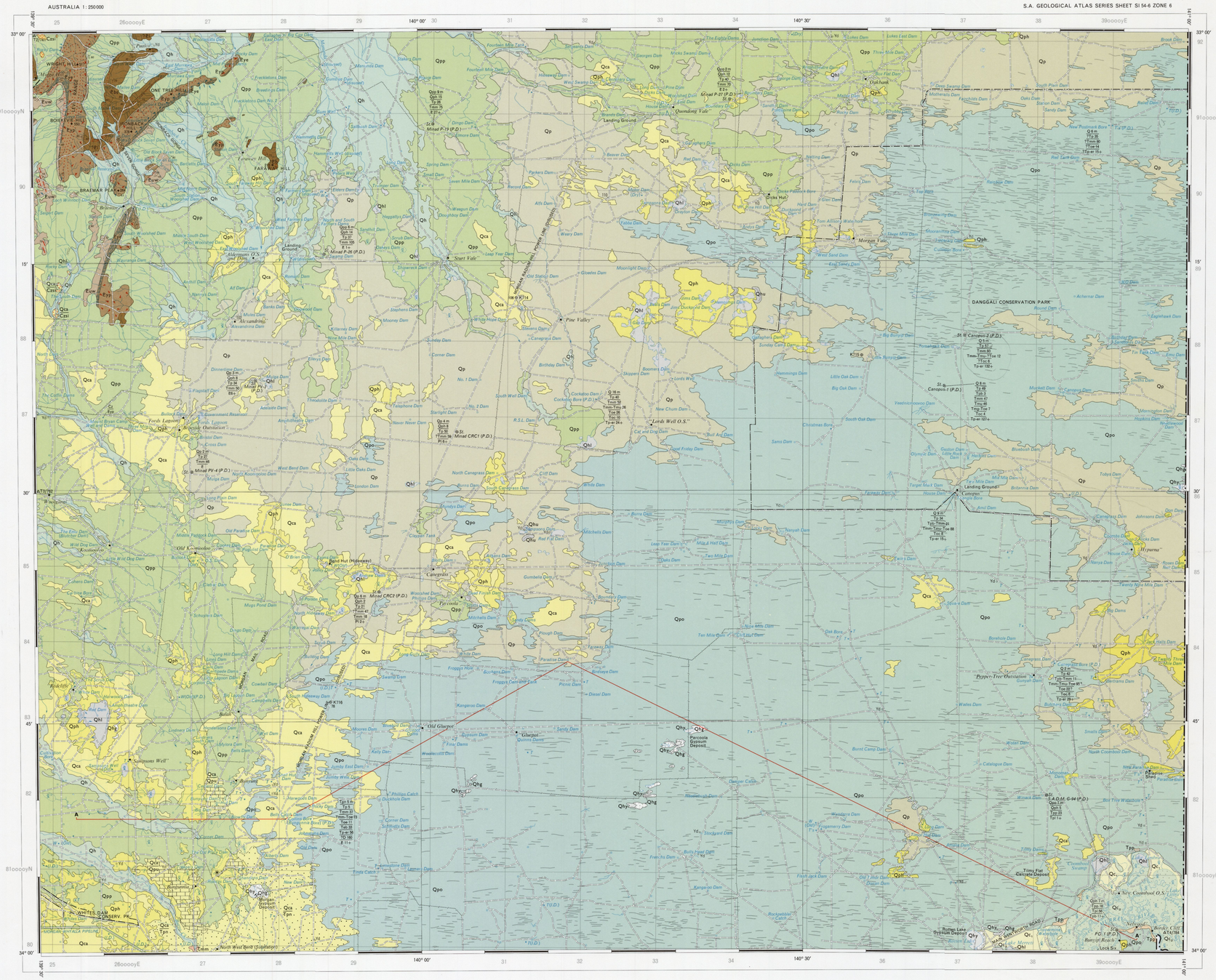
CHOWILLA

GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT OF MINES ADELAIDE

AUSTRALIA 1:250000

S.A. GEOLOGICAL ATLAS SERIES SHEET SI 54-6 ZONE 6

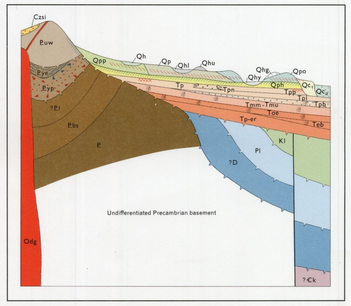
FIRST EDITION 1977



SECTION A-A'

SCALE $\frac{V}{H} = 5$

ROCK RELATION DIAGRAM



Paleosol:
Loveday Soil
Bakara Soil
Duricrust of Karoonda Surface
Major unconformity
Tertiary marine units

SCALE

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

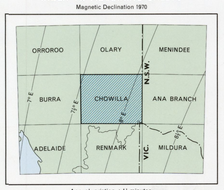
MILES 2 1 0 2 4 6 8 10 12 14 16 18 20 MILES

PRINTED IN AUSTRALIA
D. J. WOOLMAN, GOVERNMENT PRINTER
SOUTH AUSTRALIA

CROWN COPYRIGHT RESERVED

INDEX TO ADJOINING SHEETS

Magnetic Declination 1970



Annual variation +1½ minutes

Geological compilation by P. A. Rogers, B.Sc.(Hons.)

Geological mapping by P. A. Rogers, with contributions from A. Andrawewskis, N. Duncan, J. B. Firman, B.Sc.(Hons.), B. G. Forbes, Ph.D., D. S. Kel, B.Sc., N. S. Pledge and G. F. Whitten, B.Sc.

B. P. Thomson, M.Sc., Supervising Geologist, Regional Geology Division.

Map preparation by Cartographic Division, Department of Mines, S.A.

Topography supplied by Royal Australian Survey Corps with amendments by South Australian Department of Mines.

Compiled under the direction of B. P. Webb, M.Sc., Government Geologist, Director of Mines.

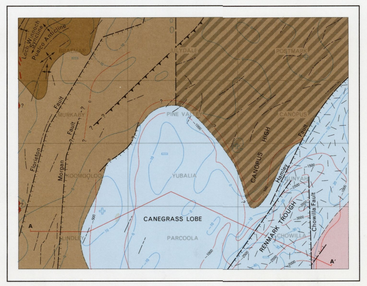
Issued under the authority of the Honourable H. R. Hudson, B.Ec., M.P., Minister of Mines and Energy.

Published 1977

This publication is sold subject to the condition that it shall not, by way of trade, be resold, hired out, or otherwise disposed of without the publisher's consent.

Copies of this map may be obtained from the Geological Survey of South Australia, Department of Mines, Adelaide, or the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T. Printed for the Geological Survey of South Australia as a contribution to the Geological Map Series of the Commonwealth.

TECTONIC AND STRUCTURAL SKETCH (PRE-CRETACEOUS)



Permian and ?Devonian sediments of the Renmark Trough and Canegrass Lobe
Renmark Trough overlies possible Kanmantoo Group.

BASEMENT
Granodiorite, and rhyolite dykes emplaced during early Palaeozoic Delamerian Orogeny
Possible Cambrian metamorphic rocks of the Kanmantoo Group
Adelaidean sedimentary rocks of the Adelaide 'Geosyncline' (outcrop and subsurface)
Lower Proterozoic (Carpentarian) high-grade metamorphics of the Willyama Complex with a cover of Adelaidean sediments
Geological boundary, inferred and concealed
Inferred fault showing downthrown side
Inferred thrust, after Gerdes (1973)
Inferred basement structure at depth of 14 km, after Gerdes (1973)
Interpreted structural contours of upper surface of pre-Devonian basement (metres below M.S.L.) (Thornton, 1974a)
Delamerian folds (anticline; syncline) showing direction of plunge
Positive magnetic features (from Aeromagnetic Map of Total Intensity, Webb, 1965)
Bouguer Gravity Anomaly contours (milligalls) after Hall and Gerdes (1976)
Gravity highs and lows
Geological Section A A'

REFERENCE

CAINOZOIC — QUATERNARY — HOLOCENE

- Qc$_2$ — COONAMBIDGAL FORMATION: Pale grey clay, silt and sand of the Murray River channels and floodplain (lower terrace deposits). Disconformably overlies MONOMAN FORMATION in boreholes.
- Qh — Deposits of drainage channels and older floodplains outside of the Murray Valley.
- Qhl, Qhu — Modern deposits of claypans and Murray River lagoons (Qhl); associated lunette deposits of clay and silt (Qhu).
- Qhy, Qhg — YAMBA FORMATION (Qhy): Lacustrine gypsiferous clay and silt. Marginal lunette dunes of seed and flour gypsum (Qhg).

CAINOZOIC — QUATERNARY — PLEISTOCENE

- Qc$_1$ — Upper terrace deposits of the Murray Valley: Red-brown clayey sand.
- Qpo — WOORINEN FORMATION: Pale red-brown silty quartz sand of linear dunes. Thin overlays of Holocene BUNYIP SAND.
- Qp — Transitional unit of red-brown silty sand and sandy silt. Thin overlays of Holocene red-brown clay and BUNYIP SAND.
- Qpp — POORAKA FORMATION: Red-brown clayey sand with gravel lenses. Thin overlays of Holocene red-brown clay.

Late Pleistocene units contain nodular and platy carbonate of LOVEDAY SOIL.

- Qca — Nodular and sheet calcretes of BAKARA SOIL. Calcrete of BAKARA SOIL cements TELFORD GRAVEL.
- Qca, Qpu, Qca, Czsi, Qca, Tpn — Calcrete of BAKARA SOIL overlying BUNGUNNIA LIMESTONE (Qpu), silcrete (Czsi), and NORWEST BEND FORMATION (Tpn).
- Qph — BLANCHETOWN CLAY: Pale grey over mottled red-brown and grey sandy clay with thin beds of quartz sand; abundant concretionary carbonate. Overlain by BUNGUNNIA LIMESTONE (Qpu).
- Czsi — Siliceous duricrust developed on Adelaidean rocks.

CAINOZOIC — TERTIARY — PLIOCENE

- Tp, Tpn, Tpl, Tpb — NORWEST BEND FORMATION (Tpn): Estuarine calcareous sandstone with oyster beds, equivalent in part to PARILLA SAND (Tpp): Fluviatile fine to medium sand and clayey sand, overlies LOXTON SANDS (Tpl): Fluviatile and estuarine fine to coarse sand over clayey fine sand. Tp: undifferentiated fluviatile sands and clayey sands. (Rock relation diagram and sections only.)
  BOOKPURNONG BEDS: Dark grey fossiliferous glauconitic silt, sandy clay and silty sand. (Rock relation diagram and sections only.)

CAINOZOIC — TERTIARY — MIOCENE

- Tmm — PATA LIMESTONE and equivalents: Grey glauconitic sandy limestone; fossiliferous glauconitic silt and clay; black calcareous; coal. MORGAN LIMESTONE and equivalents (includes CADELL MARL): Yellow sandy bryozoal limestone outcropping in Burra Creek; grey fossiliferous calcareous sandy clay.
- Tmu — MANNUM FORMATION equivalents: Grey glauconitic calcareous sandy clay. (Rock relation diagram and sections only.)

CAINOZOIC — TERTIARY — OLIGOCENE

- Toe — ETTRICK FORMATION (includes equivalents of GAMBIER LIMESTONE (Tmg) and COMPTON CONGLOMERATE (Toc): Grey glauconitic fossiliferous calcareous clay. (Rock relation diagram and sections only.)

CAINOZOIC — TERTIARY — PALEOCENE/EOCENE

- Teb — BUCCLEUCH BEDS: Grey-brown fossiliferous sand. (Rock relation diagram and sections only.)
- Tp-er — RENMARK BEDS: Dark grey carbonaceous sand and sandy clay. (Rock relation diagram and sections only.)

MESOZOIC — EARLY CRETACEOUS

- Ki — MONASH FORMATION: Sand, silt and shale; shale and siltstone with minor sand; sandstone. (Rock relation diagram and sections only.)

PALAEOZOIC — EARLY PERMIAN

- Pi — Pale grey, well-indurated, pebbly fine to medium quartz sandstone in Minad CRC1 and CRC2 boreholes. (Rock relation diagram and sections only.)

PALAEOZOIC — ?DEVONIAN

- ?D — Pale grey, fine sandstone in Bungunnia Bore. (Rock relation diagram and sections only.)

PALAEOZOIC — ORDOVICIAN

- Rhyolite dykes.
- Odg — Biotite granodiorite-adamellite. (Rock relation diagram only.)

?CAMBRIAN

- ?Ck — ?KANMANTOO GROUP: Phyllite and slate; metagreywacke and gneiss. (Rock relation diagram and sections only.)

PROTEROZOIC — ADELAIDEAN — STURTIAN

- Euw — WILYERPA FORMATION: Greenish-grey laminated siltstone with slaty cleavage. Quartzite. Dolomite.
- Eye — BENDA SILTSTONE: Dark grey laminated siltstone and ferruginous siltstone; quartzite; minor tillite and calcareous sandstone. 'Braemar Iron Formation'.
- Eyp — PUALCO TILLITE: Massive calcareous tillite, ferruginous at top in places. Quartzite with minor tillite and siltstone. Massive dolomitic tillite.

UMBERATANA GROUP — WOOMERA SUBGROUP

PROTEROZOIC — ADELAIDEAN — TORRENSIAN

- ?Bl — Siltstone and shale with dolomite layers. Feldspathic quartzite beds at base.
- Ebs — SADDLEWORTH FORMATION equivalent: Siltstone, shale and black slate with dolomitic and pyritic layers.
- ?Eb — Quartzite; siltstone with minor boulders; dolomite and dolomitic sandstone.

BURRA GROUP — BREAKAWAY SUBGROUP

- E — Undifferentiated Adelaidean metasediments. (Rock relation diagram and sections only.)

GEOLOGICAL BOUNDARY
OBSERVED
INFERRED
FAULT
CONCEALED
BEDDING
INCLINED
VERTICAL
OVERTURNED
TREND OF BEDDING (CONCEALED)
CLEAVAGE
INCLINED
VERTICAL
GEOLOGICAL SECTION A A'
TYPE SECTION (BUNGUNNIA LIMESTONE)
MAIN ROAD
SECONDARY ROAD
TRACK
BOUNDARY FENCE
QUARRY
MINE
YARD
HOMESTEAD "Hypurna"
TRIANGULATION STATION
CONTROL POINT, ASTRONOMICAL
SPOT ELEVATION IN METRES 125
BORE
WELL W
TANK T
DAM
CLAYPAN
EPHEMERAL STREAM
DRAIN
SWAMP
STRATIGRAPHIC BORE SI 0.2 m Tp-er Tb
SAND DUNES

CHOWILLA
SHEET SI 54-6