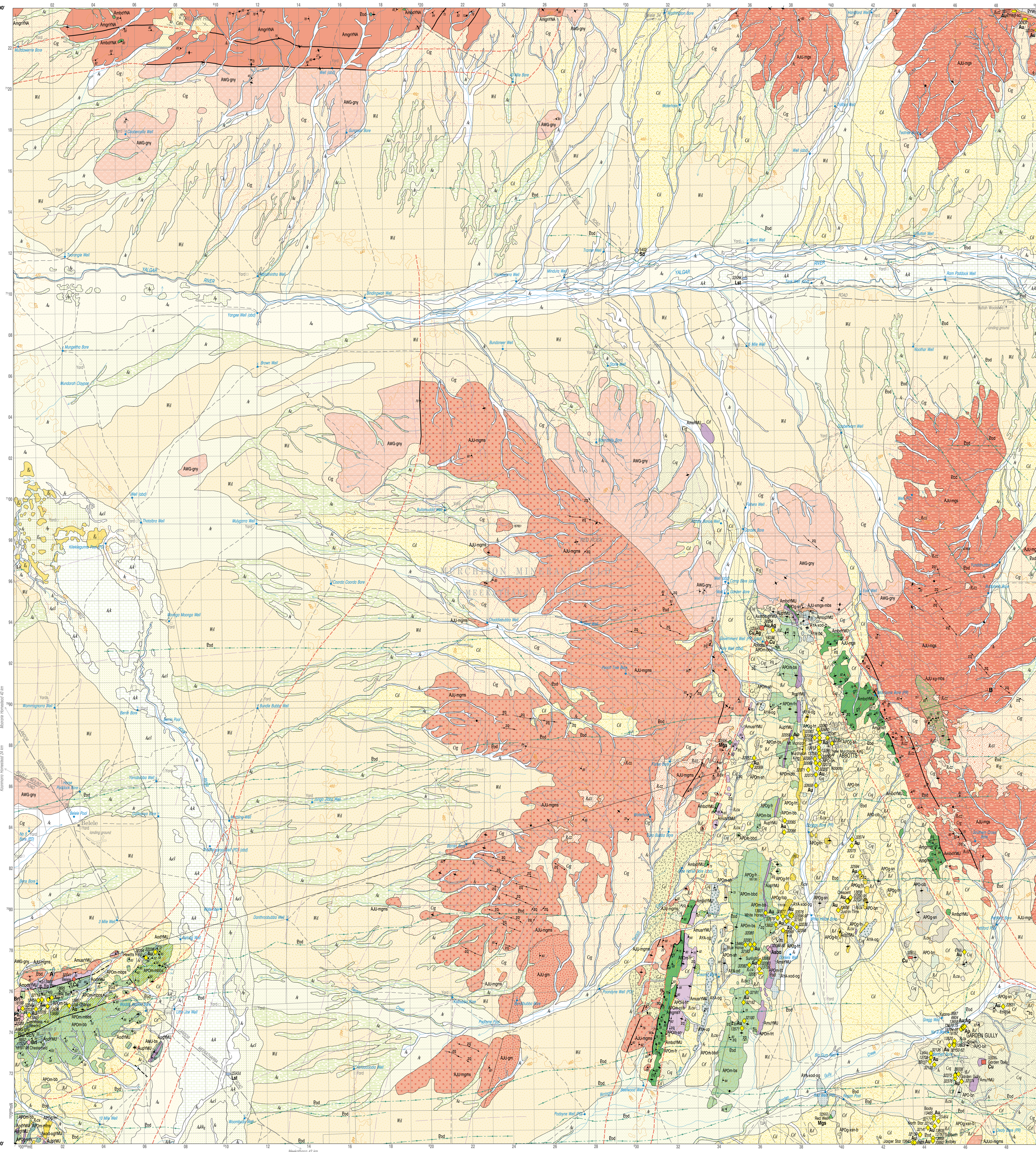
AUSTRALIA 1 : 100 000 GEOLOGICAL SERIES

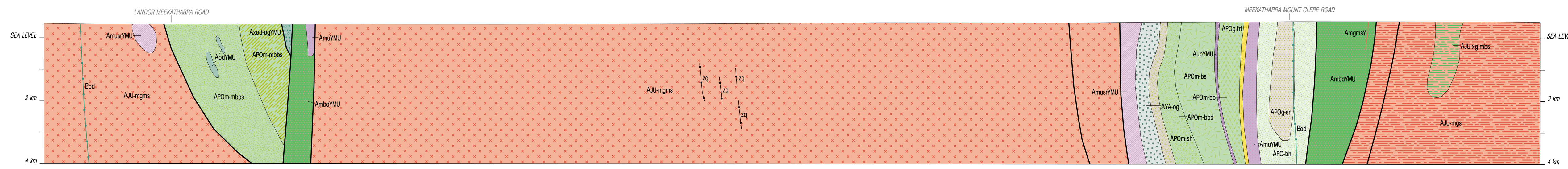
TIERACO

GEOLOGICAL SURVEY OF WESTERN AUSTRALIA

SHEET 2545



DIAGRAMMATIC SECTION



PHANEROZOIC — CENOZOIC

Cₐl	Cf	Cg	Cd	Cq	Cₜtcᵢ	Wg	Wd
Aa	Aₐcl	Aₐkk_g	Ac	Ack	Ad	Af	Ap

Colluvial units

- Cₐl — Colluvium in pediment derived from different rock types; includes gravel, sand, and silt
- Cf — Colluvial footslope containing ferruginous gravel and reworked ferruginous duricrust
- Cg — Colluvial footslope containing quartzofeldspathic gravel, sand, and silt commonly derived from granite and associated weathering products
- Cd — Colluvium in footslope derived from different rock types; includes gravel, sand, and silt
- Cq — Quartz-vein debris on colluvial footslope
- Cₜtcᵢ — Talus from banded iron-formation and chert; locally cemented

Sheetwash units

- Wg — Clay, silt, and sand on sheetflood fan; commonly derived from granite
- Wd — Clay, silt, and sand on sheetflood fan; local ferruginous gravel

Alluvial units

- Aa — Clay, silt, sand, and gravel on alluvial plains
- Aₐcl — Clay and heterogeneous sediments on alluvial plains, including a sparse lag of quartz sand with some quartz and ferruginous saprolite gravel
- Aₐkk_g — Calcrete developed in alluvial channels, dissected by present-day stream channels
- Ac — Clay, silt, sand, and gravel in channels
- Ack — Calcrete and carbonate-cemented alluvium in fluvial channels
- Ad — Clay, silt, and sand in braided swales on floodplains
- Af — Clay, silt, and sand on floodplains
- Ap — Clay and silt in claypans

Es

Eolian unit

- Es — Sandplain overlying alluvial-playa plain

Rf | Rzu | Rzz

Residual or relict units

- Rf — Ferruginous duricrust, massive to rubbly; includes iron-cemented reworked products
- Rzu — Silica caprock over ultramafic rock; local chalcedony and chrysoprase
- Rzz — Silcrete commonly derived from granite

PROTEROZOIC

Ɛod — Dolerite dyke, sill or plug; fine- to medium-grained dolerite and gabbro

Capricorn Orogeny (1835–1780 Ma)

PALEOPROTEROZOIC — Windplain Group — YERRIDA BASIN

ƐYWj-s | ƐYWjf-sa

- ƐYWj-s — **JUDERINA FORMATION:** quartz sandstone; local sandstone, shale, siltstone, chert breccia, and conglomerate
- ƐYWjf-sa — Finlayson Member: quartz arenite; planar or cross bedded; minor pebble conglomerate and intercalated siltstone

- zq — Quartz vein or pod; massive, crystalline, or brecciated; age uncertain
- gY — Granitic dyke
- AmgmsY — Foliated, meta biotite monzogranite; minor metagranodiorite, metasyenogranite, and pegmatite; fine- to coarse-grained; locally gneissic

ARCHEAN — YILGARN CRATON

2637–2602 Ma — Bald Rock Supersuite — Walganna Suite

- AWG-gny — Granite, undivided with local biotite- or amphibole-rich bands; metamorphosed; includes deeply weathered rock

Murchison Regional Deformation Event

2665–2640 Ma — Jungar Suite (c. 2650 Ma; c. 2644 Ma)

AJU-xmgs-mbs | AJU-mgms | AJU-mgs | AJUcl-mgms | AJU-xg-mbs | AJU-gm

- AJU-xmgs-mbs — Foliated metagranite interleaved with subordinate foliated, fine- to medium-grained metamafic rock; gneissic banding developed locally
- AJU-mgms — Foliated, meta biotite monzogranite; minor metagranodiorite, metasyenogranite, and pegmatite; fine- to coarse-grained; locally gneissic
- AJU-mgs — Foliated metagranite; locally schistose; may include amphibolite lenses; includes deeply weathered rock
- AJUcl-mgms — **CHUNDERLOO MONZOGRANITE:** foliated metamonzogranite; locally schistose; may include amphibolite lenses; includes deeply weathered rock
- AJU-xg-mbs — Massive to weakly foliated granitic rock interleaved with minor foliated metamafic rock
- AJU-gm — K-feldspar megacrystic monzogranite; metamorphosed

Murchison Domain — Youanmi Terrane

AmoaYMU | AmodsYMU | Axod-ogYMU | AodYMU | AogYMU

- AmoaYMU — Amphibolite; medium- to coarse-grained; derived from dolerite and gabbro
- AmodsYMU — Metadolerite; schistose; locally amphibolitic
- Axod-ogYMU — Massive dolerite interleaved with minor gabbro; metamorphosed
- AodYMU — Dolerite, medium-grained; massive, locally weakly deformed; metamorphosed
- AogYMU — Gabbro, coarse-grained; massive, locally weakly deformed; locally contains dolerite, quartz gabbro, and gabbronorite; metamorphosed

Axmbs-gYMU | AmbaYMU

- Axmbs-gYMU — Foliated metamafic rock and local amphibolite interleaved with minor massive to weakly foliated granitic rock
- AmbaYMU — Amphibolite, fine- to medium-grained; typically foliated

AmuYMU | AmusrYMU | AupYMU

- AmuYMU — Meta-ultramafic rock, undivided; typically deeply weathered
- AmusrYMU — Tremolite–chlorite(–talc) schist
- AupYMU — Peridotite; metamorphosed; commonly serpentinized

Austin Downs Supersuite — Yalgowra Suite

AYA-xod-g | AYA-xod-og | AYA-od | AYA-og | AYA-up

- AYA-xod-g — Massive dolerite interleaved with minor massive to weakly foliated granitic rock
- AYA-xod-og — Massive dolerite interleaved with minor gabbro; metamorphosed
- AYA-od — Dolerite; massive, locally weakly foliated; metamorphosed
- AYA-og — Gabbro; massive to weakly foliated; locally contains dolerite, quartz gabbro, and gabbronorite; metamorphosed
- AYA-up — Peridotite; metamorphosed; commonly serpentinized

Unassigned

- AMU-bs — Pyroxene spinifex-textured basalt and local basalt; locally variolitic; metamorphosed

Murchison Supergroup — Polelle Group

APO-cib | APO-bn

- APO-cib — Banded iron-formation and ferruginous banded chert; metamorphosed
- APO-bn — Fine- to very fine-grained mafic rock, undivided; metamorphosed; typically weathered

c. 2744 Ma; c. 2739 Ma

APOg-xsn-b | APOg-sn | APOg-mfs | APOg-fap | APOg-fn | APOg-fr | APOg-frt

GREENSLEEVES FORMATION

- APOg-xsn-b — Sedimentary rock, undivided; interleaved with basalt; metamorphosed
- APOg-sn — Sedimentary rock, undivided; metamorphosed
- APOg-mfs — Meta felsic volcanic rock, undivided; foliated; commonly deeply weathered
- APOg-fap — Feldspar-phyric andesite; metamorphosed
- APOg-fn — Felsic volcanic and volcaniclastic rock, undivided; metamorphosed; commonly deeply weathered and kaolinized
- APOg-fr — Rhyolite; metamorphosed
- APOg-frt — Felsic volcanic and volcaniclastic rock; commonly bedded; metamorphosed

2800–2760 Ma

APOm-sh | APOm-sn | APOm-ccb | APOm-fn | APOm-fr | APOm-frt | APOm-mbbs | APOm-mbps | APOm-bb | APOm-bbd | APOm-bs

MEEKATHARRA FORMATION

- APOm-sh — Shale and mudstone with volcaniclastic rock; metamorphosed
- APOm-sn — Sedimentary rock, undivided; metamorphosed
- APOm-ccb — Banded chert; metamorphosed
- APOm-fn — Felsic volcanic and volcaniclastic rock, undivided; metamorphosed; commonly deeply weathered and kaolinized
- APOm-fr — Rhyolite; metamorphosed
- APOm-frt — Felsic volcanic and volcaniclastic rock; commonly bedded; metamorphosed
- APOm-mbbs — Strongly foliated metabasalt and local amphibolite
- APOm-mbps — Meta pyroxene spinifex-textured basalt; locally schistose
- APOm-bb — Basalt; massive to weakly foliated; locally pillowed and/or vesicular; metamorphosed
- APOm-bbd — Variolitic basalt; locally pillowed with a fine-grained groundmass; varioles typically comprise up to 90% of rock; metamorphosed
- APOm-bs — Pyroxene spinifex-textured basalt and minor basalt; locally variolitic; metamorphosed

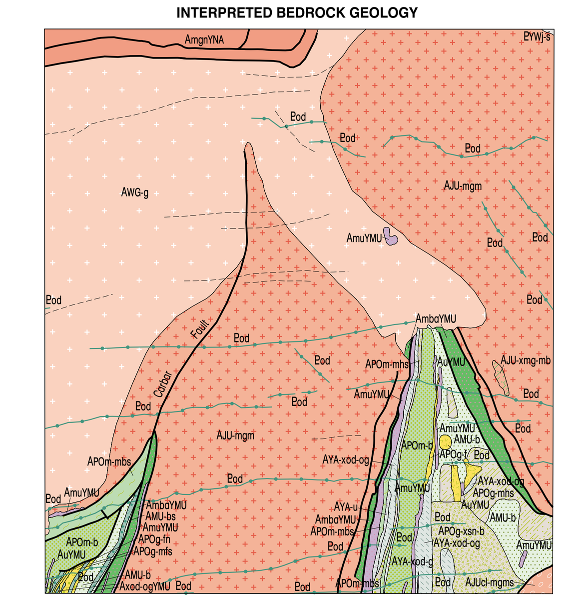
Narryer Terrane

AmgnYNA | AmbaYNA

- AmgnYNA — Granitic gneiss; locally migmatitic
- AmbaYNA — Amphibolite and local metabasalt; fine- to medium-grained; typically foliated

Symbol		Symbol	
Geological boundary		Airphoto lineament	
exposed		unspecified	
Fault or shear		Aeromagnetic lineament	
exposed		unspecified	
concealed		Isotopic age determination site with identification number	185138
concealed, interpreted from aeromagnetic data		Road; unsealed	
Small-scale fold axial surface, showing strike and dip		Track	
vertical		Fence, generally with track	
Bedding, showing strike and dip		Telegraph line	
inclined	45	Townsite	
vertical		less than 1000	Abbotts
Way-up indicator		Homestead	Belele
pillow structure		Locality	Buttah Woolshed
Metamorphic foliation, showing strike and dip		Building	
inclined	50	Yard	Yard
vertical		Horizontal control; minor	
Gneissic banding, showing strike and dip		Contour line, 20 metre interval	520
inclined	83	Watercourse with ephemeral pool and waterhole	
vertical		Lake	
Cleavage, showing strike and dip		Playa lake	
vertical		Pool	Pool
Shear-sense indicator		Waterhole	Waterhole
showing dip of foliation		Bore, well	Bore Well
dextral		Windpump	
vertical		Abandoned	(abd)
Stretching lineation, showing trend and plunge		Position reliable	(PR)
inclined	55	Position doubtful	(PD)
Fracture, joint, or extension vein, showing strike and dip		Mining centre	ABBOTTS
inclined	83		
vertical			

INTERPRETED BEDROCK GEOLOGY



For other linear structures, refer to main reference

PROTEROZOIC

- Ɛod — Dolerite dyke, sill or plug
- Windplain Group: ƐYWj-s — JUDERINA FORMATION (YERRIDA BASIN)

ARCHEAN — YILGARN CRATON

- Bald Rock Supersuite — Walganna Suite: AWG-g — Granite; metamorphosed
- Jungar Suite: AJU-xmg-mb | AJU-mgm | AJUcl-mgms
  - AJU-xmg-mb — Granitic rock interleaved with metamafic rock
  - AJU-mgm — Metamonzogranite
  - AJUcl-mgms — **CHUNDERLOO MONZOGRANITE**
- Murchison Domain — Youanmi Terrane
  - AmbaYMU — Amphibolite
  - Axod-ogYMU — Dolerite interleaved with minor gabbro; metamorphosed
  - AmuYMU — Meta-ultramafic rock
  - AuYMU — Ultramafic rock, undivided; metamorphosed
- Austin Downs Supersuite — Yalgowra Suite
  - AYA-xod-g — Dolerite interleaved with minor granitic rock
  - AYA-xod-og — Dolerite interleaved with minor gabbro
  - AYA-mu — Meta ultramafic rock, undivided
  - AYA-u — Ultramafic rock, undivided; metamorphosed
- Unassigned
  - AMU-b — Mafic volcanic rock, undivided; metamorphosed
  - AMU-bs — Pyroxene spinifex-textured basalt; metamorphosed
- Murchison Supergroup — Polelle Group
  - **GREENSLEEVES FORMATION**
  - APOg-mhs — Schistose pelite and psammite
  - APOg-xsn-b — Sedimentary rock, undivided; interleaved with basalt; metamorphosed
  - APOg-mfs — Meta felsic volcanic rock, foliated
  - APOg-f — Felsic volcanic and volcaniclastic rock, undivided; metamorphosed
  - **MEEKATHARRA FORMATION**
  - APOm-mhs — Schistose pelite and psammite
  - APOm-mbs — Foliated metamafic rock
  - APOm-b — Mafic volcanic rock; metamorphosed
- Narryer Terrane: AmgnYNA — Granitic gneiss

Fracture pattern in granitic rock

MINERAL SITES

MINERALIZATION STYLES

- Orthomagmatic mafic and ultramafic
- Vein and hydrothermal
- Stratabound volcanic and sedimentary
- Stratabound sedimentary and/or sedimentary banded iron-formation
- Regolith hosted

MINERAL AND ROCK COMMODITY GROUPS

- Precious metal
- Speciality metal
- Base metal
- Industrial mineral
- Construction material

OPERATING STATUS AND SITE IDENTIFICATION NUMBER

Mine, operating	e.g. 5402
Mine, shut	e.g. 32431
Mineral deposit	e.g. 32577
Mineral prospect or occurrence	e.g. 32688

In the MINEDEX database the formal Site ID consists of 'S' followed by seven numbers. Site numbers shown on this map are abbreviated for clarity by removing the leading zeros (0). To search for site numbers in the MINEDEX database the user must insert sufficient leading zeros (0).

e.g. S1234 = S0001234 or S12 = S0000012

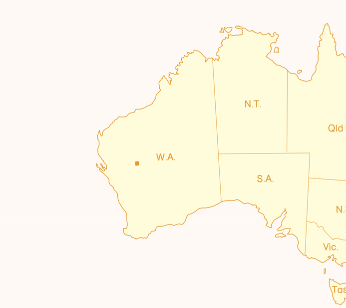
MINERAL AND ROCK COMMODITIES

Asbestos, amphibolite	Asba
Barite	Brt
Copper	Cu
Gold	Au
Lead	Pb
Limestone	Lst
Sand (undifferentiated)	Sd
Silver	Ag
Magnesite	Mgs

DATA DIRECTORY

Theme	Data Source	Data Currency	Organization
Geology	GSWA	2005 – 06	Dept of Mines and Petroleum
Structural data	WAROX	FEB 2009	Dept of Mines and Petroleum
Mineral sites	MINEDEX *	FEB 2009	Dept of Mines and Petroleum
Horizontal control	GESMAR	MAR 2009	Landgate
Topographic nomenclature	GEONOMA	2008	Landgate
Topography	Landgate and GSWA field survey	2008	Landgate
Contours	NASA SRTM 90m Digital Elevation Data	2000	Consultative Group for International Agriculture Research – Consortium for Spatial Information

* GSWA and DMP databases can be viewed online (www.dmp.wa.gov.au/geoview) or can be downloaded from the GSWA Data and Software Centre (www.dmp.wa.gov.au/datacentre)



Compiled by SF Chen, TJ Ivanic, and JR Gozzard 2006–08

Geology by SF Chen 2005–06

Geochronology from GSWA data (published and in preparation) and interpreted from external sources (listed below). Some GSWA geochronology may come from samples obtained on adjoining map sheets. GSWA geochronology data are available online at http://www.dmp.wa.gov.au/geoview and on DVD (Compilation of geochronology data – updated as required), or can be downloaded from http://www.dmp.wa.gov.au/datacentre.

Cartography by D Ladbrook

Edited by B Striewski and B Williams

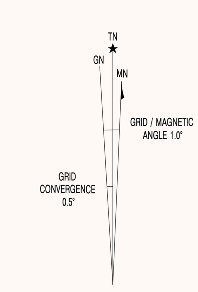
Published by the Geological Survey of Western Australia. Digital and hard copies of this map are available from the Information Centre, Department of Mines and Petroleum, 100 Plain Street, East Perth, WA 6004.

Phone (08) 9222 3459 Fax (08) 9222 3444

Website www.dmp.wa.gov.au Email geological.survey@dmp.wa.gov.au

The recommended reference for this map is:

Chen, SF, Ivanic, TJ, and Gozzard, JR 2009, Tieraco, WA Sheet 2545: Geological Survey of Western Australia, 1:100 000 Geological Series.



True north, grid north and magnetic north are shown diagrammatically for the centre of the map. Magnetic north is correct for 2008 and moves easterly by approx. 2' annually

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ERRABIDDY 2347	MARQUIS 2447	MILGUN 2547	JAMINDI 2647	THREE RIVERS 2747	MARYMIA 2847
GOULD 2346	MOORARIE 2446	PADBURY 2546	BRYAH 2646	DOOLGUNNA 2746	THADUNA 2846
MILEURA 2345	KOONMARRA 2445	TIERACO 2545	GLENGARRY 2645	MOOLOOGOOL 2745	MOUNT BARTLE 2845
KALLI 2344	MADOONGA 2444	MEEKATHARRA 2544	GABANINTHA 2644	YAGAHONG 2744	MEREWETHER 2844

ROBINSON RANGE SG 50-7; PEAK HILL SG 50-8; BELELE SG 50-11; GLENGARRY SG 50-12

1:100 000 maps shown in black

1:250 000 maps shown in brown

Government of Western Australia
Department of Mines and Petroleum

HON. NORMAN MOORE, M.L.C.
MINISTER FOR MINES AND PETROLEUM

Geological Survey of Western Australia

TIM GRIFFIN
EXECUTIVE DIRECTOR

SCALE 1:100 000

1000 Metres 0 1 2 3 4 5 6 7 8 9 10 Kilometres

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
HORIZONTAL DATUM: GEOCENTRIC DATUM OF AUSTRALIA 1994
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

Grid lines indicate 1000 metre interval of the Map Grid Australia Zone 50

GDA — The Map Grid Australia (MGA) is based on the Geocentric Datum of Australia 1994 (GDA94). GDA94 positions are compatible within one metre of the datum WGS84 positions

TIERACO

SHEET 2545 FIRST EDITION 2009

Version 2.0 — August 2009

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