

SECOND EDITION 1999 1039 14

REFERENCE

Lake deposits: Gypseous clay, saline silt and quartz sand. Modern stream alluvium and high-level terrace flood deposits; Cobbles, gravel, sand, silt and clay; usually bouldery near ranges; mostly unconsolidated but ma Low-angle scree and talus deposits: Unconsolidate angular rock fragments, grit, sand and silt. Usually clast-supported on slopes; commonly within or flanking ranges and higher level gravels. Scree and talus deposits overlying Willawortina Formation. 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.

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. Alluvial fans: Flanking bedrock outcrops, consolidated but not cemented, with incipient to strongly develope soil horizonation. Poorly sorted, bouldery to gravelly proximal to source. Older fans are larger and dissected

Lacustrine deposits: Brown to olive-green, finely laminated calcareous silt, fine-grained sand and mud. Playalacustrine deposit found in palaeovalleys. 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.

WILLAWORTINA FORMATION: Calcareous, silty to sandy clay and medium-grained sand grading to boulder deposits near ranges. Piedmont slope deposit. Silcrete, undifferentiated: Grey to buff-coloured micro-to cryptocrystalline silica horizons; both massive bedded and conglomeratic substrates, possibly equivalent to upper Eyre Formation. 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.

grey to black, argillaceous and white calcareous mudstone; basal carbonaceous clay rich in shell fragments and COTABENA FORMATION (subsurface only): Fluvio-

lacustrine, partly carbonaceous, fine to coarse-grained sand, silt, clay and lignite. 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

DAWSON HILL MEMBER: Well-rounded quartz-arenite pebbles and cobbles concentrated in channels and GRINDSTONE RANGE SANDSTONE: Cross-bedded mature quartz arenite with minor feldspar and upward decreasing traces of volcanic lithic clasts. PANTAPINNA SANDSTONE: Red and white feldspathic medium-grained sandstone with minor micaceous siltstor 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.

and green micaceous siltstone-shale-carbonate cycles with pencil-thin chalky limestone bands and laminated or stromatolitic carbonates 0.2-1 m thick. Ripples, crossbedding, mudcracks, halite casts; trilobite tracks are MOODLATANA FORMATION: Micaceous siltstone, shale, 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 WIRREALPA LIMESTONE: Lime mudstone and wavy

localities. Cryptalgal laminae, stromatolites and colum thrombolites are common; trilobites and brachiopods occur close to the base. BILLY CREEK FORMATION: Red siltstone and sandstone. EREGUNDA SANDSTONE MEMBER: Fine-grained, current-lineated and cross-stratified greyish red 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. WARRAGEE SILTSTONE MEMBER: Evenly to ripple-

EDEOWIE LIMESTONE MEMBER: Planar to wavy laminated, platy dolomite mudstone with peloidal sandy limestone and tuff. COADS HILL MEMBER: Conglomerate with cobbles of siltstone, shale and burrow-mottled and stromatolitic

NARINA GREYWACKE: Khaki-green, flat to ripplerounded quartz granules appear sporadically; carbonate 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. ORAPARINNA SHALE: Khaki-green silty shale becoming calcareous upwards. Abundant limestone concretions commonly contain fossil fragments.

ripple-laminated, silty fine-grained quartz sandstone overlain by planar to trough cross-bedded, mediumgrained quartz sandstone. Trace fossils occur at several levels but body fossils are rare. MERNMERNA FORMATION: Dark grey, fine-grained limestone. Slumped turbidite couplets of lime silt and mu-15 m diameter in the Donkey Bore Syncline. Uppe onlapping lag of coarse-grained sand and occasional

tised pebbles, passing up into dark grey nodular 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. MIDWERTA SHALE: Grey-green shale and calcareous 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

calcrete profiles; surface is capped by conspicuous recrust up to 0.1 m thick but is absent south of the Chac Range, where only a flooding surface is present. 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. 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.

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 RAWNSLEY QUARTZITE: Mature, medium-grained

wavy, disrupted cryptalgal lamination; planar and EDIACARA MEMBER: Comprises from base up: Massive with deformed contacts; laminated siltstone and finegrained sandstone; interbedded siltstone and fossil-bearing sandstone; concretionary cross-bedded sar nformable base; thickness ranges from 100 to 300 m CHACE QUARTZITE MEMBER: Mature, white, flatbedded quartzite, often with wavy disrupted cryptalgal lamination; similar in appearance to upper Rawnsley Quartzite; sharp to disconformable base. BONNEY SANDSTONE: Red micaceous siltstone and sandstone parasequences with cross-bedding, ripple marks, mud-clasts and mudcracks; rippled an

cross-bedded medium-grained sandstone near middle PATSY HILL MEMBER: Two prominent limestonelaminated grey limestone or wavy to swaley cros stratified limestone, grading up to thickly bedded colitic calcarenite with stromatolitic bioherms followed by reddish, micaceous sandstone. Sharp or erosive base WONOKA FORMATION: Storm-dominated mixed arbonate-siliciclastic sequence. Lower unit consists f interbedded maroon mudstone and sharp-based stites), commonly with sole marks, graded

bedding, combined-flow ripples and hummocky crestratification. Middle unit is finely laminated reddish calcareous mudstone with varying proportions of thinl 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. 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. 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

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 of four or five upward-coarsening cycles capped BRACHINA FORMATION: Red-brown and grey-BAYLEY RANGE SILTSTONE MEMBER: Thinly planar tabular cross-bedding and herring-bone cross-bedding, arranged into several upward-shallowing, upward-coarsening cycles ~5 m thick. 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. MOOLOOLOO SILTSTONE MEMBER: Drab olivegreen micaceous siltstone overlying lower red

NUCCALEENA FORMATION: Laminated to wellbedded, pink, cream to buff-yellow, fine-grained dolomicrite. Cyclic purple shale interbeds in upper ELATINA FORMATION: Red-brown, mediumgrained 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. YALTIPENA FORMATION: Channel-forming, redbrown, swaley cross-stratified, intraformational limestone with sandy beds and diapiric detritus, fining upwards to parallel-laminated calcareous re 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 impression and mudcracks. Irregular basal disconformity, with possible karst developed in places along the Trezona Range. 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. ENORAMA SHALE: Laminated grey-green and minor red shale, silty shale and rare fine-grained sandstone. Poorly outcropping in valleys. 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.

WILMINGTON FORMATION: Red-brown micaceous siltstone with fine sandstone interbeds becoming ANGEPENA FORMATION: Finely laminated red-brown to purple siltstone with mudcracks; dolomitic interbeds in lower half. Erosional base. 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. 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 BRIGHTON LIMESTONE: Stromatolitic, oolitic and commonly with erosional base. Well-developed down TAPLEY HILL FORMATION: Finely laminated grey-WOCKERAWIRRA DOLOMITE MEMBER: Sharp-

cycles of dolomitic siltstone to ripple cross-laminated fine-grained silty dolomite. Occupies erosional valley formed around northern slopes of Oraparinna Diapir MOUNT CAERNARVON GREYWACKE MEMBER: FINDELPINA SHALE MEMBER: Discrete cyclic bands onglomerate bands around Oraparinna Diapir. Disconformable base. WILYERPA FORMATION: Green siltstone. Lower

sandstone (Nuw₁); upper unit is siltstone with minor sandstone. Includes discrete dropstone intervals and possible lodgement tillite east of Oraparinna Diapir WARCOWIE DOLOMITE MEMBER: Sandy and pebbly dolomite, conglomerate, minor diamictite HOLOWILENA IRONSTONE: Dark red, thinly arse-grained gritty sandstone and glacially

PUALCO TILLITE: Blue-grey gritty siltstone and minor thin sandstone with pebble to boulder-sized glacial clasts; matrix-supported diamictite.

SADDLEWORTH FORMATION-AUBURN DOLOMITE: olomitic siltstone, fine-grained sandstone, dark CRADOCK QUARTZITE: Pale grey, medium to 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 NAPOLEON MEGABRECCIA MEMBER: Unsorted clasts of blue-grey dolomite and siltstone in

© Undifferentiated: Cross-bedded, feldspathic sandstone and quartzite; heavy-mineral laminations in lower part. YEDNALUE QUARTZITE: White, medium to goarsegrained feldspathic quartzite; siliceous siltstone. Cross-bedding, ripple marks and mudcracks. Undifferentiated: Dark grey finely laminated siltstone; WIRREANDA DOLOMITE BEDS: Blue-grey dolomite

with tepee structures; dolomitic sandstone, siltstone;

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. WARACO LIMESTONE: Pale grey to cream stromatolitic dolomite and calcitic and dolomitic marble grey, partly laminated siltstone at top. KIRWAN SILTSTONE: Dark grey to black, finely ARKABA HILL BEDS: Laminated stromatolitic dolomite and limestone, local fenestral fabrics and siltstone, fine sandstone. Dark grey, laminated, carbonaceous, locally silicified siltstone in lower part NIGGLY GAP BEDS: Grey, micaceous siltstone and

fine-grained sandstone, partly with halite casts, heavy mineral-laminated sandstone, minor dolomite; locally WIRRAWILKA BEDS: Pale grey to buff laminated dolomitic limestone overlying dark grey, finely laminated siltstone, locally silicified. minor dolomite, shale and sandstone; abundant sali

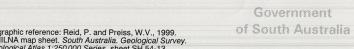
Dolomite, commonly cryptalgal laminated or stromatolitic, with dolomitic siltstone interbeds. Shale: Khaki-green to light grey, finely laminated micaceous shale and fine dolomitic mudstone: rare pseudomorphs after halite and occasional mudcracks. Sandstone: Medium to coarse-grained sandstone and clean, mature quartzite. Well bedded, commonly with heavy-mineral lamination, occasional ripples and micro-trough cross-bedding, halite casts and rare rosettes possibly pseudomorphing barite. Minor interbedded siltstone and dolomite.

Unnamed volcanics (Arkaroola or Curdimurka Subgroup): Altered dark purple to grey-green, haematitic, amygdaloidal basalt. Possible Wooltana Volcanics equivalent. Indifferentiated basic intrusives: Fine to coarsegrained, dark green, uralitised dolerite, locally intrusive into the Callanna Group.

Diapiric breccia: Massive to flow-banded, pink to buff, carbonate-cemented breccia with wide size range of dolomite, siltstone and micaceous sandstone clasts. 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

Undifferentiated metasediments: Small rafts of meta-conglomerate, quartzo-feldspathic mylonitic gneiss, and calcsilicate marble (?Willyama Supergroup in part).





PARACHILNA **SHEET SH 54-13** Geology of the Flinders Ranges National Park, 1994. Drew, G.J., Drexel, J.F, Reid, P. & Preiss, W.V. (text). Mines and Energy, South Australia.

NOTE:

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