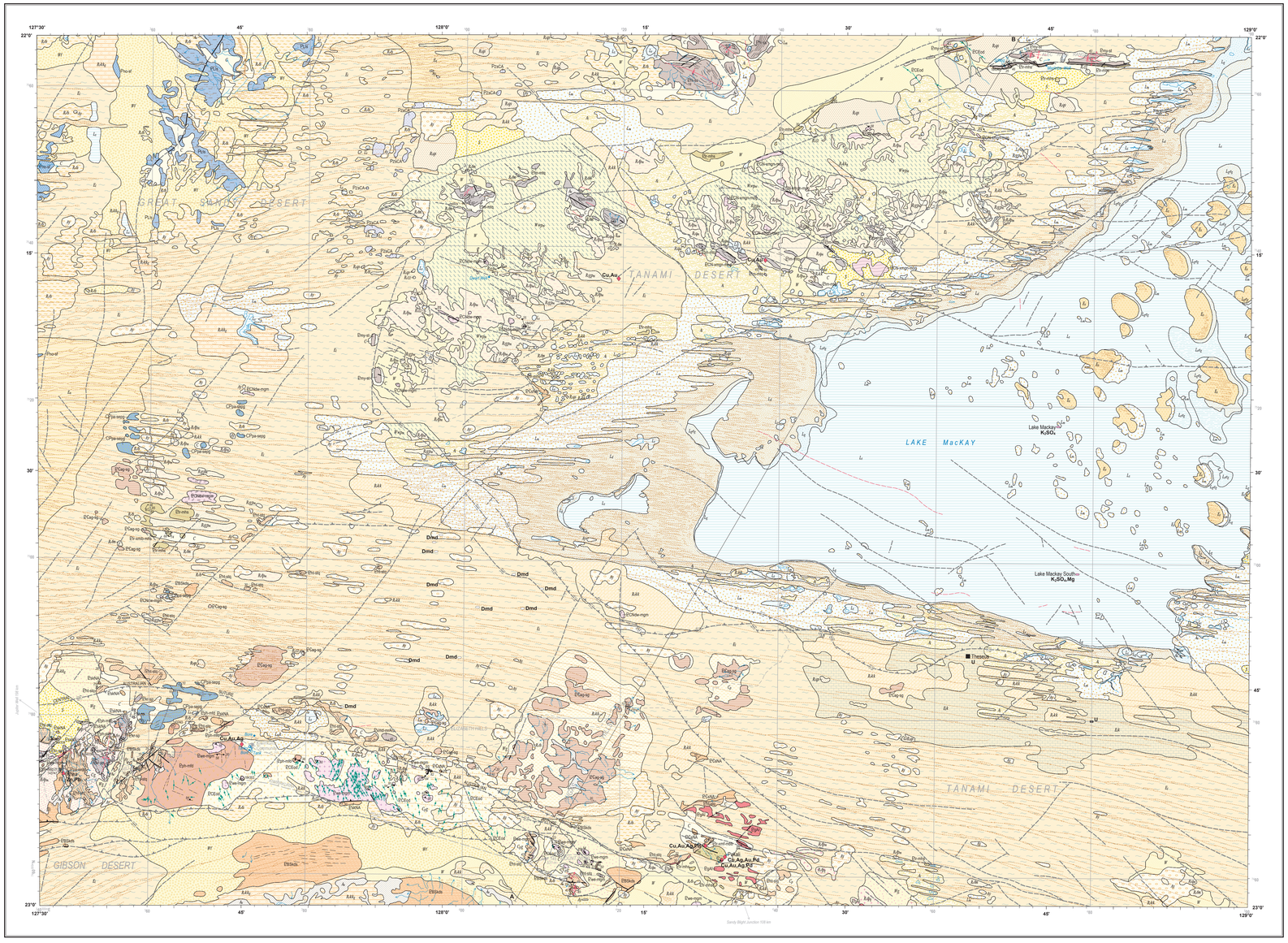
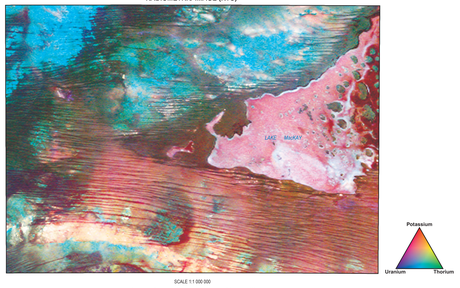
WEBB

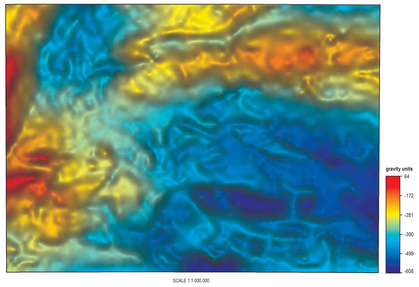
AUSTRALIA 1 : 250 000 GEOLOGICAL SERIES | **GEOLOGICAL SURVEY OF WESTERN AUSTRALIA** | **SHEET SF 52-10**



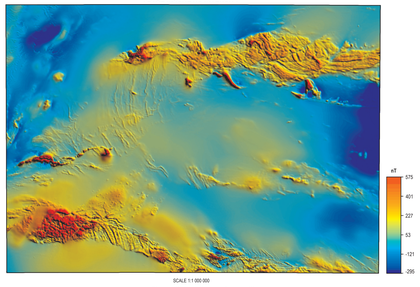
RADIOMETRIC IMAGE (KTU)



BOUGUER GRAVITY



TOTAL MAGNETIC INTENSITY



MINERAL SITES

MINERALIZATION STYLE

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

COMMODITY GROUP

- Precious mineral
- Base metal
- Energy
- Industrial mineral

COMMODITY

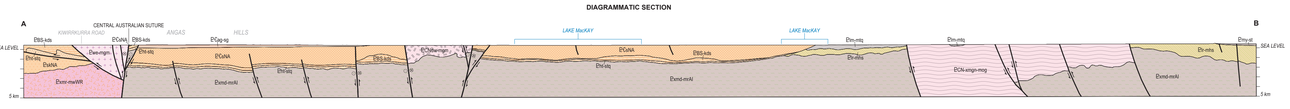
Copper	Cu
Diamond	Dmd
Gold	Au
Lead	Pb
Magnesium	Mg
Palladium	Pd
Potassium sulphate	K_2SO_4
Silver	Ag
Uranium	U
Zinc	Zn

SITE NAME

Mine, deposit, prospect, or occurrence ..... Pokalli

Mineralization sites on this map have been extracted from GSWA's MINEDEX database. For clarity, names have been shown only for selected sites. Full details of site numbers, site locations, site status, mineralization, and commodities can be obtained from the MINEDEX database, accessed at: <www.dmp.wa.gov.au/minedex>.

DIAGRAMMATIC SECTION



PHANEROZOIC

CENOZOIC

Colluvial units

- C — Colluvium derived from different rock types; includes gravel, sand, silt and clay
- C_p — Clay, silt, and sand of mixed origin in pediplain deposits; subcropping bedrock
- C_{pE} — Quartzofeldspathic clay, silt, and sand of mixed origin in pediplain deposits; subcropping bedrock
- C_E — Gravel, sand, and silt, commonly derived from quartzofeldspathic rocks and associated weathering products

Sheetwash units

- W — Clay, silt, and sand in sheetwash fans
- W_f — Clay, silt, and sand with abundant ferruginous grit
- W_E — Clay, silt, and sand, commonly derived from quartzofeldspathic rocks
- $W_E\gamma_{Nk}$ — Clay, silt and sand derived from weathered metamorphosed monzogranite and monzonite

Sheetwash units

- A — Sand, silt, and clay in alluvial drainage depressions, claypans, and ephemeral floodplain lakes; low-lying areas with internal drainage
- A_r — Superficial channel commonly terminating at a sheetwash zone; ephemeral
- A_f — Clay, silt, sand, and gravel in alluvial fans
- A_l — Sand, silt, and clay in localized depressions within eolian sandplain

Lacustrine units

- L_s — Sand, silt, and gypsum in dunes adjacent to and within playa lakes
- L_p — Silt, sand, and gravel in halophyte flats adjacent to playa lakes
- L_{pG} — Lithified and unconsolidated gypsum and clay; in locally well-bedded deposits fringing salt lakes
- L_d — Mixed dune, evaporite, and alluvial deposits, typically adjacent to playa lakes
- L_{dK} — Calcareous dune, evaporite, and alluvial deposits, typically adjacent to playa lakes
- L_c — Saline lake, rimmed by evaporitic gypsum and carbonate deposits
- L_{cG} — Saline lake deposit; predominantly comprising evaporitic gypsum

Eolian units

- E — Unconsolidated to consolidated, quartz-dominated eolian sand in longitudinal dunefield
- E_K — Calcareous sand in longitudinal dunefield
- E_n — Net-like dunefield
- E_l — Unconsolidated, quartz-dominated eolian sand overlying alluvial-playa plain

Sandplain unit

- Z — Residual and eolian sand with minor silt and clay; low vegetated dunes locally common

Residual or relict units

- $R_{Z\gamma Nk}$ — Quartzofeldspathic sand, silt, and clay derived from weathered monzogranite and monzonite, and metamorphosed equivalents; localized outcrops of weathered bedrock
- $R_{Z\gamma m}$ — In situ weathered metamorphic rocks; quartz-rich
- R_{Zsp} — In situ weathered sedimentary rocks; quartz-rich
- R_{Zfe} — Ferruginous duricrust; massive to rubbly; derived from metamorphic rocks; includes iron-cemented reworked products
- R_{Zfg} — Ferruginous duricrust; massive to rubbly; derived from granitic rocks; includes iron-cemented reworked products
- $R_{Zf\gamma Nk}$ — Ferruginous duricrust; massive to rubbly; derived from metamorphosed granitic rocks; includes iron-cemented reworked products
- R_{Zfs} — Ferruginous duricrust and iron-cemented products derived from sedimentary rocks
- R_{Zfv} — Ferruginous duricrust; massive to rubbly; derived from felsic volcanic rocks; includes iron-cemented reworked products
- R_{ZK} — Calcrete, undifferentiated
- R_{ZKL} — Groundwater calcrete; locally forms low mounds; nodular to massive; commonly with alternating layers of carbonate and chalcedony
- R_{ZCl} — Silcrete, residual or relict siliceous duricrust

PALEOZOIC

Fitzroy Movement (237–199 Ma)

- PLcs — **Liveringa Group:** sandstone and siltstone, minor conglomerate, and coal
- Pnu-al — **NOONKANBAH FORMATION:** siltstone, shale, and sandstone; minor carbonate
- CPpe-wpg — **PATERSON FORMATION:** conglomerate (including diamictite), sandstone, and siltstone; largely glaciogene

Alice Springs Orogeny (450–298 Ma)

- PzpCA — Sandstone and siltstone, eastern Canning Basin
- zq — Quartz vein or pod; massive, crystalline, or brecciated; age uncertain

Petermann Orogeny (580–520 Ma)

- <781 Ma — EꞒag-sg — **ANGAS HILLS FORMATION:** interbedded conglomerate and sandstone, minor mudstone
- EꞒaNA — Undivided sedimentary rocks of the western Amadeus Basin
- EpaNA — Siltstone, carbonate, evaporites, and sandstone; undifferentiated lower formations of the western Amadeus Basin
- <896 Ma — EBtSkds — **Bitter Springs Group:** dolomite, stromatolitic dolomite, siltstone, and sandstone; evaporitic in subsurface
- <1050 Ma — Eht-stq — **HEAVITREE FORMATION:** quartz sandstone and quartzite; lesser siltstone and pebbly conglomerate
- <1099 Ma — Ɛmy-st — **MUNYU SANDSTONE:** quartz sandstone and conglomerate
- c. 975 Ma — ꞒCEdol — **Central Desert Dolerite Suite:** dolerite dyke
- <1633 Ma — Ekw-sp — **KIWIRRKURRA FORMATION:** red-weathering lithic sandstone, quartz sandstone, and conglomerate

Chewings Orogeny (1590–1570 Ma)

- Ehs-as — **HIDDEN BASIN BEDS:** quartz sandstone, sublithic sandstone, shale, and siltstone

Liebig Orogeny (1640–1630 Ma)

- 1647–1633 Ma — Ꞓwk-mgs — **MOUNT WEBB GRANITE:** metamorcrogranite; metasyenogranite, metagranodiorite, and metatonalite
- c. 1677 Ma — Ełyk-mfd — **POLLOCK HILLS FORMATION:** metadacite, metarhyodacite, and volcaniclastic metasedimentary rock
- Ełwm-mwWR — **Warumpi Province metamorphic unit:** undivided granitic gneiss and metamorphosed, felsic to mafic volcanic and volcaniclastic rocks (section only)
- <1750 Ma — Ełkm-mtq — **LAKE MacKAY QUARTZITE:** interbedded quartzite and quartz–mica schist

Yambah Event (1780–1770 Ma)

- 1779–1767 Ma — Ꞓwgm — ꞒCNk-mgm
- c. 1773 Ma — ꞒCNk-mgm — **DWARF WELL GRANITE:** coarse-grained biotite metamorcrogranite
- ꞒCNk-smgm-mcg — Granite gneiss interlayered with metagabbro

- Ełyki — **Aileron Province granitic unit:** granitic rock

Stafford Event (1810–1790 Ma)

- <1840 Ma — Ełk-mhs; Ełv-amf-mbb; Ełv-amb-mhs
- Ełk-mhs — **LANDER ROCK FORMATION:** interbedded psammitic and pelitic schist; quartz–muscovite schist; may include metamorphosed banded iron-formation and metavolcanic rocks
- Ełv-amf-mbb — Felsic volcanic metaandesite and metacongloomerate; interbedded with amygdaloidal metabasalt
- Ełv-amb-mhs — Metamorphosed banded-iron formation; interbedded with psammitic and pelitic schist

- Ełwd-mvM — **Aileron Province metamorphic unit:** undivided metasedimentary and meta-igneous rocks

Geological boundary — exposed; concealed

Fault or shear zone — exposed; normal, exposed, tick on downthrown side; thrust, exposed, triangle on upthrown side; strike-slip, exposed, showing relative dextral displacement; strike-slip, exposed, showing relative sinistral displacement; thrust oblique, exposed, triangle on upthrown side, showing relative dextral displacement; concealed; normal, concealed, tick on downthrown side; thrust, concealed, triangle on upthrown side; strike-slip, concealed, showing relative dextral displacement; strike-slip, concealed, showing relative sinistral displacement; thrust oblique, concealed, triangle on upthrown side, showing relative dextral displacement; thrust oblique, concealed, triangle on upthrown side, showing relative sinistral displacement; relative movement (section only): vertical, direction indicated by arrows; horizontal, towards viewer, away from viewer

Fold axial trace — exposed; anticline, exposed; syncline, exposed; concealed; anticline, concealed; syncline, concealed

Small-scale fold axis, showing strike and dip — inclined

Small-scale fold axis, showing trend and plunge — antiform

Bedding, showing strike and dip — horizontal; inclined; vertical

Trend of bedding

Way-up indicator — cross-bedding

Metamorphic foliation, showing strike and dip — inclined; vertical

Trend of metamorphic foliation

Cleavage, showing strike and dip — inclined; vertical

Crenulation cleavage, showing strike and dip — inclined

Mineral lineation, showing trend and plunge — inclined

Stretching lineation, showing trend and plunge — inclined

Slickenline, showing plunge — inclined

Fracture pattern

Archaeo or satellite image trend — unspecified

Stromatolite fossil locality

GSWA isotopic age determination site with identification number

Road, unsealed

Track

Aboriginal community — Community

Building

Horizontal control; mirror

Breakaway or cliff

Ridge

Sand dune crest

Watercourse

Lake

Spring — Spring

Bore, well — Bore, Well

Windpump

Tank — Tank

DATA SOURCES

Theme	Data Currency	Organization[1]
Geology *	2016	Geological Survey of Western Australia, Department of Mines and Petroleum
Mineral sites *	May 2016	Geological Survey of Western Australia, Department of Mines and Petroleum
Structural data	Apr 2016	Geological Survey of Western Australia, Department of Mines and Petroleum
Horizontal control	Apr 2016	Landgate
Topography	2013	Landgate

* DMP data can be viewed interactively via GeoVIEW.WA <www.dmp.wa.gov.au/geoview> and related datasets can be downloaded from the GSWA Data and Software Centre <www.dmp.wa.gov.au/datacentre>

[1] WA State Government unless otherwise indicated

SHEET INDEX

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

Search for GSWA map products online at <www.dmp.wa.gov.au/GSWApublications>
Grey lines show magnetic declination for epoch 2016.5 derived from the 2015 AGRF model.
Annual change is 6'05" per year westerly at the centre of the map.
The information is current to the year 2016.

Compiled by CV Spaggiari 2007–09; PW Haines, N de Souza Kovacs, D Maidment, CV Spaggiari and G Eacott 2015–16
Geology by DH Blake, IM Hodgson, and RR Towner (BMR) 1973; RWA Crowe 1973;
CV Spaggiari and BM Tyler 2007; PW Haines and HJ Allen 2009
Regolith by H Wulf 2009; N de Souza Kovacs 2015–16

Explanatory Notes for units and events are available online at <www.dmp.wa.gov.au/END>.

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/geochron>.

External geochronology by:
(1) Kositcin et al. 2015, Northern Territory Geological Survey, Record 2015-001, 56p.
(2) Kositcin et al. 2014, Northern Territory Geological Survey, Record 2014-005, 24p.
(3) Worden, et al. 2006, Northern Territory Geological Survey, Record 2006-008, 63p.
(4) Young, et al. 1995, Precambrian Research, v. 71, p. 45–68.

Cartography by AK Francois

Edited by SR White, MA Ferland, and K Greenberg

Published by Geological Survey of Western Australia

This map is published in digital format (PDF) and is available online at <www.dmp.wa.gov.au/GSWApublications>.
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Website: www.dmp.wa.gov.au/gswa Email: geological.survey@dmp.wa.gov.au

The recommended reference for this map is:
Spaggiari, CV, Haines, PW, Tyler, IM, Allen, HJ, de Souza Kovacs, N and Maidment, D 2016, Webb, WA Sheet SF 52-10 (2nd edition): Geological Survey of Western Australia, 1:250 000 Geological Series.

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EXPLORATION INCENTIVE SCHEME

Kiwirrkura Community

Government of **Western Australia**
Department of **Mines and Petroleum**

HON. SEAN K L'ESTRANGE MLA
MINISTER FOR MINES AND PETROLEUM

Geological Survey of Western Australia

RICK ROGERSON
EXECUTIVE DIRECTOR

SCALE 1 : 250 000

5000 0 5 10 15 20 25
Metres — Kilometres

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

Grid lines indicate 20 000 metre interval of the Map Grid Australia Zone 52

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.

WEBB

SHEET SF 52-10

SECOND EDITION 2016
Version 1 — June 2016

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