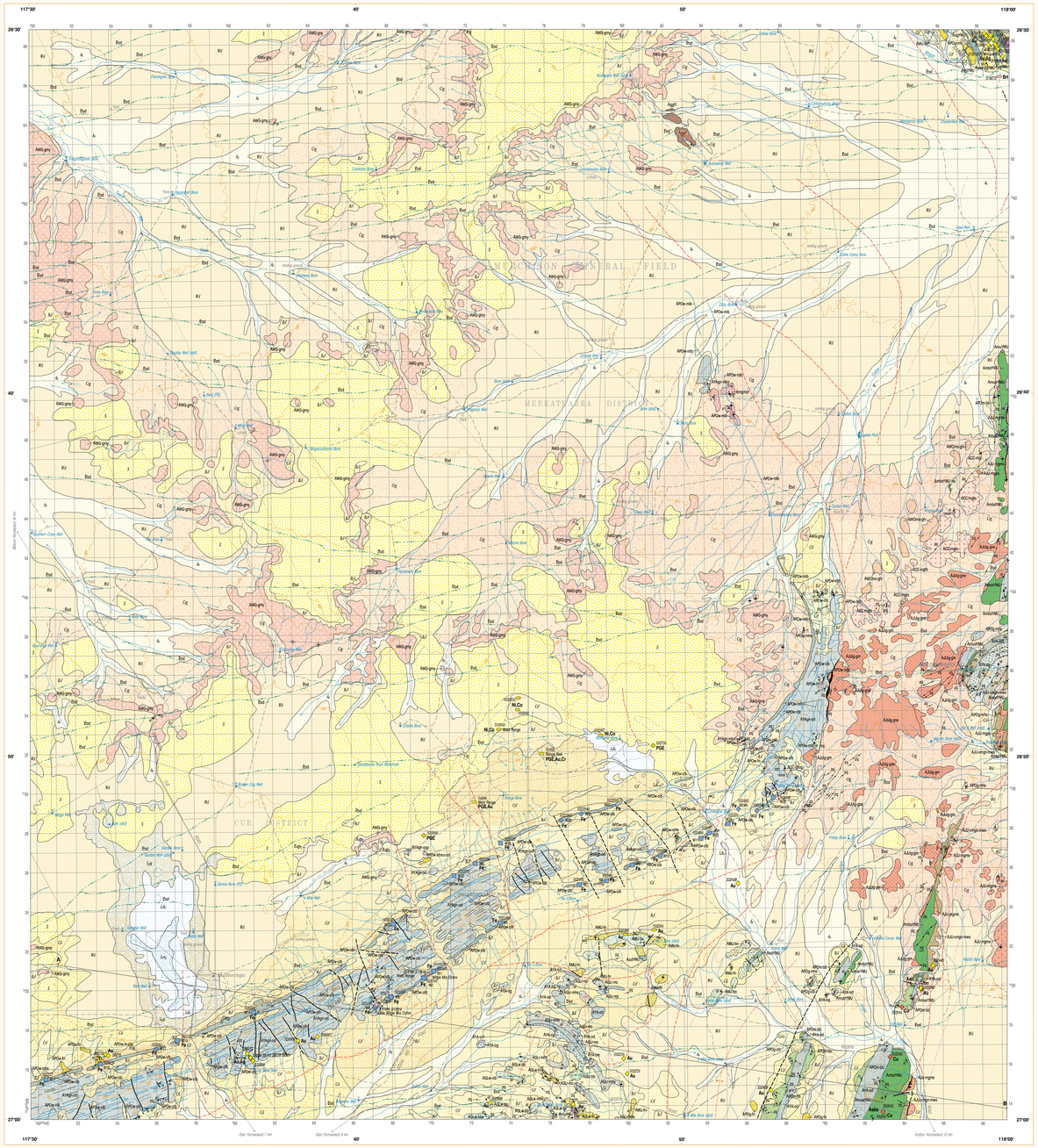
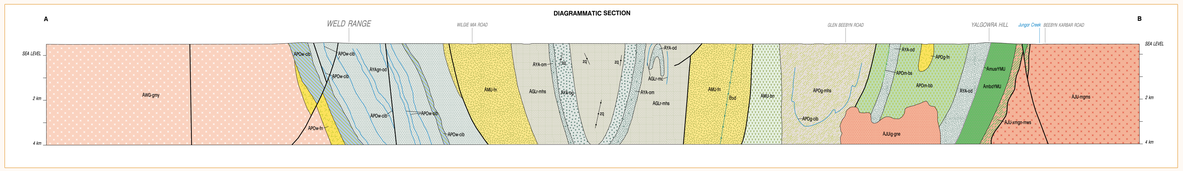
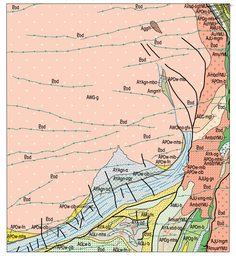


DIAGRAMMATIC SECTION



INTERPRETED BEDROCK GEOLOGY



Bxd Dolerite dyke, sill or plug

Bird Rock Supersuite

Weigonna Suite

AMG-g Granite, undivided; metamorphosed

AMGmz-gr **MARLOMBUNBAH GRANITE:** muscovite-bearing alkali granite

Wyguna Suite

Amgnr Foliated, metamorphosed biotite monzogranite

Amgnr? Migmatitic granodiorite with mafic inclusions

Jorgor Suite

AJz-xmg-mb Weakly foliated granitic rock with subordinate metamafic rock

AJz-mgm Biotite metamonzogranite

AJzlg-gm **ILUGUARA MONZOGRANITE:** K-feldspar megacrystic monzogranite and equigranular granitic rock

AJzqd-gd(YMU) Massive dolerite interleaved with minor gabbro

AmduYMU Amphibolite and local metabasalt

AmuYMU AmuprYMU AuYMU

AmuYMU Meta-ultramafic rock, undivided

AmuprYMU Tremolite-chlorite(-talc) schist

AuYMU Ultramafic rock, undivided

Murchison Supergroup

Gee Group — Unassigned

AMLr-fn Felsic volcanic and volcaniclastic rock, undivided

AMLr-b Mafic volcanic rock

AGLe-fn AGLe-b

WATAGEE FORMATION

AGLr-fn Felsic volcanic and volcaniclastic rock

AGLr-b Mafic volcanic rocks

RYANSVILLE FORMATION

AGLr-mts Schistose pelite and psammite

AGLr-b Felsic volcanic and volcaniclastic rock

Peak Group

APOe-mts APOe-mb APOe-cb APOe-fn

WILGIE MIA FORMATION

APOe-mts Schistose pelite and psammite

APOe-mb Foliated meta-banded iron-formation

APOe-cb Banded iron-formation and chert

APOe-fn Felsic volcanic and volcaniclastic rock

APOg-mts APOg-mb

GREENFIELDS FORMATION

APOg-mts Schistose pelite and psammite

APOg-mb Meta felsic volcanic rock

APOg-fn Felsic volcanic and volcaniclastic rock, undivided

APOm-b **MEEKATHARRA FORMATION**

APOm-b Mafic volcanic rock

Austin Downs Supersuite

Yelgarra Suite

ARKo-sd Dolerite

ARKo-sg Gabbro

ARKgn-sd Leucogabbro, coarse grained; contains alternating layers of melanocratic and leucocratic gabbro; massive, locally weakly deformed; metamorphosed

ARKgn-sm Gabbronorite, coarse grained; metamorphosed

ARKgn-mbd Amphibolite, fine to medium-grained; typically foliated

ARKgn-sd Dolerite, medium grained with local fine- and coarse-grained layers; massive, locally weakly deformed; metamorphosed

ARKgn-ogg Gabbro, coarse grained; contains alternating layers of melanocratic and leucocratic gabbro; massive, locally weakly deformed; metamorphosed

Cullaloo Suite

ACC-mgt Metatonalite

ACC-mgts Metatonalite with hornblende phenocrysts and common; small, elliptical mafic xenoliths

ACC-grsp Porphyritic microgranite; quartz, plagioclase, augite, and biotite phenocrysts; metamorphosed

Murchison Domain — Yilgarn Craton

Murchison Supergroup

Gee Group

AGLe-mts Schistose pelite and psammite; locally contains biotite porphyroblasts

AGLe-cb Banded iron-formation and ferruginous banded chert; metamorphosed

AGLe-fn Felsic volcanic and volcaniclastic rock, undivided; metamorphosed; commonly deeply weathered and kaolinized

AGLe-bb Basalt; massive to weakly foliated; locally pillowed and/or vesicular; metamorphosed

AGLe-bbx Pillow basalt; vesicular or amygdaloidal; metamorphosed

AGLe-bx Pyroxene spinifex-textured basalt and local basalt; locally variolitic; metamorphosed

AGLr-mts AGLr-mc AGLr-sm

RYANSVILLE FORMATION

AGLr-mts Schistose pelite and psammite; locally contains biotite porphyroblasts and minor bands of felsic volcaniclastic rock

AGLr-mc Metachert; locally schistose

AGLr-bb Basalt; massive to weakly foliated; locally pillowed and/or vesicular; metamorphosed

Peak Group

APOe-mts APOe-mb APOe-cb APOe-chso-sd APOe-fn

2752 Ma ¹ — 2730 Ma; <2989 Ma — 2742 Ma

WILGIE MIA FORMATION

APOe-mts Schistose pelite and psammite; locally contains biotite porphyroblasts

APOe-mb Foliated meta-banded iron-formation; commonly with coarse, granular, and recrystallized magnetite crystals

APOe-cb Banded iron-formation and ferruginous banded chert; minor jasplite and hematite-rich rock; minor volcaniclastic sandstone; metamorphosed

APOe-chso-sd Polymictic breccia with a fine felsic volcanic matrix intruded by dolerite; metamorphosed

APOe-fn Felsic volcanic and volcaniclastic rock, undivided; metamorphosed; commonly deeply weathered and kaolinized

APOg-mts APOg-cb APOg-mb APOg-fn

GREENFIELDS FORMATION

APOg-mts Schistose pelite and psammite; locally contains biotite porphyroblasts

APOg-cb Banded iron-formation and ferruginous banded chert; metamorphosed

APOg-mb Meta felsic volcanic rock, undivided; foliated; commonly deeply weathered

APOg-fn Felsic volcanic and volcaniclastic rock, undivided; metamorphosed; commonly deeply weathered and kaolinized

APOm-bb APOm-bx

2800–2760 Ma

MEEKATHARRA FORMATION

APOm-bb Basalt; massive to weakly foliated; locally pillowed and/or vesicular; metamorphosed

APOm-bx Pyroxene spinifex-textured basalt and minor basalt; locally variolitic; metamorphosed

Yilgarn Craton

Cr Cg Cf Cg CZc Rg RV A

LAc LAg LAg

Colluvial units

Cr Colluvial footslope containing ferruginous gravel and reworked ferruginous duricrust

Cg Colluvial footslope containing quartzite/jasperite gravel, sand, and silt commonly derived from granite and associated weathering products

Cf Colluvium in footslope derived from different rock types; includes gravel, sand, and silt

Cg Quartz-vein debris on colluvial footslope

CZc Talus from bonded iron-formation and chert; locally cemented

Sheetwash units

Rg Clay, silt, and sand on sheetflood fan; commonly derived from granite

RV Clay, silt, and sand on sheetflood fan; local ferruginous gravel

Alluvial unit

A Clay, silt, sand, and gravel on alluvial plain

Lacustrine units

LAc Calcareous lake deposit; predominantly cemented calcite

LAg Deposits fringing salt lakes; mainly evaporitic quartz and sand, and gypsum with bedding; lacustrine clay

LAg$_1$ Saline lake deposit; predominantly comprising evaporitic gypsum

X Xd RdgSy Xd

Sandplain unit

S Residual and aeolian sand with minor silt and clay; low vegetated dunes locally common

Residual or relic units

Xd Undivided residual or relict material; mainly ferruginous and siliceous duricrust; minor calcrete and kaolinised rock

RdgSy Quartzite/jasperite sand and minor stones over granite; sparse granite outcrop; includes mottled and leached zones of weathering profile

Xd Ferruginous duricrust; massive to rubbly; includes non-cemented reworked products

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

Qz Quartz vein or pod; massive, crystalline, or brecciated; age unknown

Murchison regional deformation event

Amgnr¹ Amgnr²

Amgnr¹ Foliated, meta biotite monzogranite; minor metagranodiorite, metasyenogranite, and pegmatite; fine- to coarse-grained; locally gneissic

Amgnr² Migmatitic granodiorite with mafic inclusions; metamorphosed

2800 – 3940 Ma; c. 2850 Ma

Jorgor Suite

AJz1-xmgr-mwc Monzogranite interleaved with subordinate, foliated, metamafic rock; gneissic banding developed locally

AJz1-mgms Foliated, meta biotite monzogranite; minor metagranodiorite, metasyenogranite, and pegmatite; fine- to coarse-grained; locally gneissic

AJz1-mgau Metamorphosed pegmatitic granite with feldspar augen

ILUGUARA MONZOGRANITE

AJzlg-gme K-feldspar megacrystic monzogranite; locally laminated; metamorphosed

AJzlg-gne Equigranular granitic rock; metamorphosed; includes deeply weathered rock

AmduYMU AmduprYMU AsuYMU AsgrYMU

AmduYMU Amphibolite; medium- to coarse-grained; derived from dolerite and gabbro

AmduprYMU Massive dolerite interleaved with minor gabbro; metamorphosed

AsuYMU Dolerite; medium-grained; massive, locally weakly deformed; metamorphosed

AsgrYMU Gabbro, coarse-grained; massive, locally weakly deformed; locally contains dolerite, quartz gabbro, and gabbronorite; metamorphosed

AmduYMU Amphibolite, fine- to medium-grained; typically foliated

AmuYMU AmuprYMU AsuprYMU

AmuYMU Meta-ultramafic rock, undivided; typically deeply weathered

AmuprYMU Tremolite-chlorite(-talc) schist

AsuprYMU Peridotite, metamorphosed; commonly serpentinised

Yilgarn Craton

Geological boundary
- exposed
- Fault or shear
- exposed
- concealed
- concealed, interpreted from aeromagnetic data

Fold, showing axial trace and generalized plunge direction
- syncline, concealed
- antiform, concealed
- synform, concealed
- synformal anticline; exposed, concealed
- antiformal syncline, concealed

Small-scale fold axis, showing trend and plunge
- unspecified
- S-vergence
- M-vergence
- Z-vergence

Bedding, showing strike and dip
- inclined
- vertical

Igneous layering, showing strike and dip
- inclined
- vertical

Igneous flow banding, showing strike and dip
- inclined
- vertical

Igneous contact, showing strike and dip
- vertical

Way-up indicator
- Igneous layering
- pillow structure
- graded bedding
- cross-bedding

Metamorphic foliation, showing strike and dip
- inclined
- vertical
- dip indeterminate

Gneissic banding, showing strike and dip
- inclined
- vertical

Cleavage, showing strike and dip
- inclined
- vertical

Shear-zone indicator
- sinistral
- showing dip of foliation
  - dextral
  - inclined
  - vertical
  - sinistral
  - inclined
  - vertical

Lineation, unspecified, showing trend and plunge
- inclined

Mineral lineation, showing trend and plunge
- inclined

Bedding-cleavage intersection lineation, showing trend and plunge
- inclined

Cleavage-cleavage intersection lineation, showing trend and plunge
- inclined

Mineral alignment, showing trend and plunge
- inclined

Fracture, joint, or extension vein, showing strike and dip
- inclined
- vertical

Airphotos lineament
- unspecified

Aeromagnetic lineament
- unspecified

Isotopic age determination site with identification number

Road, sealed
Road, unsealed
Track
Fence, generally with track
Homestead
Locality
Yard
Microwave repeater station
Contour line, 30 metre interval

Watercourse with ephemeral pool or waterhole
Playa lake
Pool
Waterhole
Bore, well
Windpump

Mineral field district boundary
Mine, shut; deposit; prospect or occurrence — Hetcubes

MINERAL SITES

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

MINERAL AND ROCK COMMODITY GROUPS
- Precious metal
- Base alloy metal
- Base metal
- Iron
- Industrial mineral

OPERATING STATUS AND SITE IDENTIFICATION NUMBER

Mine, shut e.g. 201B201
Mineral deposit e.g. 0201A90
Mineral prospect or occurrence e.g. C0201L4

is the MINEDEX database file format Site Number consisting of 7 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. 0123A = 3000123A or 012 = 3000012

MINERAL AND ROCK COMMODITIES

Asbestos, amphibole	**Aabo**
Asbestos, (undifferentiated)	**Aab**
Barite	**Brt**
Chromium	**Cr**
Cobalt	**Co**
Copper	**Cu**
Gold	**Au**
Iron	**Fe**
Nickel	**Ni**
Platinum Group Elements	**PGE**
Silver	**Ag**

DATA DIRECTORY

Theme	Data Source	Date Currency	Organization
Geology	GSWA	2007	Dept of Mines and Petroleum
Structural data	MAPCIS	MAY 2006	Dept of Mines and Petroleum
Mineral sites	MINEDEX*	JUN 2006	Dept of Mines and Petroleum
Topography	Landgate and GSWA field survey	2007	Landgate
Contours	NASA SRTM Mini 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/dbcentre)

SHEET INDEX

1:100 000 maps shown in black
1:250 000 maps shown in brown

True north, grid north and magnetic north are shown diagrammatically for the centre of the map. Magnetic north is correct to 2006 and moves eastwards by approx 2' annually

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

Compiled by TJ Ivanic 2007–09
Geology by TJ Ivanic 2007

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 www.dmp.wa.gov.au/geoview and on DVD *Compilation of geochronology data – updated as required*, or can be downloaded from www.dmp.wa.gov.au/dbcentre

Geochronology by:
(1) Wang, Q. 1988. The Australian National University, Canberra. PhD thesis (unpublished), 175p.

Cartography by P Taylor

Edited by S White and S 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/geoviews Email: geological.survey@dmp.wa.gov.au

The recommended reference for this map is:
Ivanic, TJ 2008, Mooloogoo, WA Sheet 2444: Geological Survey of Western Australia, 1:100000 Geological Series.

MADOONGA

SHEET 2444 **FIRST EDITION 2009**

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