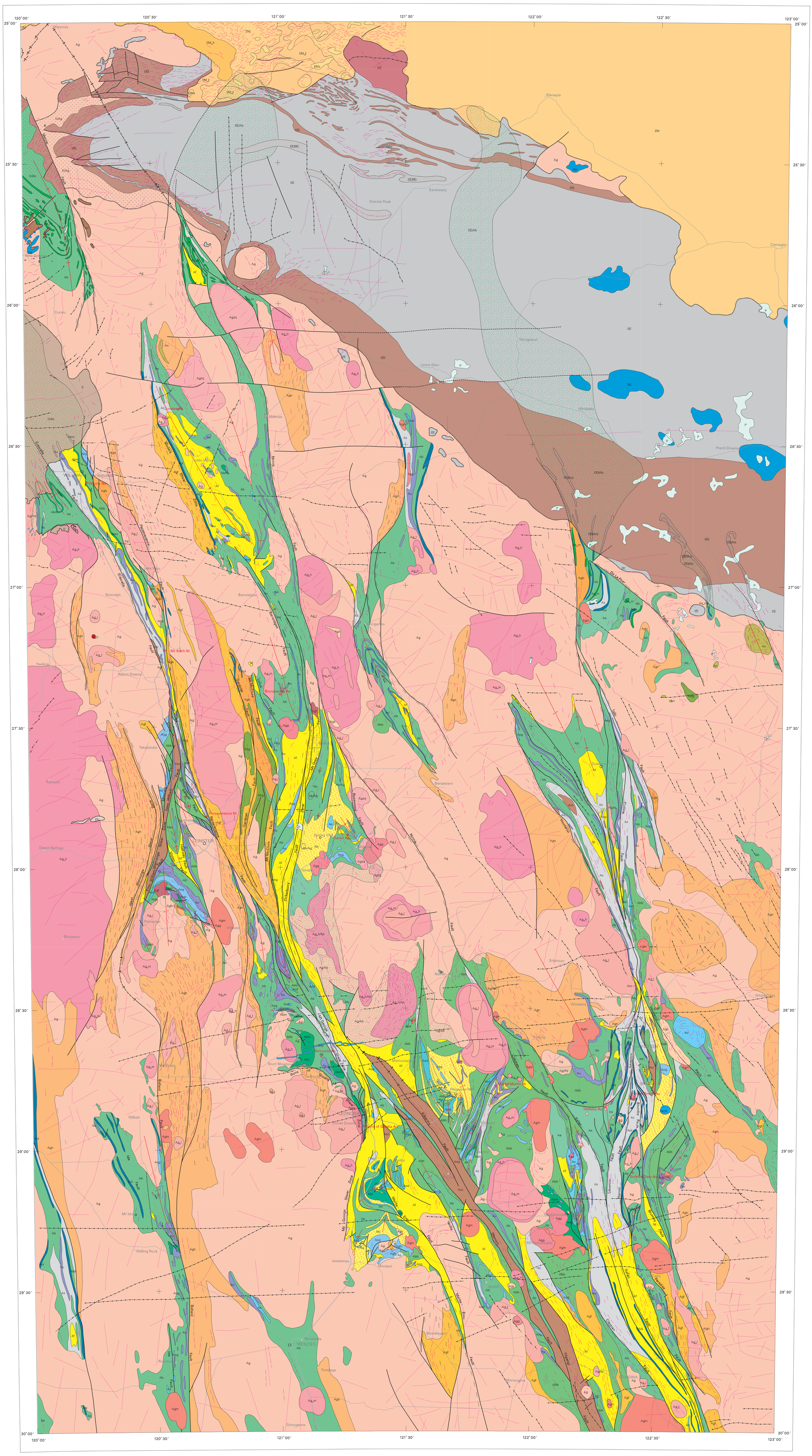
SOLID GEOLOGY OF THE NORTH EASTERN GOLDFIELDS WESTERN AUSTRALIA

S.F. Liu, A.J. Stewart, T.R. Farrell, A.J. Whitaker & S.F. Chen



PERMIAN

- P — *Permian sedimentary rocks, undivided*

PROTEROZOIC

- E — *Proterozoic sedimentary rocks, undivided*
- Ed — *Proterozoic dolerite sills*
- Edy — *Proterozoic dykes*
- EcM — *Mt Weld Carbonatite*
- Ek — *Kaluweerie Conglomerate*
- EM — *Bangemall Group*
- EM_h — *Bangemall Group (high magnetisation)*
- EM_l — *Bangemall Group (low magnetisation)*
- EMs — *Bangemall Group (abundant thin/small units of high magnetisation)*
- ES — *Scorpion Group*
- EE — *Earaheedy Group*
- EEi — *Earaheedy Group (iron formation)*
- EY — *Yerrida Group*

ARCHAEAN

- Ai_h — *Archaean intrusive rock, unknown type, high magnetisation*
- Ai_l — *Archaean intrusive rock, unknown type, low magnetisation*
- Ag — *Granite, undivided*
- Agb — *Granite interleaved with minor greenstone*
- Agf — *Granite, foliated*
- Agg — *Granodiorite*
- Agm — *Monzogranite*
- Agn — *Granitic gneiss and foliated granite*
- Ags — *Syenite*
- Agt — *Tonalite*
- Agzq — *Quartz monzonite*
- Ag_h — *Granite, high magnetisation*
- Ag_m — *Granite, medium magnetisation*
- Ag_l — *Granite, low magnetisation*
- An — *Felsic gneiss*
- As — *Metasedimentary rocks*
- Ac — *Metamorphosed chert*
- Aci — *Metamorphosed banded iron formation*
- Asc — *Conglomerate and sandstone, metamorphosed*
- Af — *Metamorphosed felsic igneous rocks, dominantly extrusive*
- Afc — *Felsic volcaniclastic conglomerate, metamorphosed*
- Afv — *Felsic volcanic and/or volcaniclastic rocks, undivided, metamorphosed*
- Aa — *Greenstone, undivided*
- Ab — *Greenstone, mafic dominant, undivided*
- Abb — *Metabasalt*
- Abg — *Greenstone interleaved with minor granitic rocks*
- Abi — *Andesitic metabasalt, or basaltic meta-andesite*
- Abm — *High-Mg metabasalt*
- Aa_m — *Greenstone, medium magnetisation*
- Ao — *Metagabbro/metadolerite*
- Aod — *Metadolerite*
- Aog — *Metagabbro*
- Au — *Metamorphosed ultramafic rocks*
- Aup — *Metamorphosed peridotite*

Note: ***Glengarry Group*** as mapped on GSWA's Nabberu 1:250 000 geological map (1981) has been renamed as **Yerrida Group** by Pirajno, F. & Occhipinti, S. (2000, Aust. J. Earth Sci., 47: 675-688).
Troy Creeks beds on GSWA's Nabberu and Stanley 1:250 000 geological maps (1981) have been grouped into **Earaheedy Group** by Pirajno, F. & Hocking, R.M. (2000, Rhodes 1:100 000 geological map, GSWA) Hocking, R.M., etc (2000, GSWA Record 2000/16).

Overlying unit (interpreted from Geophysical data)

PROTEROZOIC

- E — *Proterozoic, undivided*

Concealed units (interpreted from Geophysical data)

PROTEROZOIC

- Ed — *Proterozoic dolerite sills*
- EEi — *Earaheedy Group (iron formation)*

ARCHAEAN

- Ag — *Granite, undivided*
- Aci — *Metamorphosed banded iron formation*
- Ab — *Greenstone, mafic dominant, undivided*
- Abm — *High-Mg metabasalt*
- Au — *Metamorphosed ultramafic rocks*

- *Geological boundary*
- *Unconformity*
- *Dyke*
- *Trend*
- *Magnetic trend*
- *Strongly deformed rocks*
- *Fracture / minor fault*
- *Fault*
- *Fault, inferred*
- *Fault, concealed*
- *Fold*
- *Anticline / Antiform*
- *Syncline / Synform*
- *Principal road*
- *Secondary road*
- *Minor road*
- *Town*
- *Locality*
- *Homestead*
- *Mine*

Solid geological interpretation, 1998-2000, by S.F. Liu, A.J. Stewart, T.R. Farrell, A.J. Whitaker & S.F. Chen.
Interpretation (with emphasis on the Archaean) based on published geological mapping, airborne geophysical, gravity and Landsat TM data at 1:100 000 and 1:250 000 scales, by the Australian Geological Survey Organisation (AGSO) and the Geological Survey of Western Australia (GSWA), and from exploration companies. 400 m line-spacing airborne geophysical and 4 km station-spacing Bouguer gravity data are from the AGSO National Geophysical Database.
Scheme and interpretation of granites modified from Whitaker, A.J.

In particular, we wish to acknowledge the following maps and reports, from which some solid geology information was used in preparing the map:
Chen, S.F., 1998. *Edjudina,* W.A.: GSWA, 1:250 000 Geological Series.
Farrell, T.R., 1998. *Duketon,* W.A.: GSWA, 1:250 000 Geological Series.
Farrell, T.R., 1999. *Wiluna,* W.A.: GSWA, 1:250 000 Geological Series.
Farrell, T.R. & Langford, R.L., 1998. *Duketon,* W.A.: GSWA, 1:100 000 Geological Series.
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Ferguson, K.M., Farrell, T.R. & Hickman, A.H., 1998. *Mineralization and Geology of the North Eastern Goldfields,* 1:500 000 scale map.
Ferguson, K.M., *Mineral Occurrences and Exploration Potential of the North Eastern Goldfields,* GSWA: Report 63, Plate 1.
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Liu, S.F., 1997. *Solid Geology of the Nabberu 1:250 000 sheet area,* W.A.: AGSO.
Liu, S.F., Farrell, T.R., Stewart, A.J. & Whitaker, A.J., 2000. *Solid Geology of the Sir Samuel 1:250 000 sheet area,* W.A.: AGSO.
Liu, S.F., Griffin, T., Wyche, S. & Westaway, J., 1996. *Sir Samuel,* W.A.: GSWA, 1:100 000 Geological Series.
Stewart, A.J. & Liu, S.F., 1999. *Mt Keith Solid Geology,* W.A.: AGSO, 1:100 000 scale map.
Stewart, A.J., 1996. *De La Poer,* W.A.: AGSO, 1:100 000 Geological Series.
Stewart, A.J., 1997. *Lake Violet Solid Geology,* W.A.: AGSO, 1:100 000 scale map.
Stewart, A.J., *Laverton,* W.A.: GSWA, 1:250 000 Geological Series Explanatory Notes.
Stewart, A.J., *Leonora,* W.A.: GSWA, 1:250 000 Geological Series.
Swager, C.P., 1996. *Geology of the Greenstone Terranes in the Kurnalpi-Edjudina region, southeastern Yilgarn Craton,* W.A.: GSWA, Report 47, Plate 1.
Whitaker, A.J., *Aeromagnetic interpretation of the Norseman - Wiluna belt,* W.A.: AGSO, 1:1 000 000 scale.
Witt, W., 1994. *Melita,* W.A.: GSWA, 1:100 000 Geological Series Explanatory Notes.
Witt, W., 1996. *Granitoid Geology of the South Eastern Goldfields,* W.A.: GSWA, Report 49, Plate 1.
Wyche, S., & Westaway, J. M., 1996. *Darlot,* W.A.: GSWA, 1:100 000 Geological Series.
Wyche, S. & Griffin, T., 1998. *Depot Springs,* W.A.: GSWA, 1:100 000 Geological Series.

Cartography by C.R. Johnson, T. Brennan & D. Isaacs, AGSO
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Liu, S.F., Stewart, A.J., Farrell, T.R., Whitaker, A.J. & Chen, S.F., 2000, *Solid Geology of the North Eastern Goldfields,* Western Australia (1:500 000 scale map), ACT: AGSO

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GDA

Horizontal coordinates on this map are based on the new earth-centred GEOCENTRIC DATUM OF AUSTRALIA (GDA)

To convert GDA TO AGD (around 10 metre accuracy):
Geographicals (from GDA94 to AGD66/84)-
Add 5.58" to latitude (S);
Subtract 4.38" from longitude (E)

INDEX TO 1 : 250 000 SHEETS

NABBERU SG51-05	STANLEY SG51-06
WILUNA SG51-09	KINGSTON SG51-10
SIR SAMUEL SG51-13	DUKETON SG51-14
LEONORA SH51-01	LAVERTON SH51-02
MENZIES SH51-05	EDJUDINA SH51-06

MAP LOCALITY

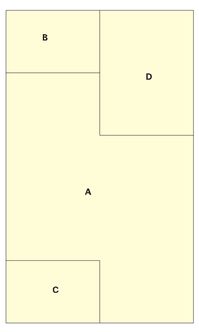
SCALE 1:500 000

10 0 10 20 30 40 50

Kilometres

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
Geocentric Datum of Australia 1994 MGA Zone 51

RELIABILITY DIAGRAM



A Detailed interpretation based on published 1:100 000 and 1:250 000 scale geological maps (1st & 2nd editions), AGSO's 400 m line-spacing aeromagnetic data, and detailed company 100 m line-spacing aeromagnetic data for some areas

B Interpretation based on published 1st edition 1:250 000 scale geological maps and AGSO's 400 m line-spacing aeromagnetic data, mainly to highlight the Yilgarn Craton's margin, the distribution of Proterozoic rocks and the Earaheedy Basin

C Limited interpretation based on published 1:100 000 and 1:250 000 scale geological maps, and AGSO's 1.6 km line-spacing aeromagnetic data

D Very limited interpretation of magnetic data

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GEOLOGICAL SURVEY OF WESTERN AUSTRALIA

Solid Geology of the North Eastern Goldfields

Western Australia
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