BULLEN

AUSTRALIA 1:250 000 GEOLOGICAL SERIES — **GEOLOGICAL SURVEY OF WESTERN AUSTRALIA** — **SHEET SG 51-1**

SYMBOLS

Geological boundary, accurate
Fault:
- accurate
- inferred
- inferred and concealed
- normal with dip of fault plane
- reverse:
  - accurate
  - inferred and concealed
- relative displacement

Fold, showing direction of plunge:
- anticline
- syncline
- minor, asymmetric

Bedding, showing strike and dip:
- inclined
- horizontal

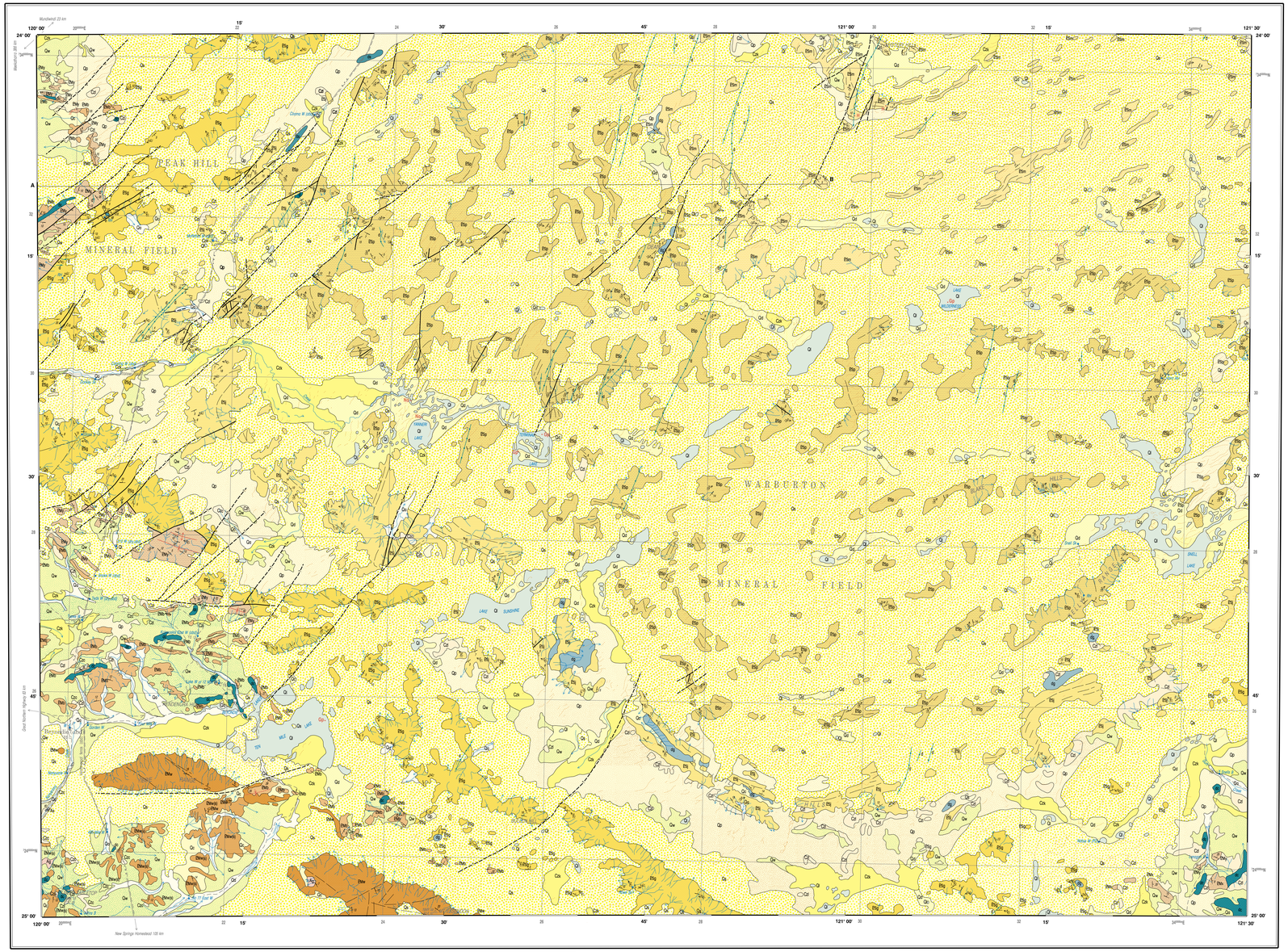
Direction of movement of sediment-bearing currents, from cross-bedding

Air photo lineament

Mineral field boundary
Road
Track
Homestead — Beyondie
Yard
Horizontal control; major
Sand dune

Watercourse, ephemeral
Bore, well
Windpump
Spring; soak, pool
Rockhole, gnamma hole — Rh
Abandoned — (abd)
Position doubtful — (?)

Industrial mineral occurrence
- Gypsum — Gp
- Halite (pseudomorphs) — H
- Salt (in playa lakes) — Na



REFERENCE

PHANEROZOIC — CAINOZOIC — QUATERNARY

Qp | Ql | Qd | Qs | Qe | Qc | Qw

- **Qp** Alluvium—clay, silt, sand, and gravel; in drainage channels and adjacent flood plains
- **Ql** Lacustrine deposits—clay, mud, and silt, mostly saline; commonly gypsiferous
- **Qd** Mixed lacustrine and eolian deposits—clay, mud, silt, and sand; mostly saline; gypsum dunes (kopi)
- **Qs** Eolian sand—in sheets and dunes; longitudinal (sel), chain, net, and pyramidal dunes
- **Qe** Eolian sand—in sheets and interdunal areas; sand, ferruginous sand with ironstone pebble veneer, derived from Czl
- **Qc** Colluvium and minor alluvium—quartz pebble and rock fragment veneer on sand and silt adjacent to bedrock; scree deposits
- **Qw** Colluvium and alluvium—clay, silt, sand, and gravel on broad sheetwash areas; distinctive striped air photo pattern to vegetation

Czk | Czl | Czc

- **Czk** Calcrete—carbonate in sheets, mostly confined to palaeodrainage lines; some secondary silicification at surface
- **Czl** Laterite—massive, pisolitic, pebbly, and nodular ferruginous deposits; overlies leached bedrock
- **Czc** Colluvium—poorly consolidated and consolidated ferruginized silt, sand, gravel; old valley-fill deposits dissected by present drainage

PROTEROZOIC — LATE PROTEROZOIC

- Dg — Fine-grained dolerite dykes; kaolinised weathered outcrop; various ages
- dg — Medium- to coarse-grained dolerite; granophyric in places; in sills, dykes, and irregular intrusions
- db — Basalt, amygdaloidal and porphyritic basalt, fine-grained dolerite; in sills, dykes, and small intrusions

Sawry Group (≤ 810 Ma) — SAUCRY BASIN

- Btm — **MUNDADJINI FORMATION:** fine- to coarse-grained sandstone, siltstone; minor shale, mudstone, conglomerate, dolomite, halite-bearing sandstone
- Bsp — **SPEARHOLE FORMATION:** coarse- to medium-grained sandstone, pebbly sandstone, granule sandstone, conglomerate and siltstone lenses
- Bjj — **JILYILI FORMATION:** fine- to medium-grained sandstone, siltstone; subordinate shale, mudstone, pebbly mudstone, thin-bedded conglomerate
- Bsg — **GLASS SPRING FORMATION:** medium- to coarse-grained sandstone, granule sandstone, conglomerate lenses; minor siltstone

MIDDLE PROTEROZOIC — BANGEMALL BASIN

- dc — Medium- to coarse-grained dolerite; in sills, dykes, and irregular intrusions

Bangemall Group — Collier Subgroup (≤ 1300 Ma)

- Bhy — **CALYTE FORMATION:** medium- to fine-grained sandstone, siltstone, shale
- Bhb — **BACKDOOR FORMATION:** shale, siltstone; medium- to fine-grained sandstone, minor chert
- Bhw — **WONYULGUNNA SANDSTONE:** coarse- to medium-grained sandstone; minor conglomerate
- (Bhw(s)) — Shale, siltstone; minor sandstone

Kalpini Subgroup

- Bhn — **COONABILIBE FORMATION:** coarse- to fine-grained sandstone, micaceous siltstone, shale

ARCHAEAN — MARYMA DOME

- Ag — Granitoid rock; foliated, gneissic
- As — Schist, quartzite, metasedimentary rocks

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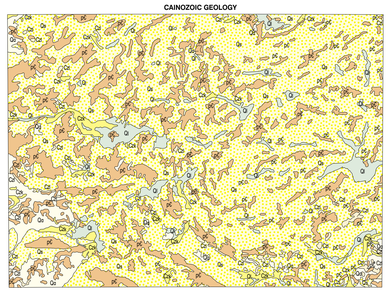
The lines indicate magnetic declination 1982.
+ means declination is east and correction must be added to compass bearing to give true bearing
− means declination is west and correction must be subtracted from compass bearing to give true bearing
Annual change in 1 westerly

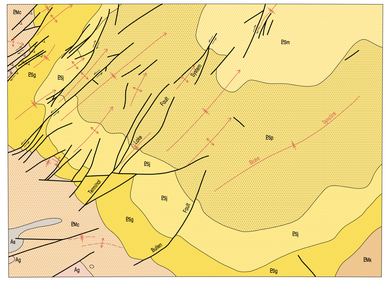
CAINOZOIC GEOLOGY



- Qs — Alluvium and colluvium
- Ql — Lacustrine and associated deposits
- Qd — Eolian sand
- Czk — Calcrete
- Czl — Laterite, older colluvium
- pЄ — Precambrian bedrock

SCALE 1:1 000 000 — 0 10 20 30 40 50 Kilometres

TECTONIC SKETCH MAP

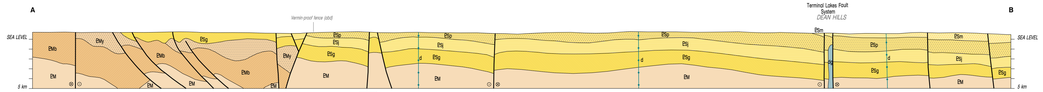


- Btm — Mundadjini Formation
- Bsp — Spearhole Formation
- Bjj — Jilyili Formation
- Bsg — Glass Spring Formation
- (SAUCRY BASIN)
- Bhc — Collier Subgroup
- Bhk — Kalminbin Subgroup
- (BANGEMALL BASIN)
- Ag — Granitoid rocks
- As — Metasedimentary rocks
- (MARYMA DOME)
- Antcline
- Syncline
- Fold axes Bangemall Basin

SCALE 1:1 000 000 — 0 10 20 30 40 50 Kilometres

DIAGRAMMATIC SECTION

NATURAL SCALE



SCALE 1:250 000

1000 Metres — 0 5 10 15 20 25 30 — Kilometres

TRANSVERSE MERCATOR PROJECTION

Grid lines indicate 20 000 metre interval of the Australian Map Grid Zone 51

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