with coarse-grained to pebbly sandstone and/or oolitic limestone, commonly conglomeratic with large clasts of stromatolitic limestone and siltstone, overlying basal disconformity. Slumping and flaser bedding common in upper part.
- **Nir** **TARCOWIE SILTSTONE:** Grey-green siltstone with wavy and lenticular laminations of brown sandy siltstone or fine sandstone and thin grey shale drapes; characteristic flaser bedding. Medium-grained lenticular-bedded sandstone and local grit at base (Cox Sandstone Member), 1-2 m thick. Disconformable base.

STURTIAN — NEPOUIE SUBGROUP (Nn)

- **Nni** **BRIGHTON LIMESTONE:** Stromatolitic, oolitic and intraclastic limestone; massive, partly cross-bedded, commonly with erosional base. Well-developed down-lapping parasequences preserved south of `Holowilena´.
- **Nnt** **TAPLEY HILL FORMATION:** Finely laminated grey-green siltstone to fine lithic sandstone cycles.
- **Nnto** WOCKERAWIRRA DOLOMITE MEMBER: Sharp-based, condensed limestone at base overlain by cycles of dolomitic siltstone to ripple cross-laminated, fine-grained silty dolomite. Occupies erosional valley formed around northern slopes of Oraparinna Diapir.
- **Nntc** MOUNT CAERNARVON GREYWACKE MEMBER: Ridge-forming fine-grained lithic grey-green sandstone. Diamictite interbeds at Mount Caernarvon.
- **Nntt** TINDELPINA SHALE MEMBER: Discrete cyclic bands of thinly laminated dolomicrite interbedded with dark grey, very thinly laminated siltstone and silty shale. Conglomerate bands around Oraparinna Diapir. Disconformable base.

YUDNAMUTANA SUBGROUP (Ny)

- **Nyw₁ / Nyw** **WILYERPA FORMATION:** Green siltstone. Lower third is fine grained and includes intervals of glacial dropstones; middle unit is medium to coarse-grained sandstone (Nuw₁); upper unit is siltstone with minor sandstone. Includes discrete dropstone intervals and storm-derived thick sandstone and glacial conglomerate; possible lodgement tillite east of Oraparinna Diapir.
- **Nyww** WARCOWIE DOLOMITE MEMBER: Sandy and pebbly dolomite, conglomerate, minor diamictite. Disconformable base.
- **Nyh** **HOLOWILENA IRONSTONE:** Dark red, thinly laminated iron-rich siltstone; includes medium to coarse-grained gritty sandstone and glacially derived pebbly siltstone.
- **Nyp** **PUALCO TILLITE:** Blue-grey gritty siltstone and minor thin sandstone with pebble to boulder-sized glacial clasts; matrix-supported diamictite. Unconformable base.

TORRENSIAN — BURRA GROUP (Nb)

- **Nbs-Nba** **SADDLEWORTH FORMATION–AUBURN DOLOMITE:** Dolomitic siltstone, fine-grained sandstone, dark grey dolomite.
- **Nbc** **CRADOCK QUARTZITE:** Pale grey, medium to coarse-grained feldspathic quartzite.

MUNDALLIO SUBGROUP (Nm)

- **Nms** **SKILLOGALEE DOLOMITE:** Lower member; grey-green siltstone, pale grey to pink dolomite and feldspathic sandstone; ripple marks, mudcracks. Upper member; blue-grey dolomite, partly stromatolitic, with black chert, magnesite conglomerate, dolomitic siltstone and sandstone; mudcracks, intraclasts. At `Warrakimbo´, uppermost beds are white to pale grey, medium and coarse-grained feldspathic sandstone.
- **Nmsn** NAPOLEON MEGABRECCIA MEMBER: Unsorted clasts of blue-grey dolomite and siltstone in dolomitic and silty matrix.

EMEROO SUBGROUP (No)

- **No** Undifferentiated: Cross-bedded, feldspathic sandstone and quartzite; heavy-mineral laminations in lower part.
- **Noy** **YEDNALUE QUARTZITE:** White, medium to coarse-grained feldspathic quartzite; siliceous siltstone. Cross-bedding, ripple marks and mudcracks.

RIVER WAKEFIELD SUBGROUP (Nr)

- **Nr** Undifferentiated: Dark grey finely laminated siltstone; minor quartzite, dolomite.
- **Nrw** **WIRREANDA DOLOMITE BEDS:** Blue-grey dolomite with tepee structures; dolomitic sandstone, siltstone; minor magnesite conglomerate.

WILLOURAN — WARRINA SUPERGROUP — CALLANNA GROUP (Nc) — CURDIMURKA SUBGROUP (Nk)

- **Nkm** **WORUMBA DOLOMITE BEDS:** Upper and Lower members of pale grey to buff, cryptalgal-laminated dolomite separated by middle member of dark grey, thinly laminated carbonaceous siltstone.
- **Nkq** **WARACO LIMESTONE:** Pale grey to cream stromatolitic dolomite and calcitic and dolomitic marble overlying blue-grey, flaggy to massive limestone with black chert and slumped stromatolites; dark grey, partly laminated siltstone at top.
- **Nki** **KIRWAN SILTSTONE:** Dark grey to black, finely laminated carbonaceous siltstone; locally silicified.
- **Nka** **ARKABA HILL BEDS:** Laminated stromatolitic dolomite and limestone, local fenestral fabrics and gypsum pseudomorphs; interbedded micaceous siltstone, fine sandstone. Dark grey, laminated, carbonaceous, locally silicified siltstone in lower part.
- **Nkn** **NIGGLY GAP BEDS:** Grey,micaceous siltstone and fine-grained sandstone, partly with halite casts, heavy-mineral-laminated sandstone, minor dolomite; locally cupriferous.
- **Nkw** **WIRRAWILKA BEDS:** Pale grey to buff laminated dolomitic limestone overlying dark grey, finely laminated siltstone, locally silicified.
- **Nk₁** Siltstone: Undifferentiated micaceous siltstone with minor dolomite, shale and sandstone; abundant salt casts; tuffaceous in part. Largely equivalent to the Niggly Gap Beds.
- **Nk₂** Dolomite, commonly cryptalgal laminated or stromatolitic, with dolomitic siltstone interbeds.
- **Nk₃** Shale: Khaki-green to light grey, finely laminated micaceous shale and fine dolomitic mudstone; rare pseudomorphs after halite and occasional mudcracks.
- **Nk₄** Sandstone: Medium to coarse-grained sandstone and clean, mature quartzite. Well bedded, commonly with heavy-mineral lamination, occasional ripples and micro-trough cross-bedding, halite casts and rare rosettes possibly pseudomorphing halite. Minor interbedded siltstone and dolomite.
- **bs₁** Unnamed volcanics (Arkaroola or Curdimurka Subgroup): Altered dark purple to grey-green, haematitic, amygdaloidal basalt. Possible Wooltana Volcanics equivalent.
- **dl₁** Undifferentiated basic intrusives: Fine to coarse-grained, dark green, uralitised dolerite, locally intrusive into the Callanna Group.
- **br₃ Nk** Diapiric breccia: Massive to flow-banded, pink to buff, carbonate-cemented breccia with wide size range of dolomite, siltstone and micaceous sandstone clasts.

PALAEOPROTEROZOIC-MESOPROTEROZOIC

- **gr₁** Undifferentiated granitoids: Highly strained megacrystic gneissic granite, granodiorite, felsic porphyry and granite porphyry. Possibly equivalent to the Meso-proterozoic Moolawatana Suite and acid volcanics of the Mount Painter and Mount Babbage Inliers.
- **ms₁** Undifferentiated metasediments: Small rafts of interpreted Palaeoproterozoic metasedimentary rocks, including crenulated muscovite-biotite-quartz schist, meta-conglomerate, quartzo-feldspathic mylonitic gneiss, and calcsilicate marble (?Willyama Supergroup in part).

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Bibliographic reference: Reid, P. and Preiss, W.V., 1999. PARACHILNA map sheet. *South Australia. Geological Survey. Geological Atlas 1:250 000 Series*, sheet SH 54-13.

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