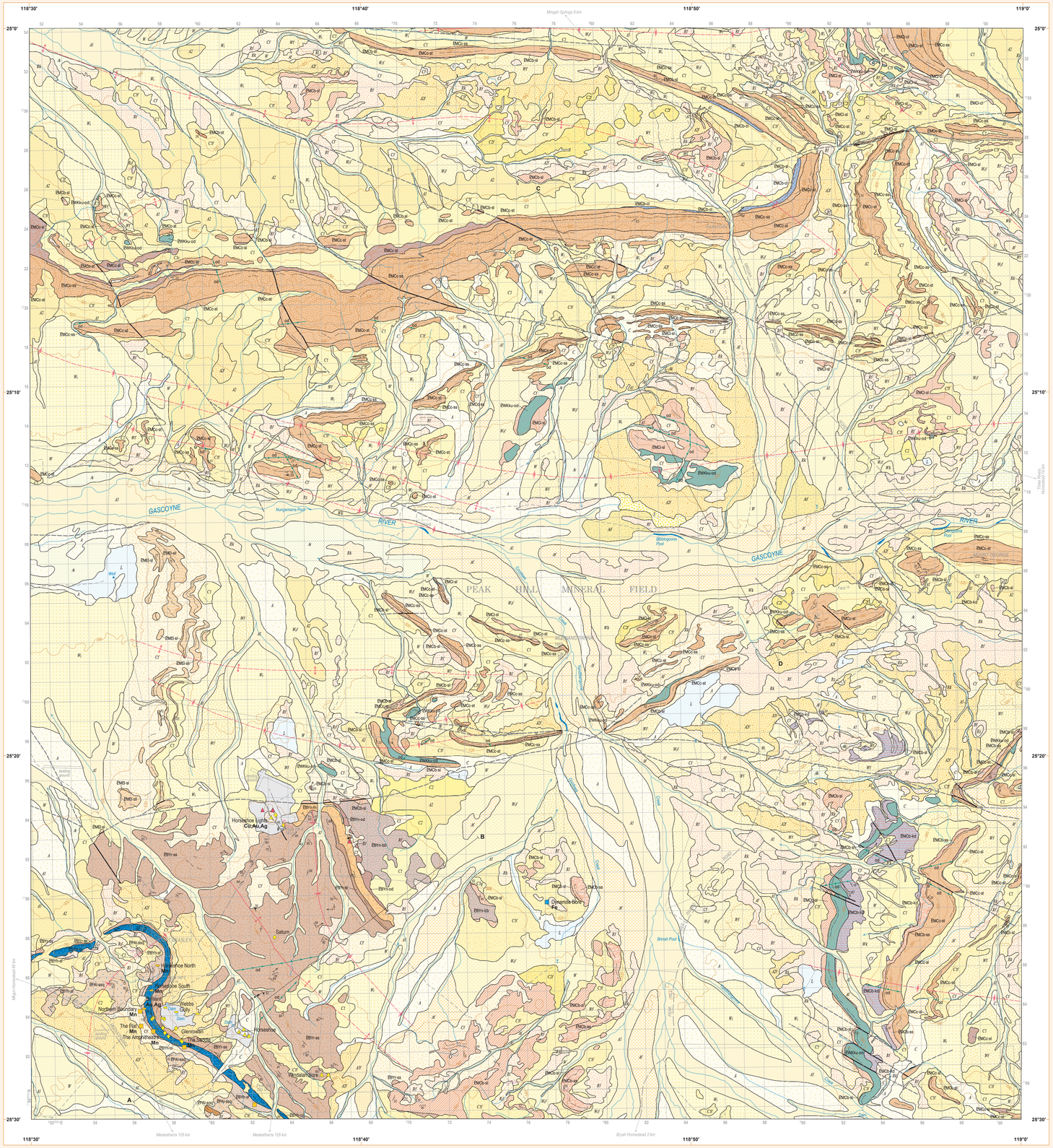
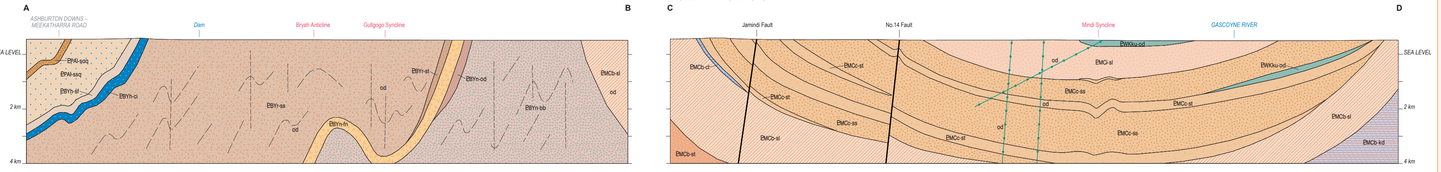
JAMINDI

AUSTRALIA 1 : 100 000 GEOLOGICAL SERIES | **GEOLOGICAL SURVEY OF WESTERN AUSTRALIA** | **SHEET 2647**



DIAGRAMMATIC SECTIONS



Geological boundary

- exposed
- Fault or shear zone
  - exposed
  - concealed
- Fold axial trace
  - anticline; exposed
  - anticline; concealed
  - syncline; exposed
  - syncline; concealed
- Small-scale fold axial surface, showing strike and dip
  - inclined
- Small-scale fold axis, showing trend and plunge
  - anticline
- Bedding, showing strike and dip
  - horizontal
  - inclined
  - vertical
  - overturned, inclined
- Trend of bedding
- Way-up indicator
  - sedimentary structure
  - graded bedding
- Trend of metamorphic foliation
- Metamorphic foliation, showing strike and dip
  - inclined
  - vertical
- Cleavage, showing strike and dip
  - inclined
  - vertical
- Stretching lineation, showing trend and plunge
  - inclined
- Axis of crenulation, showing trend and plunge
  - inclined
- Slickenline, showing plunge
  - inclined
- Joint or fracture, showing strike and dip
  - inclined

Purple point structure symbols signify measurements of bedrock features preserved in residual regolith units (RF)

- Road, unsealed
- Track
- Fence
- Homestead (Jamindi)
- Yard
- Watercourse with emphermal pool or waterhole
- Horizontal contrint; minor
- Contour line, 20 m interval
- Well
- Windpump
- Dam
- Opencut or quarry
- Made ground or mining area
- Tailings or stockpile

PHANEROZOIC — CENOZOIC — QUATERNARY

Colluvial units
- *C* — Quartz and rock fragments in a silt and sand matrix; includes ferruginous deposits
- *Cf* — Ferruginous rubble and scree

Sheetwash units
- *W* — Sandy and clayey distal sheetwash and slope deposits; no clearly defined drainage
- *Wc* — Silt and sand; surface characterized by shallow depressions aligned perpendicular to slope; supports banded mosaic vegetation ('tiger bush')
- *Wcf* — Ferruginous silt and sand; surface characterized by shallow depressions aligned perpendicular to slope; supports banded mosaic vegetation ('tiger bush')
- *Wc* — Clay, silt, and sand from saprolite and saprock
- *Wf* — Low-gradient deposits of ferruginous sand, silt, and gravel
- *Wk* — Distal sheetwash with calcrete cutans and carbonate cement

Alluvial units
- *A* — Clay, silt, sand, and gravel in channels and on floodplains
- *Ac* — Unconsolidated, fine-grained deposits in alluvial drainage depressions, claypans, ephemeral lakes, and swamps; low-lying areas with internal drainage; typically thickly vegetated
- *Ay* — Unconsolidated, fine-grained deposits on floodplains
- *Af* — Ferruginous clay, silt, sand, and gravel in channels and on floodplains
- *Afc* — Unconsolidated, fine-grained ferruginous deposits on floodplains
- *Ak* — Calcrete developed in and adjacent to alluvial channels

Lacustrine unit
- *L* — Unconsolidated, fine-grained deposits in claypans, playas, perennial lakes, and swamps; low-lying areas with internal drainage

Sandplain unit
- *s* — Quartz sand of mixed origin; includes residual and eolian sands

Colluvial units, second generation
- *C1* — Quartz and rock fragments in an unconsolidated silt and sand matrix; includes ferruginous deposits
- *C1c* — Clay, quartz sand, and deeply weathered rock fragments; reworked saprolite and saprock
- *C1f* — Unconsolidated ferruginous rubble and scree
- *C1g* — Unconsolidated quartz fragments in a silt and sand matrix; derived from quartz veins and quartzose rocks

Alluvial units, second generation
- *A1* — Unconsolidated silt, sand, and gravel in active drainage channels and floodplains; includes ferruginous deposits
- *A1f* — Unconsolidated ferruginous silt, sand, and gravel

Colluvial units, first generation
- *C2* — Quartz and rock fragments in a partly consolidated silt and sand matrix
- *C2f* — Partly consolidated ferruginous rubble and scree

Alluvial units, first generation
- *A2* — Partly consolidated silt, sand, and gravel; partly dissected by present-day drainage
- *A2f* — Partly consolidated ferruginous silt, sand, and gravel; partly dissected by present-day drainage

Residual or relict units
- *Rf* — In situ weathered rock; ferruginous
- *Rf* — Ferruginous deposits, including lateritic, ferruginous, and manganiferous duricrust
- *Rk* — Calcrete, developed in and adjacent to alluvial channels; carbonate and vuggy opaline silica; dissected by major present-day drainage
- *Rl* — Saprolite and saprock of uncertain protolith
- *Rz* — Silcrete and brecciated siliceous caprock

Mulka Tectonic Event (c. 570 Ma)

od — Dolerite dykes, sills, or plugs; fine- to medium-grained dolerite; age uncertain

Edmundian Orogeny (1030–955 Ma[1])

c. 1070 Ma — Warakurna Supersuite

EWkku-od — **KULKATHARRA DOLERITE:** dolerite and gabbro sills intruded into Edmund Group and Collier Group

LARGE IGNEOUS PROVINCE

PALEOPROTEROZOIC–MESOPROTEROZOIC — Bangemall Supergroup — Collier Group — COLLIER BASIN

- EMCi-sl — **ILGARARI FORMATION:** siltstone, mudstone, and fine-grained sandstone
- EMCi-cl — Chert and silicified siltstone
- EMCc-st — **CALYIE FORMATION:** quartz sandstone, siltstone, mudstone, conglomerate, and dolostone
- EMCc-ss — Thin- to thick-bedded sandstone and siltstone
- EMCc-sl — Siltstone and minor sandstone
- EMCd-sl — **BACKDOOR FORMATION:** siltstone, mudstone, and thin- to thick-bedded sandstone; minor chert and dolostone
- EMCd-st — Thin- to thick-bedded sandstone and minor siltstone
- EMCd-ss — Thin- to thick-bedded sandstone and siltstone
- EMCd-cl — Chert and siltstone
- EMCb-kd — Thin- to thick-bedded dolokulite, dolomitic siltstone, dolarenite, and siltstone

Mutherbukin Tectonic Event (1385–1200 Ma)

c. 1460 Ma — <1620 Ma — Edmund Group — EDMUND BASIN

- EMEI-sl — **ULLAWARRA FORMATION:** siltstone; subordinate fine-grained sandstone, dolostone, and chert; intruded by numerous dolerite sills
- EMEI-sil — Ferruginous siltstone; minor fine- to medium-grained sandstone and chert; commonly manganiferous

Mangaroon Orogeny (1680–1620 Ma[3])

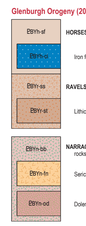
Capricorn Orogeny (1820–1770 Ma[3])

<1983 Ma — Padbury Group — PADBURY BASIN

- EPAI-ssq — **LABOUCHERE FORMATION:** quartz wacke and siltstone with local quartz-pebble conglomerate beds; includes quartz schist, quartz–muscovite schist, and minor biotite–muscovite schist; locally with chloritoid, staurolite, and/or andalusite
- EPAI-ssq — Quartz arenite; minor interleaved quartz wacke and siltstone; metamorphosed

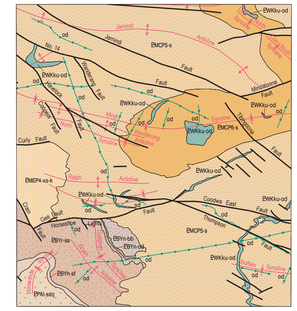
Glenburgh Orogeny (2005–1950 Ma[3])

<2014 Ma — Bryah Group — BRYAH BASIN



- EBYh-sf — **HORSESHOE FORMATION:** ferruginous, chloritic shale, and quartz–feldspar wacke; partly manganiferous and calcareous; includes iron formation and chert
- EBYh-fe — Iron formation, quartz–magnetite–(stilpnomelane); white chert lenses
- EBYh-ss — **RAVELSTONE FORMATION:** lithic wacke and siltstone; chloritic fragments; graded beds
- EBYy-st — Lithic quartz–feldspar sandstone; interbedded minor siltstone; thinly bedded; chloritic matrix
- EBYh-bb — **NARRACOOTA FORMATION:** basalt, locally pillowed and plagioclase-phyric, and mafic–ultramafic schist; interbedded with volcaniclastic and sedimentary rocks; metamorphosed
- EBYh-fn — Sericitic felsic volcanic rock; locally porphyritic with equant quartz phenocrysts; weakly to strongly foliated
- EBYh-od — Dolerite sills and dykes

INTERPRETED BEDROCK GEOLOGY



SCALE 1:500 000

0 5 10 15 20 Kilometres

- od — Dolerite dykes: various ages
- EWkku-od — Kulkatharra Dolerite
- EMCP6-s — Depositional Package 6 (Ilgarari Formation)
- EMCP5-s — Depositional Package 5 (Calyie, Backdoor Formations)
- EMEP4-xs-k — Depositional Package 4 (Ullawarra Formation)
- EPAI-ssq — Labouchere Formation
- EBYh-sf — Horseshoe Formation
- EBYh-ss — Ravelstone Formation
- EBYh-bb — Narracoota Formation
- EBYh-od — Dolerite

Bangemall Supergroup — Collier Group — Padbury Group — Earraheedy Group — Bryah Group — EDMUND BASIN — PADBURY BASIN — BRYAH BASIN — YARRAGUNNA MAGMATIC PROVINCE

For further details refer to main legend

MINERAL SITES

MINERALIZATION STYLE
- ◇ Vein and hydrothermal
- △ Stratabound volcanic and sedimentary
- □ Stratabound sedimentary and/or sedimentary banded iron-formation
- ⬭ Regolith hosted

COMMODITY GROUP
- Precious metal
- Steel alloy metal
- Base metal
- Iron

All precious metal sites are gold unless otherwise indicated

COMMODITY
- Copper — Cu
- Gold — Au
- Iron — Fe
- Manganese — Mn
- Silver — Ag

SITE NAME

Mine, deposit, prospect, or occurrence..... Horseshoe

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>

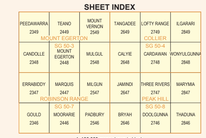
TN GN MN

GRID / MAGNETIC ANGLE 1.9°

GRID CONVERGENCE 0.9°

True north, grid north, and magnetic north are shown diagrammatically for the centre of the map. Magnetic north is correct for 2013 and moves westerly by approx. 7 annually

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>

ROYALTIES FOR REGIONS
EXPLORATION INCENTIVE SCHEME

DATA DICTIONARY

Theme	Data Currency	Organization†
Geology *	2013	Geological Survey of Western Australia, Department of Mines and Petroleum
Mineral sites *	Apr 2013	Geological Survey of Western Australia, Department of Mines and Petroleum
Structural data	Apr 2013	Geological Survey of Western Australia, Department of Mines and Petroleum
Horizontal control	Apr 2013	Landgate
Topographic nomenclature	2013	Landgate
Topography	2013	Landgate
Contours	2010	Geoscience Australia (Commonwealth)

* 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>

† WA State Government unless otherwise indicated

Compiled by HN Cutten, OA Blay, AM Thorne and SP Johnson 2012–13

Geology by HN Cutten, OA Blay, AM Thorne and SP Johnson 2012–13, CP Swager 1994, and RD Gee 1977–81

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 is available online at <www.dmp.wa.gov.au/geochron>.

Geochronology by:

(1) Sheppard, S, et al. 2007, Journal of Metamorphic Geology, v. 25, p. 477–494.

(2) Sheppard, S, et al. 2005, Australian Journal of Earth Sciences, v. 52, p. 443–460.

(3) Evans, DAD, et al. 2003, Australian Journal of Earth Sciences, v. 50, p. 853–864.

(4) Johnson, SP, et al. 2011, Precambrian Research, v. 189, p. 239–262.

Cartography by CS Schroder

Edited by SR White 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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The recommended reference for this map is:
Cutten HN, Blay OA, Thorne AM and Johnson SP 2013, Jamindi, WA Sheet 2647: Geological Survey of Western Australia, 1:100 000 Geological Series.

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

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MINISTER FOR MINES AND PETROLEUM

Geological Survey of Western Australia

RICK ROGERSON
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

JAMINDI

SHEET 2647 **FIRST EDITION 2013**

Version 1 — June 2013

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