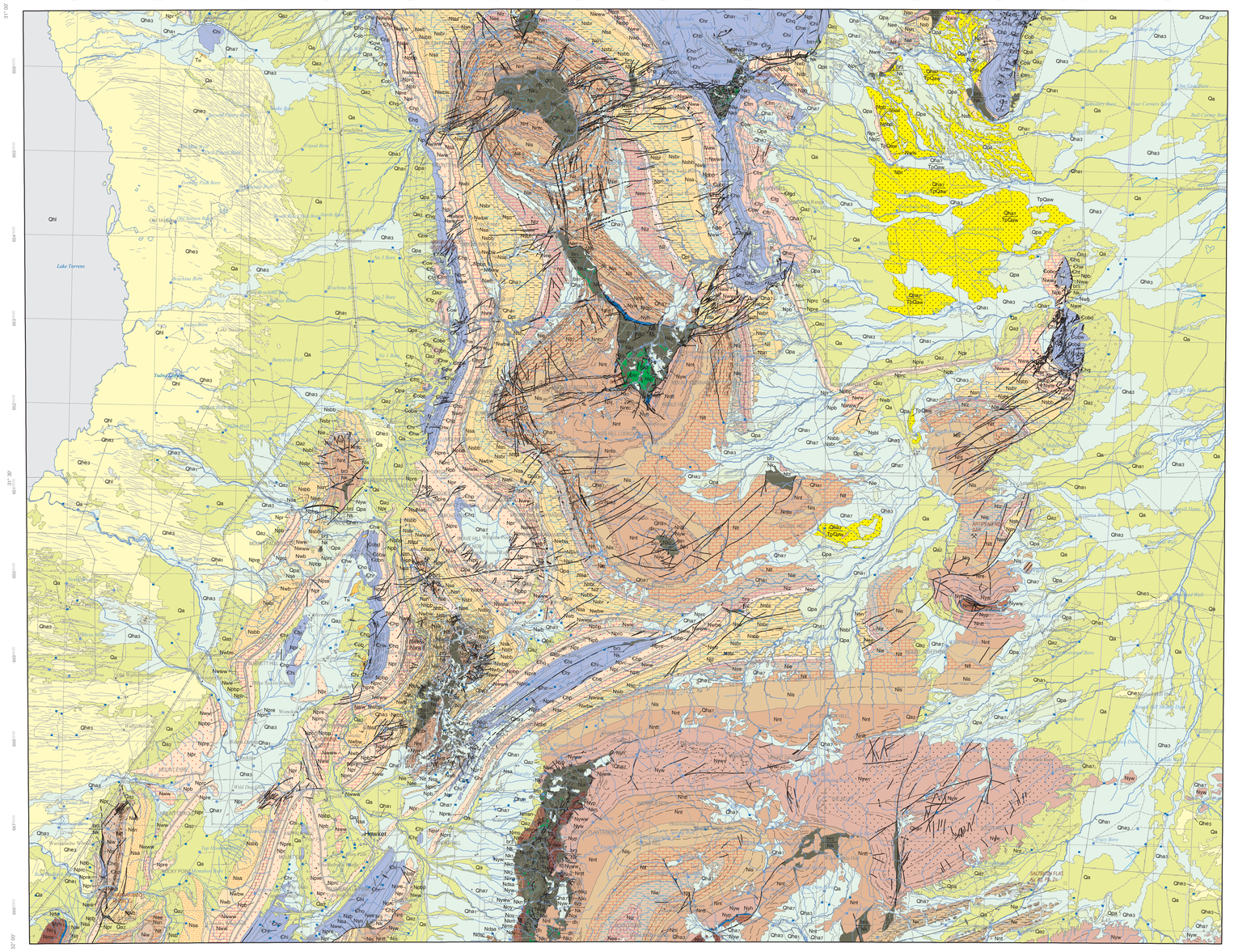
PARACHILNA

GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT FOR ENERGY AND MINING

AUSTRALIA 1:250 000

SA GEOLOGICAL ATLAS SERIES SHEET SH5413



REFERENCE

HOLOCENE

- Qha_1 — HOLOCENE ALLUVIAL/FLUVIAL UNIT 1: Present day Holocene alluvium; current bedload.
- Qha_3 — HOLOCENE ALLUVIAL/FLUVIAL UNIT 3: Holocene floodplain sediments.
- Qha_7 — HOLOCENE ALLUVIAL/FLUVIAL UNIT 7: Holocene talus/scree deposits. High angle colluvial to alluvial sediments.
- Qhe — HOLOCENE AEOLIAN SEDIMENTS: Undifferentiated Holocene aeolian sediments.
- Qhe_3 — HOLOCENE AEOLIAN UNIT 3: Holocene sand spread.
- Qhl — HOLOCENE LACUSTRINE/PLAYA SEDIMENTS: Undifferentiated Holocene lacustrine/playa sediments.
- Qhl_1 — HOLOCENE LACUSTRINE/PLAYA UNIT 1: Holocene playa sediments.

PLEISTOCENE-HOLOCENE

- Qa — QUATERNARY ALLUVIAL/FLUVIAL SEDIMENTS: Undifferentiated Quaternary alluvial/fluvial sediments.
- Qa_7 — QUATERNARY ALLUVIAL/FLUVIAL UNIT 2: Quaternary high angle alluvial fan/talus sediments.
- Qe_1 — QUATERNARY AEOLIAN UNIT 1: Quaternary dunefield sands.

PLEISTOCENE

- Qpa — PLEISTOCENE ALLUVIAL/FLUVIAL SEDIMENTS: Undifferentiated Pleistocene alluvial/fluvial sediments.
- Qpai — ARROWIE FORMATION: Gravel, sub-angular, lime-coated, in red-brown clay (possibly includes gravels of other ages).
- Qpap — POORAKA FORMATION: Clay, sand and carbonate earth, silty, with gravel lenses.
- $Qpap_1$ — POORAKA FORMATION UNIT 1: Proximal facies: angular cobbles and pebbles in red-brown clay and sand. Based on dashed unit in Qpp on COPLEY.
- Qpat — TELFORD GRAVEL: Polymict gravel, well rounded, includes boulders. Alluvial fan deposits.
- Qpl — PLEISTOCENE LACUSTRINE/PLAYA SEDIMENTS: Undifferentiated Pleistocene lacustrine/playa sediments: fossiliferous clay, sandy clay and minor limestone.

PLIOCENE-PLEISTOCENE

- TpQaw — WILLAWORTINA FORMATION: Mud, sandy, dolomite, silty, lacustrine, floodplain. Clay, green, distal fan, mudflow and playa. Gravel, coarse, framework supported, braided fan. Gravel, clayey, matrix supported, debris flows. Often calcreted or gypsified.

PALEOCENE-EOCENE

- Tase — EYRE FORMATION: Pyritic, carbonaceous sand, grain-size ranges from silt to small cobble, with beds of lignite and clay. Clays are montmorillonite, kaolinite and illite. Braided streams.

TERTIARY

- T — TERTIARY ROCKS: Undifferentiated Tertiary rocks.
- Tsi — TERTIARY SILCRETE: Undifferentiated Tertiary silcrete.

CARBONIFEROUS-PERMIAN

- CP-a — ALPINA FORMATION: Till, lodgement; Sand, proglacial; sandstone with ironstones.

CAMBRIAN

- Etg — GRINDSTONE RANGE SANDSTONE: Sandstone, pale brown, grey, cross-bedded, trace fossils, conglomeratic towards the top.
- Etgd — DAWSON HILL MEMBER: Sandstone, white, medium to coarse-grained; conglomerate, pebbles of quartzite, well rounded, poorly sorted.
- Etp — PANTAPINNA SANDSTONE: Sandstone, feldspathic, red to white, fine- to medium-grained; minor micaceous siltstone and shale.
- Etb — BALCORACANA FORMATION: Siltstone, very micaceous; shale; carbonate; sandstone, arkosic, fine-grained and crossbedded. Trilobite tracks.
- Etm — MOODLATANA FORMATION: Siltstone, micaceous; shale; arkosic fine to medium-grained sandstone; minor carbonate.
- Eow — WIRREALPA LIMESTONE: Limestone, medium grey, micritic; basal dolomite.
- Eob — BILLY CREEK FORMATION: Siltstone, shale, dolomite, with tuff beds. Age 522.8+/-1.8Ma (U-Pb).
- Eobe — EREGUNDA SANDSTONE MEMBER: Sandstone, red, fine-grained, micaceous, arkosic with heavy mineral bands; siltstone, red, green, micaceous and feldspathic. Trace fossils and worm burrows.
- Eobn — NILDOTTIE SILTSTONE MEMBER: Siltstone, coarse-grained, ripple-laminated, with halite casts.
- Eobw — WARRAGEE MEMBER: Shale and siltstone, parallel- to ripple-laminated, with desiccation cracks and halite casts; tuff beds.
- Eobd — EDEOWIE LIMESTONE MEMBER: Mudstone, dolomitic, with planar to wavy lamination; limestone, pelsidal, sandy, with tuff beds.
- Eobc — COADS HILL MEMBER: Sandstone, pale brown, fine to medium-grained; limestone, dark grey; shale, red and green; shaly siltstone. Conglomerate at the base. Some tuff beds.
- Ebn — NARINA GREYWACKE: Sandstone, khaki coloured, parallel to ripple-laminated, silty to medium-grained and feldspathic.
- Ebm — MOOROWIE FORMATION: Shale; siltstone; shelf margin oolite; reef limestone.
- Eho — ORAPARINNA SHALE: Shale, calcareous.
- Ebo — BUNKERS SANDSTONE: Sandstone, fine-grained, cross bedded; or silty, flat to ripple-laminated. Locally with sharp disconformable base. Rare trace fossils, body fossils extremely rare. Bipolar current directions at Wilkawillina Gorge.
- Ehr — MERNMERNNA FORMATION: Limestone; biohermn complexes. Slope, platform bioherm complexes, distal slope environments; turbidites; nodular wackestone; black laminated lime mud.
- Ehi — BENDIEUTA FORMATION: Packstone, ooid-peloid at base, with tuff bands. Slumped in part.
- Ehd — MIDWERTA SHALE: Shale, green-grey to black, argillaceous pyritic and manganiferous.
- Ehw — WILKAWILLINA LIMESTONE: Archaeocyath–calcimicrobe limestone.
- Ehi — WIRRAPOWIE LIMESTONE: Limestone and calcareous siltstone, green and grey, stromatolitic, intraformational conglomerate; minor cross bedded ooid grainstone.
- Ehq — WOODENDINNA DOLOMITE: Dolomite; shale; conglomerate.
- Ehp — PARACHILNA FORMATION: Sandstone, upward-fining; siltstone and minor carbonate interbeds. Trace fossils include Diplocraterion, and Bernella.

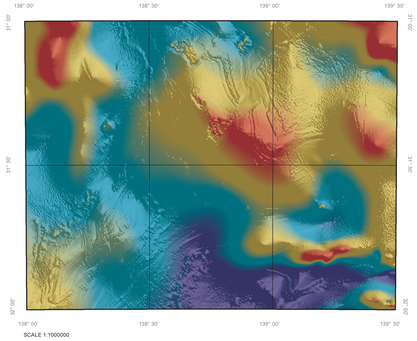
NEOPROTEROZOIC

- Npr — RAWNSLEY QUARTZITE: Quartzite and sandstone, white or light grey, locally flaggy and fossiliferous.
- Npre — EDIACARA MEMBER: Orthoquartzite, fine to coarse grained, thin to very thick beds, ripple marks, fossiliferous, mudcracks, clay intraclasts; siltstone, interbedded, laminated, pale green to red-brown.
- Nprc — CHACE QUARTZITE MEMBER: Mature, white, flat-bedded quartzite, wavy algal disrupted lamination. Sharp to disconformable base. PARACHILNA sheet.
- Npb — BONNEY SANDSTONE: Sandstone, fine to medium grained, occasionally coarse, flaggy to medium bedded, silty and feldspathic, cross bedded, ripple marks, small scale slumps, mudcracks, intraclasts; siltstone; quartzite.
- Nobp — PATSY HILL MEMBER: Limestone, algal-laminated, grey, also wavy/swaley cross-stratified limestone, grading up to thick-bedded calcarenite then to micaceous sandstone. Generally two limestone-sandstone parasequences.
- Nww — WONOKA FORMATION: Shale, grey, calcareous; flaggy dolomite, limestone and silt.
- Nwwy — WEARING DOLOMITE MEMBER: Dolomite, green, cupriferous.
- Nwb — BUNYEROO FORMATION: Siltstone, shale, grey-red to grey-green, partly calcitic; minor fine grained sandstone; dolomite, grey; limestone, grey, lenses, thin beds.
- Nwbw — WILCOLO SANDSTONE MEMBER: Thin pebbly lag sandstone or massive, c.g. to pebbly crossbedded sandstone; fluvial to shallow marine.
- Nsa — ABC RANGE QUARTZITE: Quartzite, slightly feldspathic; fine to medium grained; pale pinkish grey; clay intraclasts, flaggy to medium bedded, heavy mineral lamination, minor siltstone.
- Nsb — BRACHINA FORMATION: Siltstone, shale, red-brown and olive green, laminated, flaggy to medium bedded; alternating with sandstone, fine grained, occasionally coarse grained. All lithologies calcitic in part.
- Nsbb — BAYLEY RANGE SILTSTONE MEMBER: Siltstone, drab olive green, laminated, minor interbedded fine grained sandstone.
- Nsbr — MOORILLAH SILTSTONE MEMBER: Siltstone, coarse grained, purple and dark red, banded and unbanded. Two thin lenses of conglomerate. Basal lens of fine grained sandstone.
- Nsbd — MOOLOOLOO SILTSTONE MEMBER: Siltstone, shale.
- Nsc — NUCCALEENA FORMATION: Dolomite, thin, laminated, micritic, with interbedded shale near the top.
- Nse — ELATINA FORMATION: Sandstone, arkosic, medium grained, red-brown, slumped, ripple cross laminated; siltstone, sandy, red, dropstones and minor beds of diamictite with cobble to boulder size clasts of dolomite, basalt, dolerite, tuff.
- Nt — YALTIPENA FORMATION: Red-brown, cross-stratified intraformational limestone, sandy beds and diapiric detritus; calcareous red-brown siltstone; m.g. to c.g feldspathic sandstone.
- Nrz — TREZONA FORMATION: Limestone, intraclastic and stromatolitic; with interbeds of calcareous siltstone.
- Nie — ENORAMA SHALE: Shale, grey-green and minor red, laminated; silty shale, rare fine grained sandstone.
- Nis — ETINA FORMATION: Limestone, sandy, grey, oolitic, stromatolitic, trough cross bedding; interbedded with siltstone, grey-green. Local diapir derived conglomerate.
- Niw — WILMINGTON FORMATION: Sandstone, red, grey, with grit bands and gritty limestone; siltstone, red, gritty.
- Nia — ANGEPENA FORMATION: Siltstone, reddish, thin bedded; interbeds of dolomite and minor grey-green shale; pisolitic and algal limestone.
- Nis — SUNDERLAND FORMATION: Siltstone, calcareous, grey-green; sandstone, fine to medium grained, interbedded with coarse grained to pebbly sandstone and oolitic, conglomerate, stromatolite limestone.
- Ner — TARCOWIE SILTSTONE: Siltstone, sandy, flaser bedded.
- Nrc — BRIGHTON LIMESTONE: Limestone, massive, oolitic, stromatolitic, ripple marks. Colour from blue-grey at base to reddish-grey at top.
- Nnt — TAPLEY HILL FORMATION: Siltstone, grey to black, dolomitic and pyritic grading upwards to calcareous, thinly laminated, locally cross-bedded; dolomite, grey, flaggy to massive. limestone conglomerate, intraformational; greywacke.
- Nrc — WOCKERAWIRRA DOLOMITE MEMBER: Dolomite, fine grained, flaggy, buff and pale yellow.
- Nmc — MOUNT CAERNARVON GREYWACKE MEMBER: Greywacke, with lenticular diamictite.
- Nmt — TINDELPINA SHALE MEMBER: Shale, pyritic, carbonaceous; thinly laminated grey dolomite beds and lenses.
- Nyw — WILYERPA FORMATION: Siltstone, green. Lower third is fine grained, includes glacial dropstones; middle unit is medium to coarse sandstone; upper unit is siltstone with minor sandstone. Minor diamictite, sandy and pebbly dolomite.
- Nyw_1 — WILYERPA FORMATION UNIT 1: Middle sandstone member, PARACHILNA sheet.
- Nywc — WARCOWIE DOLOMITE MEMBER: Conglomerate, massive, well rounded pebble and boulder clasts, silty and sandy matrix; dolomite, massive to well bedded, grey and brown; breccia, dolomitic matrix.
- Nyh — HOLOWILENA IRONSTONE: Hematitic siltstone, purplish red, thinly bedded; red shale; grey siltstone, minor dolomite, medium, grained quartzite, ironstone lenses.
- Nyp — PUALCO TILLITE: Siltstone, dark grey, calcareous, with scattered quartz grains; quartzite, tillite and minor siltstone; green-grey tillite.
- Nyb — AUBURN DOLOMITE MEMBER: Dolomite, flaggy, dark to medium grey; silty and sandy dolomite and thin dolomite conglomerate, pale grey, olive, brown; shale, slate and siltstone, grey, green, brown.
- Ndc — CRADOCK QUARTZITE MEMBER: Quartzite, siltstone; dolomite.
- Nms — SKILLOGALEE DOLOMITE: Dolomite; marble, with magnesite mud-pellet conglomerates.
- Nn — NAPOLEON MEGABRECCIA MEMBER: Megabreccia; siltstone; sandstone.
- No — EMEROO SUBGROUP: Quartzite, sandstone, dolomite, conglomerate.
- Nny — YEDNALUE QUARTZITE: Quartzite, feldspathic, medium to coarse grained, pale coloured, interbedded with grey sandstone, siltstone and partly silty dolomite. Cross bedding, ripple marks and mudcracks present.
- Nov — RIVER WAKEFIELD FORMATION: Dolomite; sandstone; siltstone; quartzite.
- Nw — WIRREANDA DOLOMITE BEDS: Dolomite, dark grey, thinly bedded; minor interbedded siltstone, dolomitic sandstone, magnesite conglomerate, black chert.
- Nk — CURDIMURKA SUBGROUP: Siltstone, dark grey, carbonaceous, tiltric, pyritic, laminated, micaceous; sandstone, feldspathic, tiltric, cross bedded, halite casts; dolomite, stromatolitic, cryptalgal laminated, brown to yellow weathering; limestone, stromatolitic.
- Nk_1 — CURDIMURKA SUBGROUP UNIT 1: Siltstone rafts in diapirs. Based on red-dashed white unit on COPLEY.
- Nk_2 — CURDIMURKA SUBGROUP UNIT 2: Dolomite rafts in diapirs. Based on red-bricked white unit on COPLEY.
- Nk_3 — CURDIMURKA SUBGROUP UNIT 3: Shale rafts in diapirs. Based on blue-dashed white unit on COPLEY.
- Nk_4 — CURDIMURKA SUBGROUP UNIT 4: Quartzite/sandstone rafts in diapirs. Based on blue-dotted white unit on COPLEY.
- Nwr — WORUMBA DOLOMITE BEDS: Dolomite, pale cream, laminated with stromatolites; siltstone, dark grey, thinly laminated, slightly calcareous.
- Nkq — WARACO LIMESTONE: Siltstone, dark grey, green-grey; dolomite, buff-grey, laminated; limestone, pale grey.
- Nki — KIRWAN SILTSTONE: Siltstone, carbonaceous; dolomite; limestone.
- Nka — ARKABA HILL BEDS: Siltstone; dolomite; gypsum. Halite casts, fenestrate, breccia.
- Ng — NIGGLY GAP BEDS: Siltstone, micaceous; sandstone; dolomite.
- Nw — WIRRAWILKA BEDS: Siltstone, carbonaceous; stromatolitic dolomitic limestone.

MISCELLANEOUS

- br — BRECCIA: Breccia, undifferentiated.
- br_3 — BRECCIA UNIT 3: Diapiric breccia, typically with carbonate matrix, clasts mostly of Callanna Group rocks, emplaced or remobilised during Delamerian Orogeny.
- ba_1 — BASALT UNIT 1: Basalt in diapiric breccia. Based on green unit in Cambro-Ordovician tectonic breccia on CURDIMURKA.
- d_1 — DOLERITE UNIT 1: Dolerite in diapiric breccia. Based on green unit in Callanna Beds on ANDAMOOKA.
- gr_1 — GRANITE UNIT 1: Granite rafts in diapirs. Based on red unit as used on PARACHILNA.
- ms_1 — METASEDIMENT UNIT 1: Metasediment rafts in diapirs. PARACHILNA sheet update.
- qv — QUARTZ VEIN: Quartz veins/bodies, undifferentiated.

TOTAL MAGNETIC INTENSITY IMAGE



SCALE 1:1000000

The Total Magnetic Intensity Image has been compiled using aeromagnetic data from the Department for Energy and Mining, South Australia. Aeromagnetic data have been merged, gridded and image processed by the Geological Survey of South Australia.

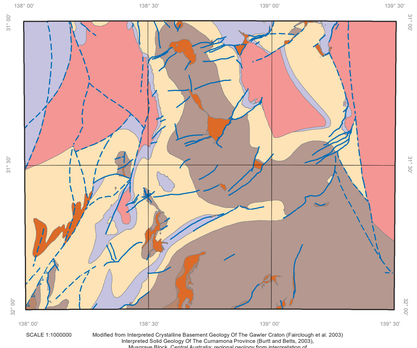
nTesla

-1144.445 — 1282.924

-441.192 80.507 602.206

A two standard deviation contrast stretch has been applied to the raster image above.

SOLID GEOLOGY INTERPRETATION



SCALE 1:1000000

Modified from Interpreted Crystalline Basement Geology Of The Gawler Craton (Fairclough et al. 2003)
Interpreted Solid Geology Of The Curnamona Province (Burtt and Betts, 2003).
Musgrave Block, Central Australia: regional geology from interpretation of aeromagnetic data (Rankin and Newton, 2002); Solid Geology South Australia (Cowley, 2006).

Solid Geology

- Eo13 — Moralana Supergroup unit 13
- Eo12 — Moralana Supergroup unit 12
- Nw — Wilpena Group
- Nu — Umberatana Group
- Nb — Burra Group
- Ncb — Callanna Group unit 6

Solid Geology - Linear Structure

- Fault position accurate
- Fault position approximate
- Fault reverse approximate triangles upthrown side
- Fault reverse triangles upthrown side

SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

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2020

Topographic detail based on TOPO-250K GEODATA (source scale 1:250 000) supplied by Geoscience Australia - National Mapping Division, ACT. The relationship between this data and DEM data is not guaranteed.

Computer generated from SA_GEOLOGY database
(Digital data available upon request)
Current version: 2018.Digital

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Grey numbered lines indicate the 10000 metre Map Grid
Transverse Mercator Projection, Geocentric Datum Australia, 2020.

The lake boundaries displayed on this map may have been derived from geological interpretation and may not match lakes interpreted by topographic mapping authorities. Not all structures are represented on this particular map.

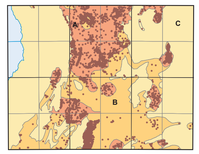
Compiled by P.W. Reid, B.Sc.(Hons), and W.V. Preiss, Ph.D.. Mapping by C.R. Dalgarno, M.Sc., and J.E. Johnson (FIRST EDITION) with contributions from Departmental mapping, Company reports and University theses.

R.C. Cobcroft, Director, Geological Survey of South Australia.

Geological boundaries displayed on this map have been Derived from geological interpretation and are not intended to be used for navigational purposes.

Copies of this map can be obtained from the Department for Energy and Mining SA, Adelaide.
2020

GEOLOGICAL RELIABILITY DIAGRAM



Parachilna sheet published 1999 SCALE 1:2000000

Geological Field Observations

A: Detailed ground traverses
B: Image interpretation with limited ground traverses
C: Image interpretation with potentially some minor ground traverses
D: Image interpretation only

INDEX TO 1:100 000 SHEETS

Parachilna 6535	Blinman 6635	Reaphook 6735
Hawker 6534	Wilpena 6634	Willippa 6734

INDEX TO ADJOINING 1: 250 000 SHEETS

Magnetic Declination 2000
(Annual variation +1.4 minutes)

ANDAMOOKA	COPLEY	FROME
TORRENS	PARACHILNA	CURNAMONA
PORT AUGUSTA	ORROROO	OLARY

DIGITAL EDITION
SUBJECT TO AMENDMENT
See published printed map for further information

CULTURAL FEATURES

- ANTICLINE
- SYNCLINE
- PRINCIPAL ROAD
- SECONDARY ROAD
- MINOR ROADS
- VEHICULAR TRACKS
- FOOT TRACK
- OPERATIONAL RAILWAY
- FENCE
- GAS, OIL PIPELINE
- WATER PIPELINE
- IDENTIFIED POINT
- BUILDING
- YARDS
- LANDING GROUND
- TOWN OR LOCALITY

LINEAR STRUCTURES

- FAULT CONCEALED
- FAULT INFERRED
- FAULT POSITION ACCURATE
- FOLD AXIAL LINES POSITION ACCURATE
- TREND OF VOLCANIC LAYERING
- TREND-LINE
- UNCONFORMITY

HYDROGRAPHIC AND GEOMORPHIC FEATURES

- INTERMITTENT LAKE
- MAJOR WATERCOURSE
- MINOR WATERCOURSE
- FLOODPLAIN
- WATERHOLE
- SPRING
- BORE
- WATER TANK
- SAND RIDGE

GEOLOGICAL BOUNDARY

- GEOLOGICAL BOUNDARY POSITION ACCURATE
- GEOLOGICAL BOUNDARY POSITION APPROXIMATE

MINING

- OCCURRENCE
- PROSPECT
- DEPOSIT - NO MINING
- MINE - METALS AND INDUSTRIAL MINERALS

COMMODITIES

Ag	Silver
Au	Gold
BAR	Barite
CELES	Celestite
Cu	Copper
Hg	Mercury
MHEM	Micaceous Hematite
OCR	Ochre
Pb	Lead
SDST	Sandstone
Zn	Zinc

Government of South Australia
Department for Energy and Mining

GDA2020

GEOLOGICAL SURVEY SOUTH AUSTRALIA

PARACHILNA
SH5413