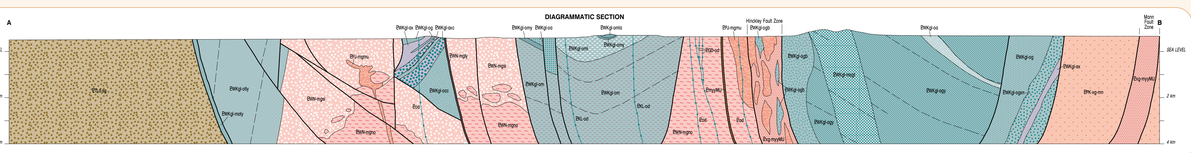
BELL ROCK

AUSTRALIA 1 : 100 000 GEOLOGICAL SERIES — **GEOLOGICAL SURVEY OF WESTERN AUSTRALIA** — **SHEET 4645**

128°30' 40' 50' 129°00' — 26°00' 20' 10' 26°30'

SOUTH AUSTRALIA

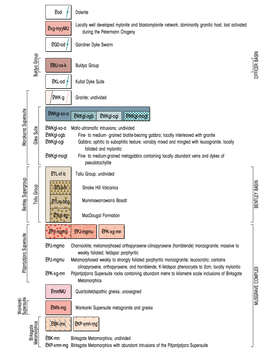
DIAGRAMMATIC SECTION



INTERPRETED BEDROCK GEOLOGY

SCALE 1 : 500 000

Kilometres



Etd Dolerite

Eng-mymU Locally well developed mylonite and blastomylonite network; dominantly granitic host; last activated during the Paterroan Orogeny

EGD-od Gardner Dyke Swarm

BHu-ss-k Bulyka Group

EKL-od Kulkul Dyke Suite

EWK-g Granite; undivided

EWK-g-o-c Mafic-ultramafic intrusions; undivided

EWK-g-gb Fine- to medium- grained biotite-bearing gabbro; locally interleaved with granite

EWK-g-ng Gabbro; ophitic to subophitic texture, variably mixed and mingled with leucogranite; locally foliated and mylonitic

EWK-g-mcg Fine- to medium-grained metagabbro containing locally abundant veins and dykes of pseudotachylite

ETL-sf-b Tolu Group; undivided

ETL-sf-b Smoke Hill Volcanics

ETL-sf-b Mummooroowarra Basalt

ETL-sf-b MacDougall Formation

EPy-ngmc Charnockite; metamorphosed orthopyroxene-clinopyroxene (hornblende) monzogranite; massive to weakly foliated; feldspar porphyritic

EPy-mgmu Metamorphosed weakly to strongly foliated porphyritic monzogranite, leucocratic, contains clinopyroxene, orthopyroxene, and hornblende; K-feldspar phenocrysts to 2cm; locally mylonitic

EPK-ug-sm Pilpintjatjara Supersuite rocks containing abundant metre to kilometre scale inclusions of Birksgate Metamorphics

EmvsMU Quartzofeldspathic gneiss; unassigned

EWK-mg Warkurna Supersuite metagranite and gneiss

EWK-sm Birksgate Metamorphics; undivided

EPK-sm-mg Birksgate Metamorphics with abundant intrusions of the Pilpintjatjara Supersuite

For further details refer to main reference

MINERAL OCCURRENCES

MINERALISATION STYLES*

- Orthomagmatic mafic and ultramafic
- Regolith hosted

MINERAL AND ROCK COMMODITY GROUPS

- Precious mineral
- Steel industry metal

OPERATING STATUS AND SITE IDENTIFICATION NUMBER

Abandoned mine	e.g. 13972
Mineral deposit	e.g. 24430
Mineral occurrence or prospect	e.g. 23422#

MINERAL AND ROCK COMMODITIES

Agate	Ago
Chromium	Cr
Chrysoprase	Chrp
Cobalt	Co
Nickel	Ni
Vanadium	V

Mineral occurrences and numbers are from the GSWA MAWA database.
* Larger symbols represent mines or deposits also in the Dolfi MINEDEX database.

DATA DIRECTORY

Theme	Data Source	Data Currency	Agency
Geology	GSWA	2004 – 2006	Dept of Industry and Resources
Structural data	WAROX	NOV 2006	Dept of Industry and Resources
Mineral occurrences (non-confidential)	MINEDEX*	NOV 2006	Dept of Industry and Resources
	MAWA	NOV 2006	Dept of Industry and Resources
Horizontal control	GEONAMA	NOV 2006	Landgate
Topographic nomenclature	GEONOMA	2006	Landgate
Topography	Landgate and GSWA field survey	2006	Landgate
Contours	NASA SRTM 90m Digital Elevation Data	2003	Consultative Group for International Agriculture Research – Consortium for Spatial Information

* GSWA and DoIR database can be viewed online (www.doir.wa.gov.au/documentsByOverview_launch.asp) or can be downloaded from the GSWA Data and Software Centre (www.doir.wa.gov.au/GSWA/downloadcentre)

RELIABILITY DIAGRAM

Access for mapping unavailable or limited; geology from remote sensing, restricted mapping, or from published information

True north, grid north and magnetic north are shown diagrammatically for the centre of the map. Magnetic north is correct for 2006 and moves easterly by about 0.1° in 10 years.

SHEET INDEX

Search for current GSWA map products online (www.doir.wa.gov.au/shopping)

Department of Industry and Resources

FRANCIS LOGAN, M.L.A.
MINISTER FOR ENERGY; RESOURCES; INDUSTRY AND ENTERPRISE

Geological Survey of Western Australia

TIM GRIFFIN
EXECUTIVE DIRECTOR

NGAANYATJARRA COUNCIL (Aboriginal Corporation)

SCALE 1:100 000

1000 Metres 0 1 2 3 4 5 6 7 8 9 10 15 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 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

Compiled by H. M. Howard, R. H. Smithies, F. Pirajno, and M. S. Siwarenecki

Geology by H. M. Howard, R. H. Smithies, F. Pirajno 2004–6; and A. J. Stewart (AGSQ) 1995

Regolith by M. S. Siwarenecki 2006

Ngaanyatjarra cultural field guides Reggie Smith, Lorna Eddy, and Cyril Duncan
Ngaanyatjarra liaison J. Turner

Geochronology interpreted from external sources (listed below) and GSWA data (published and in preparation).
Some GSWA geochronology may come from samples obtained on adjoining map sheets. GSWA geochronology data are available online at http://www.doir.wa.gov.au/documentsByOverview_launch.asp or on disk (Compilation of geochronology data – updated as required).

Geochronology by:
(1) C. J. Edgoose, I. R. Scrimgeour, and D. F. Close, 2004, Northern Territory Geological Survey, Report 15, p. 44.
(2) M. T. D. Wingate, F. Pirajno, and P. A. Morris, 2004, Geology, v. 32, p. 105–108.
(3) S. S. Sun et al., 1996, AGSO Journal of Geology and Geophysics, v. 24, p. 13–15.
(4) R. W. White, G. L. Clarke, and D. R. Nelson, 1998, Journal of Metamorphic Geology, v. 7, p. 483–481.
(5) C. M. Gray, 1978, Geological Society of Australia Journal, v. 25, p. 403–414.
(7) C. M. Gray, and M. Compston, 1975, Geochemica et Cosmochimica Acta, v. 42, p. 1735–1746.

Interpreted geochronology by:
(K.C. J. Edgoose, I. R. Scrimgeour, and D. F. Close, 2004, Northern Territory Geological Survey, Report 15, p. 44.

Edited by A. Thomson and G. Lean

Cartography by H. Weber, P. Blockhouse 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 Industry and Resources, 100 Plain Street, East Perth, WA, 6004. Phone (08) 9222 3459, Fax (08) 9222 3444
Website www.doir.wa.gov.au Email: geological.survey@doir.wa.gov.au

The recommended reference for this map is:
HOWARD, H. M., SMITHIES, R. H., PIRAJNO, F., and SIWARENECKI, M. S., 2006, Bell Rock, W.A. Sheet 4645: Western Australia Geological Survey, 1:100 000 Geological Series.

BELL ROCK

SHEET 4645 — **FIRST EDITION 2007**

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