

# Fieldnotes



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

Geological Survey of  
Western Australia



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## Collaborative scientific drilling at Hickman Crater

Hickman Crater in the Hamersley Range was recently diamond drilled in a collaborative project between Atlas Iron Ltd, which holds an exploration licence over the area, and the Geological Survey of Western Australia (GSWA). The 260 m diameter crater lies about 36 km north-northwest of Newman, along the contact between early Paleoproterozoic Woongarra Rhyolite and Boolgeeda Iron Formation. It has a flat circular floor surrounded by remnants of a circular rim up to 30 m above the present floor.

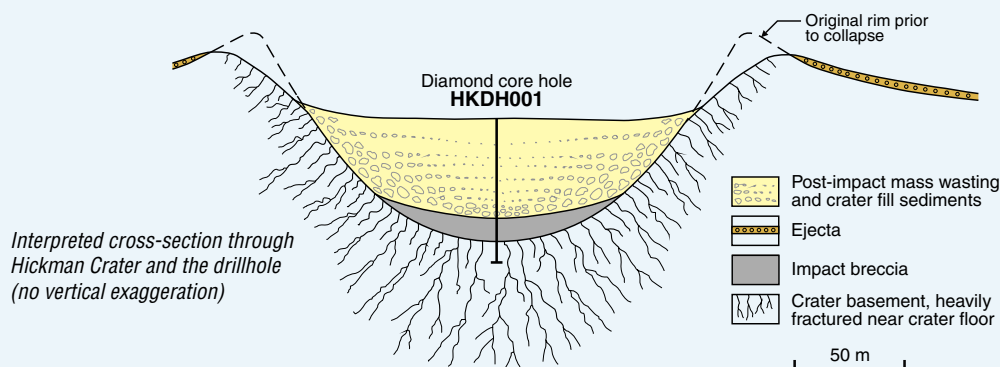
Andrew Glikson (Australian National University) named the crater in honour of GSWA geologist Dr Arthur Hickman, in recognition of his initial discovery of the site from Google Earth in 2007, and his achievements in the geological investigation of the Pilbara Craton over a period of 35 years.

The subsequent work of Andrew Glikson and colleagues recognized features consistent with a relatively young and well-

preserved impact crater, but that study did not find definitive evidence of an impact origin such as traces of the projectile or shock metamorphism of the impacted rocks. In such small young craters this evidence commonly lies within shattered rocks of the crater floor and the immediately overlying impact breccia. These are quickly buried by infilling sediments, so that drilling is often the only way to recover samples. In the case of Hickman Crater, a pre-existing creek broke through the northern crater rim some time after the crater's formation, thereby accelerating this crater-filling process. The crater was estimated to be in the range of a few tens of thousands to perhaps 100 000 years old.

Impact craters come in two main types, simple and complex, which are directly related to the size of the impact event. Simple craters have a bowl-shaped profile with a prominent raised rim. Complex craters have a flatter profile with a central peak, or

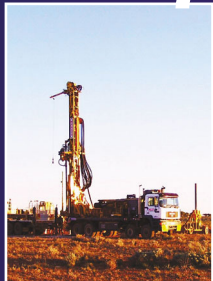
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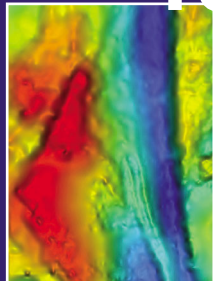
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## Finding that geological map

Built on the latest DigitalPaper XE technology, our document-delivery service provides fast online access to GSWA's growing store of digital geoscience information, including published maps. The GSWA Product Catalogue is available via the DMP website at <http://www.dmp.wa.gov.au>:

1. Click on 'Online systems' and select 'Publication Systems'
2. Click on the 'Geoscience Publications' link
3. Click on 'Access to Geoscience Publications'.

You can search for:

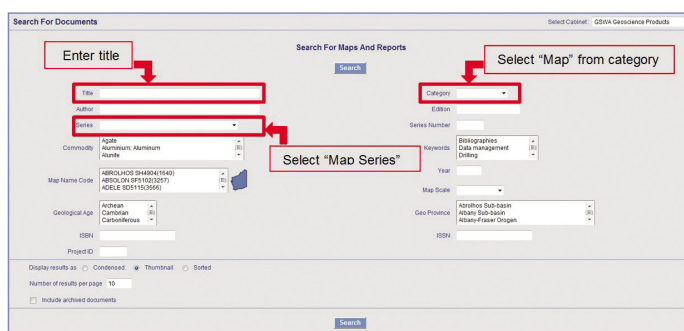
- All maps produced by GSWA by selecting 'Map' from the category list. Searches are limited to 1000 results
- Any map based on the title by entering title details and selecting 'Map' from the category list
- All maps based on a map 'Series' by selecting the map series from the Series drop-down list
- A specific map by specific Title and Series. You can use this option even when you know only part of the title of the map.

The following is a list of map series to select from:

- 1:250 000 geological map
- 1:100 000 geological map
- Environmental geology map
- Gravity map
- Hydrogeology map
- Magnetic map
- Non-series map

- Radiometric map
- Regolith-landform map
- Resources series map
- Regolith materials map
- Regolith geochemical map
- Regolith M-series map
- Seismic map
- State map
- Urban geology map

Once you've identified the map you want, you can print and/or download from anywhere in the world, any map in any category.



GSWA Product query form

For more information, contact Neville D'Antoine ([neville.d'antoine@dmp.wa.gov.au](mailto:neville.d'antoine@dmp.wa.gov.au)).

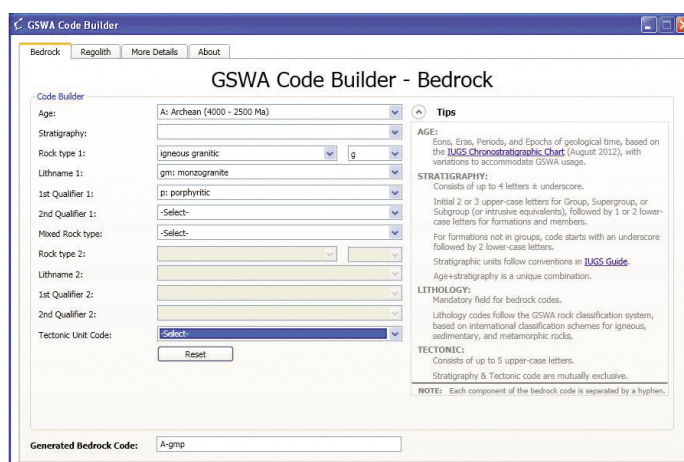
## GSWA code builder

Codes and underlying classification schemes used to differentiate various bedrock and regolith units are a critical component of all but the simplest geoscientific maps, where colour fills may suffice. GSWA has developed bedrock and regolith classification schemes (based on IUGS – International Union of Geological Sciences – guidelines) over the last decade, to provide coherent terminology and code structure on its maps and geoscience spatial information layers. The schemes are designed to ensure consistency of coding and naming of units within projects and across Western Australia, and are essential modules within GSWA database systems.

The code systems cover the whole state and a large variety of rocks and regolith types, so can be complex and difficult to understand or duplicate for the external user. Consequently, the code-generation components of GSWA's systems have been compiled into a standalone desktop application that will be available from the Department of Mines and Petroleum Data and Software Centre ([www.dmp.wa.gov.au/datacentre](http://www.dmp.wa.gov.au/datacentre)) in February 2013. Two separate tabs allow building of bedrock and regolith codes, with an expandable field displaying concise tips. Links to GSWA records under the 'More details' tab provide additional information about GSWA rock and regolith classification schemes.

The GSWA code builder provides the geological community with a solid reference for and an explanation of rock and regolith codes used in GSWA digital products, and allows exploration and mining companies to follow the GSWA scheme if desired.

For more information contact  
Angela Riganti ([angela.riganti@dmp.wa.gov.au](mailto:angela.riganti@dmp.wa.gov.au)) or  
Darren Wallace ([darren.wallace@dmp.wa.gov.au](mailto:darren.wallace@dmp.wa.gov.au)).



GSWA code builder interface



*continued from page 1*



central rings, related to elastic rebound of the crater floor after the impact explosion. The crater diameter at which the simple to complex transition occurs is controlled by the strength of the target rocks and varies from about 2 to 4 km in sedimentary and crystalline rocks, respectively. Hickman Crater is well below this threshold and exhibits classical simple crater morphology. A crater of this size is estimated to have been produced by a meteorite at least 10 m in diameter and weighing of the order of 4000 tonnes. Although somewhat slowed by atmospheric drag, it would have retained a significant proportion of its cosmic velocity of at least 11 kilometres/second.

The vertical diamond drillhole was sited in the centre of the flat crater floor and reached a total depth of about 65 m.

It penetrated the full sequence of units expected for a simple crater. The succession from surface to 48.4 m consists of clay, sand, gravel and boulders that are interpreted as post-impact sediment fill. Large boulders of rhyolite and banded iron-formation near the base of this interval probably tumbled down from the initially very steep and unstable rim. The interval from 48.4 to 55.1 m is interpreted as impact breccia (suevite) and consists of angular fragments of rhyolite and minor banded iron-formation interspersed with small fragments of highly vesicular glassy melt rock (see photo below). The remainder of the hole intersected in situ but highly fractured and altered Woongarra Rhyolite, interpreted as crater basement. The unconsolidated sediments and breccia, and intensely fractured basement presented challenging drilling conditions, but drilling contractor Mt Magnet Drilling was able to achieve good recovery for most of the hole.

Samples from the core and surface materials are currently being analysed by GSWA and the Western Australian Museum, and it is anticipated they will provide conclusive evidence of the crater's presumed impact origin and provide a much better constrained age through radiometric dating of the glassy melt rock. Future studies of the infilling sediments could provide a climatic and environmental record for the Pilbara spanning the latter part of the Quaternary.

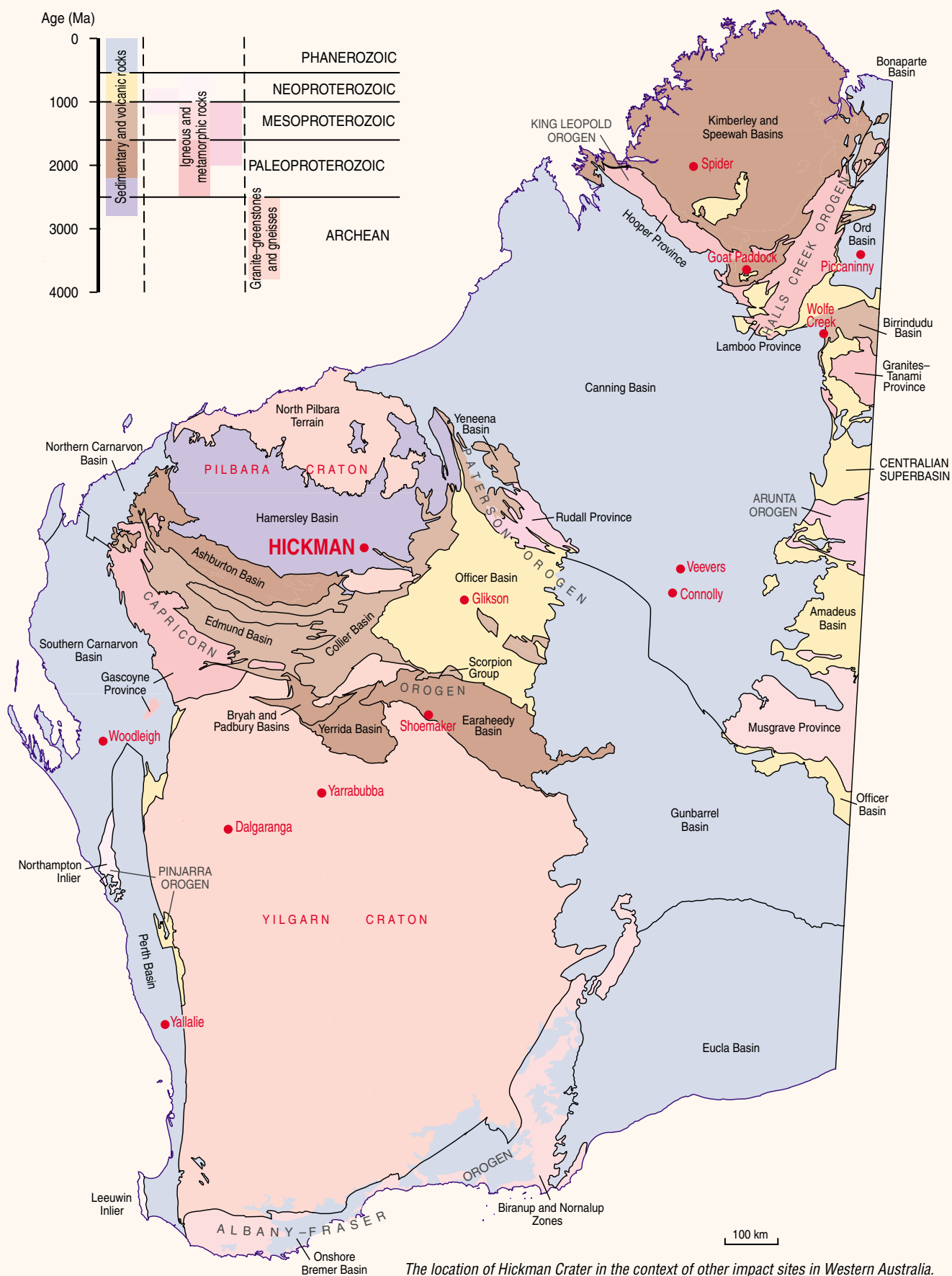
Hickman Crater increases to 14 the number of impact craters and older eroded or buried impact structures currently known from Western Australia. Only four are young well-preserved simple craters that in addition to Hickman include Dalgarranga (24 m), Veevers (80 m) and Wolfe Creek (870 m); the last is the second largest impact crater on Earth associated with preserved meteorite fragments (after Meteor Crater in Arizona).

*continued on page 4*



*Vesicular glassy melt from the impact breccia intersected in the drillcore*

# Hickman Crater



The location of Hickman Crater in the context of other impact sites in Western Australia.



*continued from page 3 and 4*

At the other end of the size spectrum are large complex impact structures such as Woodleigh, Shoemaker and Yarrabubba. Woodleigh is buried below some 100 m or more of post-impact Jurassic and younger sediments of the Southern Carnarvon Basin. Although it was originally thought to be much larger, recent data from a deep crustal seismic line that passes over the southern part of the structure suggests a diameter of 51 km. Shoemaker and Yarrabubba are both at least partly exposed, but in this case they have undergone up to several kilometres of erosion since they formed, possibly of the order of two billion years ago in the latter case. Yarrabubba is centred on Barlangi Rock, located 74 km south-southeast of Meekatharra. Barlangi Rock is interpreted to be the remnant of a large pool of remelted granite generated at the instant that the impact formed a crater possibly over 25 km across. Shoemaker is centred 105 km north-northeast of Wiluna and shows a well-formed series of rings in sedimentary rocks of the Earaeedy Basin caused by the uplift and sideways movement of rock layers during the cratering event. The original crater rim has been variably estimated at 30–35 km in diameter. Compare these figures with the largest known impact structure, Vredefort in South Africa, which had an estimated rim diameter, before erosion, of up to 300 km.

A large meteorite hitting the Earth is one of the most catastrophic events that can affect our planet, but we can be comforted by the fact that they are exceedingly rare; the last large one we know of hit above Siberia in 1908. The search for asteroids that may cross the Earth's orbit has thus far found no immediate threat. But such research is focused on objects larger than 1 km across. Hickman Crater shows that even a relatively small object that would be very difficult to detect in space, could cause a huge amount of damage to humans living directly in its path. Alternatively, impact is more likely into an ocean, generating a tsunami that could inundate surrounding coastlines with catastrophic results.



*Diamond drill rig on the crater floor viewed from the south rim of Hickman Crater*



*GSWA geologist Leon Normore on the rim of Hickman Crater during the August 2012 Meteoritical Society excursion beside a 'visitors book' letterbox placed on the rim by local tourist guides.*

For more information, contact  
Peter Haines ([peter.haines@dmp.wa.gov.au](mailto:peter.haines@dmp.wa.gov.au))  
or Mike Freeman ([mike.freeman@dmp.wa.gov.au](mailto:mike.freeman@dmp.wa.gov.au)).



*Excursion participants standing on Barlangi Rock at the centre of the Yarrabubba impact structure. In August 2012, the international Meteoritical Society held its annual conference in Cairns, with a post-conference excursion to five Western Australian impact sites, including Hickman Crater.*



# Exploration Incentive Scheme

## Government co-funds Round 6 of exploration drilling

Over \$6 million has been offered to 57 drilling projects to be drilled in 2013, under Round 6 of the Exploration Incentive Scheme's Co-funded Exploration Drilling Program.

The Co-funded Drilling Program is the flagship program of the Royalties for Regions funded Exploration Incentive Scheme (EIS).

The highly competitive program now offers two rounds of co-funding a year with this being the sixth round of offers made to resource explorers since the EIS commenced in 2009.

The program has been supporting drilling projects for only three years but already has shown success with commercially promising and scientifically interesting projects.

Projects that received early support from the Co-funded Exploration Drilling Program include the following:

- the deep drilling that led to the re-opening of the Mt Magnet gold mine
- the drilling instrumental in the discovery of the East Tropicana and Handpump gold deposits
- the Speewah vanadium deposit
- the Yeneena copper discovery
- the Theseus and Yalgoo uranium discoveries
- support for drilling by Sirius Resources at The Eye nickel project prior to the discovery of the Nova deposit.

The Co-funded Industry Drilling Program provides co-funding of up to 50 per cent of direct drilling costs with caps of \$150 000 for a multi-hole project, \$200 000 for a single deep hole, and \$30 000 for a prospector's project. Payment is made to successful applicants after the completion of their drilling programs. The process is scrutinized by an independent probity auditor, and applications are evaluated by experienced exploration geologists who are members of professional organizations with strong codes of ethics.

Information acquired by the companies through the drilling programs is publicly released on the Department of Mines and Petroleum's website after a short confidentiality period. The information adds to the geological knowledge of the State and helps reduce risks for subsequent explorers.

Another round of co-funded drilling will be open for applications from 22 February to 22 March 2013 for projects to be undertaken between July 2013 and the end of June 2014.



	Applicant Name	Drilling Project Title	Target Commodities
1	Alicanto Minerals Ltd	Meekatharra Regional	Au
2	Alicanto Minerals Ltd	Gnaweeda	Au
3	Australia Minerals & Mining Group Ltd	Bencubbin Phase 2	Fe
4	Avocet Resources Limited	Ashburton Monster Prospect	Au, Ag
5	Black Peak WA Pty Ltd	Gnaweeda	Au
6	Bulletin Resources	Reform Project	Au
7	Bulletin Resources	Nicolson North	Au
8	Buxton Resources Ltd	Widowmaker	Ni, Cu, Co, PGM
9	Eastern Goldfields Exploration Pty Ltd	Maroonah Project (E8/1386)	Au, Ag, Cu, Pb, Zn
10	Eastern Goldfields Exploration Pty Ltd	Maroonah Project (E9/2015)	Au, Ag, Cu, Pb, Zn
11	Encounter Operations Pty Ltd	Yeneena Project	Cu, Pb, Zn
12	Enterprise Metals	Harris Lake Drilling Project	U, Au, Ni, Cu
13	Enterprise Metals	Peranbye Drilling Project	U, Ni, Cu and Au
14	Ernst Kohler	Lucius Target	Au
15	Hannans Reward Ltd	Mt Gordon Nickel Drilling 2013	Ni, Cu
16	Hazelwood Resources Ltd	Anomaly Hill, East Pilbara	Ni
17	Highfield Resources Limited	McLarty Potash Project	Potash
18	Highfield Resources Limited	Fruitcake Potash Project	Potash
19	Iron Ore Holdings Limited	Mardie 2013 RC Drilling	Fe
20	Kamax Resources Limited	Cundeelee Project	Au
21	Karlawinda Pty Ltd	Karlawinda Co Funded drilling	Au
22	La Mancha Resources Australia Ltd	Gecko Deeps	Au
23	Lamboo Resources Limited	McIntosh Graphite	graphite
24	Latin Gold Limited	Narracoota	Au, Ni, Cu
25	Macphersons Resources Limited	Nimbus Ag	Ag -Au -Zn -Cu -Pb
26	Macphersons Resources Limited	Coolgardie NiS	Au -Ag -Zn -Cu -Pb
27	Macphersons Resources Limited	Brindabella Ag - Au	Au -Ag -Zn -Cu -Pb
28	Magnetic Resources NL	Ragged Rock	Fe
29	Matsa Resources Limited	Fraser North Bullseye Magnetic Target	Cu, Au
31	Mt Magnet Gold Pty Ltd	Water Tank Hill Deeps DD	Au
32	Northern Minerals Ltd	John Galt Project	Heavy REEs
33	Octagonal Resources (WA) Pty Ltd	Burns Prospect Diamond Drilling	Au, Cu, Ag
34	Phoenix Gold Ltd.	Catherwood Deep Diamond Drilling	Au
35	Phoenix Gold Ltd.	Broads Dam Deep Diamond Drilling	Au
36	Redstone Resources Ltd	Blackstone Range (Tollu)	Cu, Ni, Co
37	Reed Resources Ltd.	Mt. Finnerty	Ni-Cu-PGE
38	Resource Mining Corporation Ltd	St Patricks	Au, Ni, Cu, Zn
39	Rox Resources	Mt Fisher East	Ni
40	Rox Resources	Mt Fisher	Au
41	Rox Resources	Mt Fisher Project, Dam Prospect	Au
42	Rubianna Resources Limited	Killara - North Ruby Well Au - Cu	Au, Cu
43	Sheffield Resources Ltd	Oxley Potash Project - Maiden Drilling	Potash
44	Silver Lake Resources	Hollandaire Stratigraphy Program	Cu, Zn, Pb, Au, Ag
45	Southern Gold Ltd	Bulong South	Au
46	St George Mining Ltd (ASX:SGO)	Red Dragon REE Project	REE
47	Traka Resources Limited	Mt Morphet Project	Ni, Cu and PGE
48	Traka Resources Limited	Tollu Project	Ni, Cu, PGE, U and REE
49	Tropicana Gold Ltd	Tropicana East Air Core Program	Au
50	United Mining Resources Pty Ltd	Hyperion Project	U
51	United Uranium Limited	Mount Danvers Project	U, Cu, W
52	Venus Metals Corporation Limited	Moodini	IOCG
53	Venus Metals Corporation Limited	Copper Hills	Cu, Au & other precious metals
54	Wild Acre Metals Limited	Spotted Dog - Mt Ida	Au
55	Ross Leach	Goodlands Auger	Au
56	Edward Nybo	Tommies Dam South	Au
57	Christopher Potts	Great Hope Gold Mine	Au

More information about the Co-funded Drilling Program is available at <[www.dmp.wa.gov.au/eisdrilling](http://www.dmp.wa.gov.au/eisdrilling)> or contact Margaret Ellis ([margaret.ellis@dmp.wa.gov.au](mailto:margaret.ellis@dmp.wa.gov.au)).



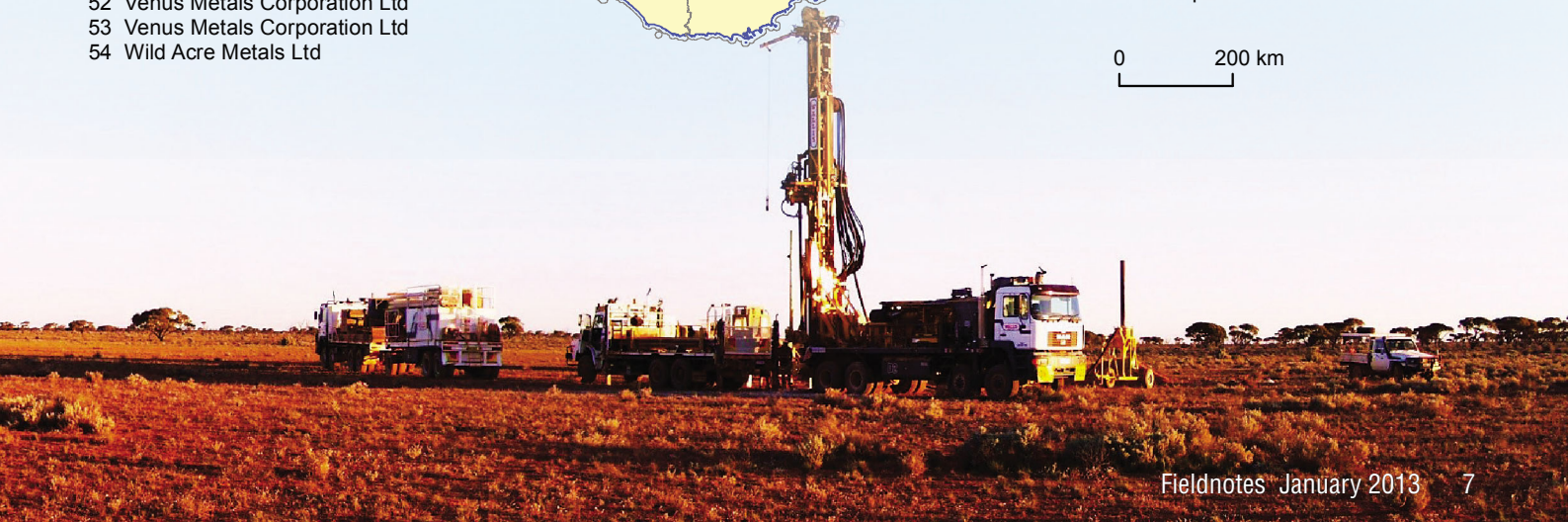
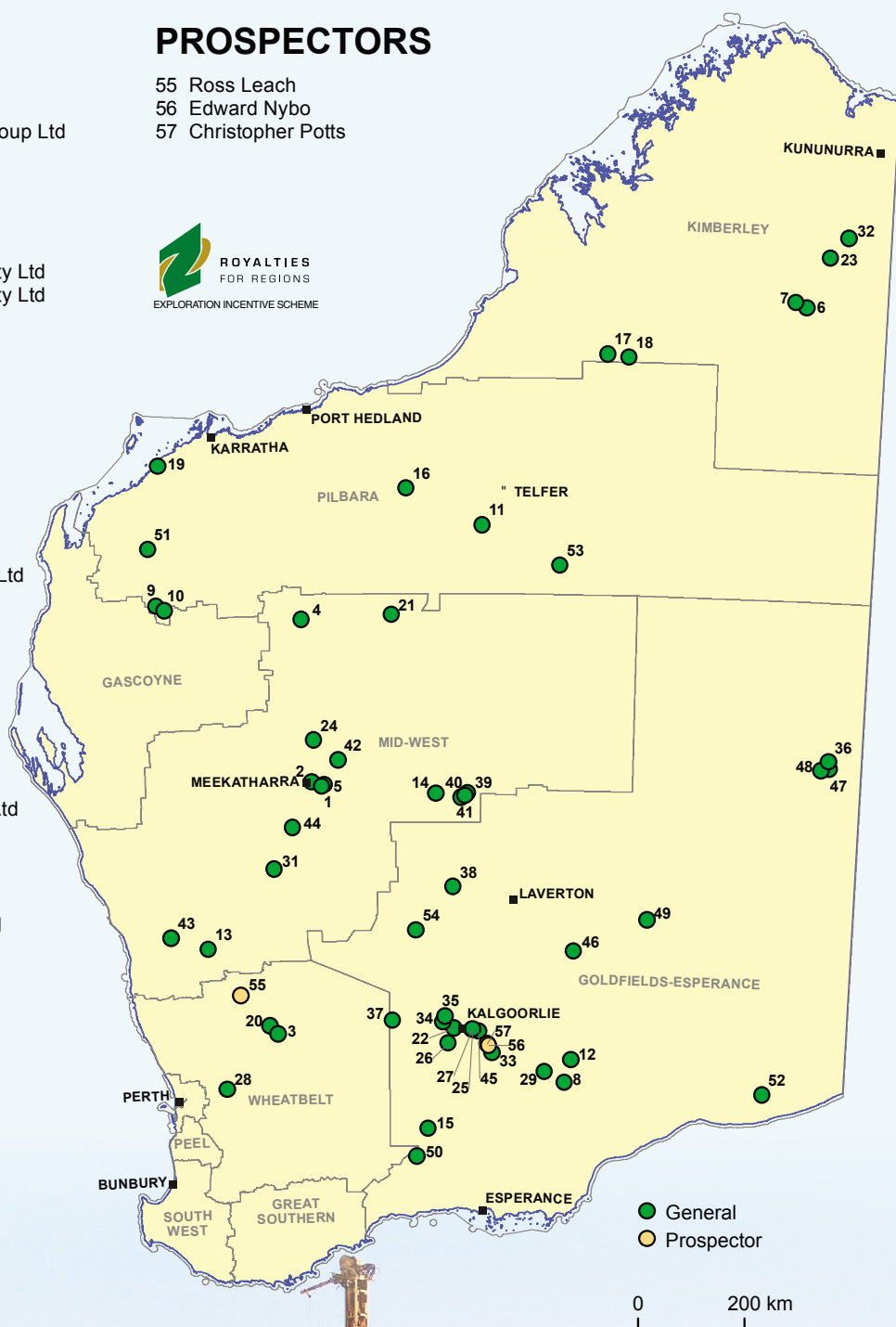
## Co-funded Government-Industry drilling Round 6, 2013

### GENERAL

- 1 Alicanto Minerals Ltd
- 2 Alicanto Minerals Ltd
- 3 Australia Minerals And Mining Group Ltd
- 4 Avocet Resources Ltd
- 5 Black Peak WA Pty Ltd
- 6 Bulletin Resources
- 7 Bulletin Resources
- 8 Buxton Resources Ltd
- 9 Eastern Goldfields Exploration Pty Ltd
- 10 Eastern Goldfields Exploration Pty Ltd
- 11 Encounter Operations Pty Ltd
- 12 Enterprise Metals
- 13 Enterprise Metals
- 14 Ernst Kohler- Echo
- 15 Hannans Reward Ltd
- 16 Hazelwood Resources Ltd
- 17 Highfield Resources Ltd
- 18 Highfield Resources Ltd
- 19 Iron Ore Holdings Ltd
- 20 Kamax Resources Ltd
- 21 Karlawinda Pty Ltd
- 22 La Mancha Resources Australia Ltd
- 23 Lamboo Resources Ltd
- 24 Latin Gold Ltd
- 25 Macphersons Resources Ltd
- 26 Macphersons Resources Ltd
- 27 Macphersons Resources Ltd
- 28 Magnetic Resources NL
- 29 Matsa Resources Ltd
- 31 Mt Magnet Gold Pty Ltd
- 32 Northern Minerals Ltd
- 33 Octagonal Resources (WA) Pty Ltd
- 34 Phoenix Gold Ltd.
- 35 Phoenix Gold Ltd.
- 36 Redstone Resources Ltd
- 37 Reed Resources Ltd
- 38 Resource Mining Corporation Ltd
- 39 Rox Resources
- 40 Rox Resources
- 41 Rox Resources
- 42 Rubianna Resources Ltd
- 43 Sheffield Resources Ltd
- 44 Silver Lake Resources
- 45 Southern Gold Ltd
- 46 St George Mining Ltd
- 47 Traka Resources Ltd
- 48 Traka Resources Ltd
- 49 Tropicana Gold Ltd
- 50 United Mining Resources Ltd
- 51 United Uranium Ltd
- 52 Venus Metals Corporation Ltd
- 53 Venus Metals Corporation Ltd
- 54 Wild Acre Metals Ltd

### PROSPECTORS

- 55 Ross Leach
- 56 Edward Nybo
- 57 Christopher Potts





## Basic raw material mapping for Western Australia's northern growth areas

GSWA is mapping Basic Raw Materials (BRM) to assist in land use planning around some of Western Australia's northern growth areas — Karratha, Port Hedland and Broome. In May 2012 the Department of Planning and Department of Mines and Petroleum signed a Memorandum of Understanding for the provision of mapping of BRM in parts of the Pilbara and West Kimberley regions.

In the Pilbara the mapping covers those areas within 100 km of Karratha and Port Hedland. This work is partly funded by the government's Pilbara Cities initiative, which is planning for both Karratha and Port Hedland (including South Hedland) expanding to populations of 50 000 persons in each city. There is an anticipated need for large quantities of fill material to raise development above flood levels. Smaller quantities of other BRM will also be required, including sand for concrete, limestone, hard rock and gravel.

In the West Kimberley the mapping covers those areas within 100 km of Broome and Derby and the entire Dampier Peninsula. This work is partly funded through the State Natural Resource

Management Program. As for the Pilbara, development is likely to necessitate requirements for large quantities of BRM, particularly around Broome.

Existing mapping is being compiled into seamless digital datasets with each BRM type clearly identified so that planners and others, including industry, can identify constraints and potential opportunities for BRM supplies. Limited fieldwork involved regional-scale material sampling for particle size analyses and limestone quality. Data compilation included the identification of active and inactive quarry sites, associated mining tenure and Crown reserves for BRM as well as aggregated BRM production data from mining tenements. Mapping and data for the West Kimberley have already been supplied to the Department of Planning, and the Pilbara information is still being compiled for delivery in April 2012. It is intended to publish this information as maps and digital datasets during 2013.

For more information, contact Warren Ormsby ([warren.ormsby@dmp.wa.gov.au](mailto:warren.ormsby@dmp.wa.gov.au)).



*Sampling BRM in the Karratha region*



## New gemstones book released

### Mineral Resources Bulletin 25 Gemstones of Western Australia

From the time of formal inception in 1896, the Geological Survey of Western Australia (GSWA) has, until now, never produced a substantial and systematic work on the subject of gemstones to be found in this State. Mineral Resources Bulletin 25, Gemstones of Western Australia, redresses this deficiency. In this joint publication by GSWA and the Gemmological Association of Australia (GAA), the authors have assembled a comprehensive resource on virtually all gemstones and decorative stones used in jewellery and ornamental sculpture known in the State. Although diamonds command a certain pride of place in the Western Australian mining industry, far less is known about occurrences of beryl, topaz, tourmaline, tektites, gem-quality quartz and associated siliceous gems. Material peculiar to this State, such as zebra stone, orbicular granite and mookaite are described, as are pearls, fossil wood, and precious metals. Geographical locations are indicated where possible,



and abundant references to earlier work given. Gemstones of Western Australia is written not only for the professional geologist and gemmologist, but also with the experienced fossicker and amateur rockhound in mind.

The book was launched by the Minister for Mines and Petroleum, the Hon. Norman Moore on 22 January 2013. It is now available to purchase from <[www.dmp.wa.gov.au/GSWApublications](http://www.dmp.wa.gov.au/GSWApublications)> at a cost of \$50 (including GST) or you can download a free PDF.

## YOUANMI SEISMIC and MT WORKSHOP 2013

PERTH 27 February 2013

**New results to be released** This one-day workshop will present the results of new seismic reflection and magnetotelluric data collected along the Youanmi and

Southern Carnarvon seismic traverses across the northern Yilgarn Craton in Western Australia. The workshop will be led by Geological Survey of Western Australian and Geoscience Australia.

### Provisional program

**FREE** — registration is required

Morning tea, lunch and afternoon tea will be provided

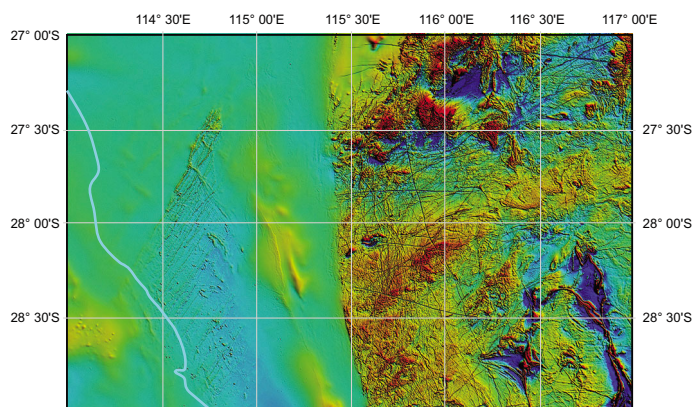
Introduction and aims of survey	Ian Tyler
Seismic acquisition and processing of the Youanmi lines	Ross Costelloe et al.
Regional geology and seismic interpretation in the vicinity of line 10GA-YU1 and 10GA-YU3	Ivan Zibra et al.
Regional geology and seismic interpretation in the vicinity of line 10GA-YU2	Stephen Wyche et al.
Geology and seismic interpretation in the region of the Windimurra Igneous Complex	Tim Ivanic et al.
Interpretation of seismic line 11GA-SC1 and relationship to Capricorn and Youanmi seismic surveys	Russell Korsch et al.
Potential field data and modelling	Tim Jones and Klaus Gessner
Magnetotellurics acquisition and processing	Peter Milligan
Geodynamic implications of the Youanmi seismic and MT results	Russell Korsch et al.
Mineral systems and implications for mineralization of the new datasets	Stephen Wyche et al.
Discussion and concluding remarks	Ian Tyler



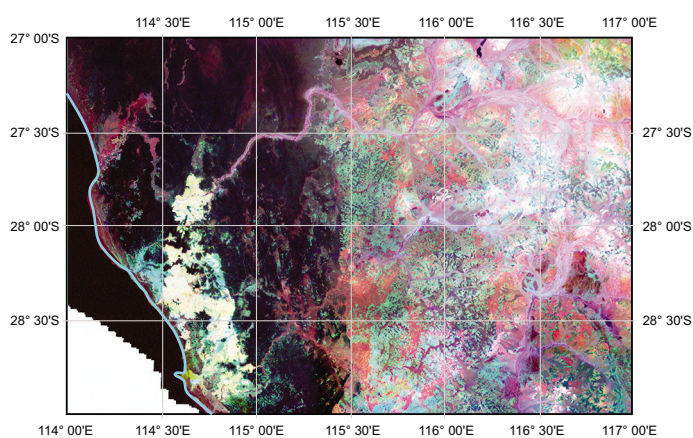
## Northampton–Murchison area, Western Australia

Geophysical data compilations from recent EIS-funded surveys over the the Ajana (SG50-13), Geraldton (SH50-01), Murgoo (SG50-14) and Yalgoo (SH50-02) 1:250 000-scale map sheet areas.

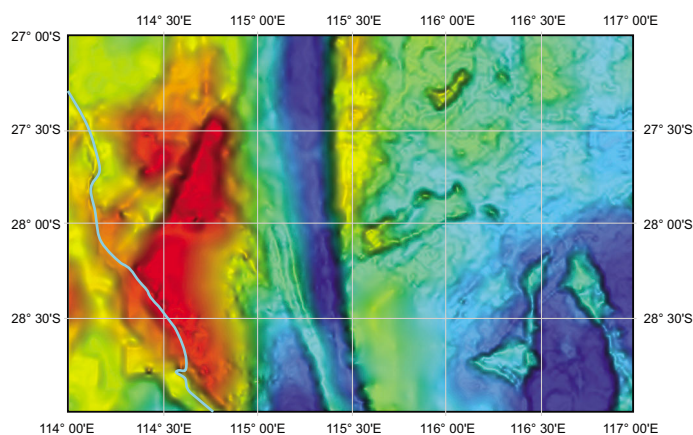
### Total magnetic intensity image



### Ternary radiometric image



### Bouguer gravity image



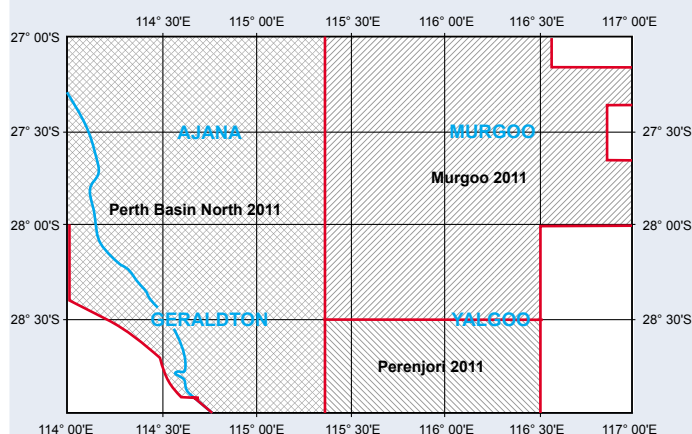
### Data distribution legend

#### Airborne magnetic and radiometric surveys 2011–12

Magnetic and radiometric images include data from the Perth Basin North 2011, Murgoo 2011 and Perenjori 2011 airborne surveys. Go to <[www.dmp.wa.gov.au/14582.aspx](http://www.dmp.wa.gov.au/14582.aspx)>.

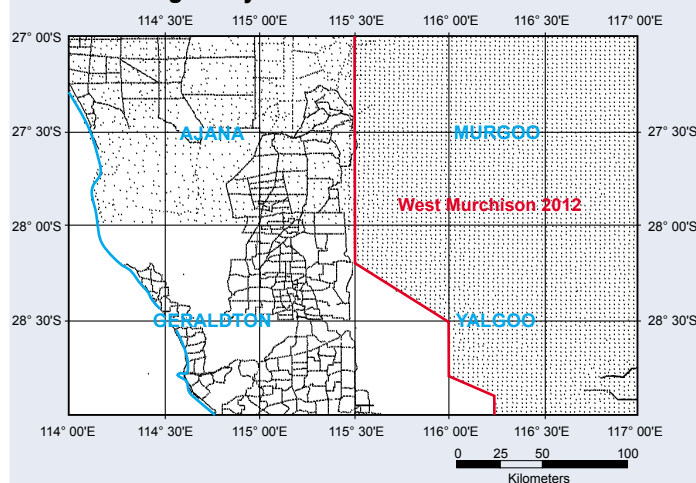
The total magnetic intensity (TMI) data are displayed as a pseudo-colour image with north east illumination (azimuth 45°, elevation 45°). Values from low to high are represented by colours blue to red.

The radiometric data are displayed as a ternary image. Potassium, thorium and uranium elements are shown as red, green and blue colours respectively.



Area/Name	Line spacing	Direction
Perth Basin North 2011	400 m	E/W
Murgoo 2011	200 m	E/W
Perenjori 2011	200 m	E/W

#### Ground gravity data stations



Points show distribution of gravity stations along roads and in areas of helicopter-assisted surveys in Ajana (nominal 4 km station spacing) and in Murgoo and Yalgoo 1:250 000 map sheet areas at a nominal station spacing of 2.5 km in recent West Murchison 2012 survey (data released on 20 December 2012). Areas with no stations shown have data only from national 'BMR 11 km surveys'.

The data are displayed as a pseudo-colour image with overhead illumination (elevation 90°). Values from low to high are represented by colours blue to red.



## Western Australia regional geophysics surveys: January 2013

### Data access downloads

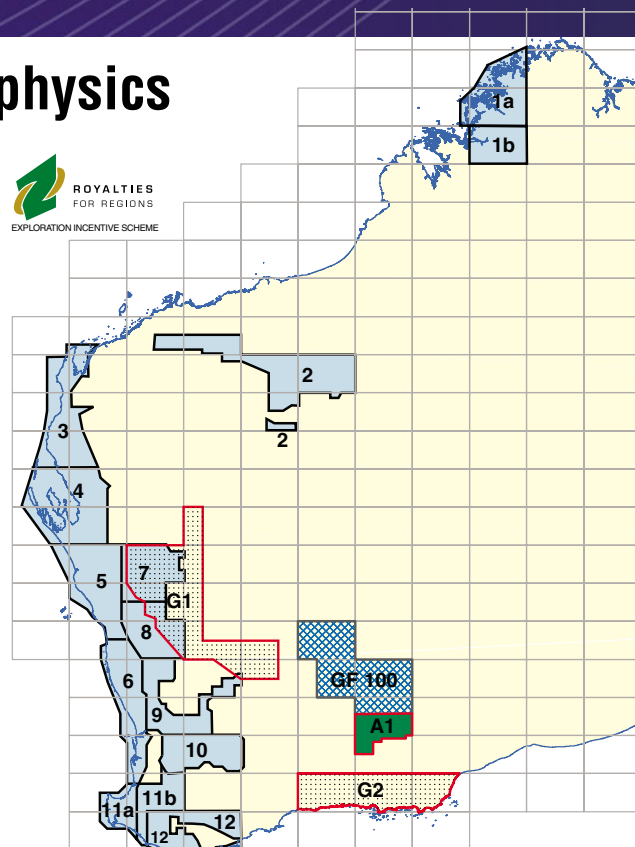
Final data releases from the Geophysical Archive Data Delivery System at <[www.ga.gov.au/gadds](http://www.ga.gov.au/gadds)>.

Preliminary and final grids and images from the GSWA website at <[www.dmp.wa.gov.au/geophysics](http://www.dmp.wa.gov.au/geophysics)>.

Subscribe to the GSWA eNewsletter for alerts of preliminary and final data release dates.



For more information, contact David Howard ([david.howard@dmp.wa.gov.au](mailto:david.howard@dmp.wa.gov.au)).



### Airborne magnetic and radiometric surveys

ID	Area/Name	Line spacing and direction	Line-km	Acquisition Start	Acquisition End	Current Status	Preliminary Release <sup>1</sup>	Final Release
<b>2011-12 program</b>								
1a	Prince Regent – Montague Sound 2011 <sup>2</sup>	800m; N/S	42 000	Jun-11	Dec-11	Released	—	25-Oct-12
1b	Charnley 2011	200m; N/S	102 000	Jun-11	Dec-11	Released	9 Feb 12	25-Oct-12
2	South Pilbara 2012	400 m; N/S	134 000	Jun-12	Jan-13*	Survey 98%	—	Mar-13*
3	Carnarvon Basin North 2011	400 m; E/W	106 000	Jul-11	Oct-11	Released	—	16 Feb 12
4	Carnarvon Basin South 2012	400 m; E/W	123 000	Apr-12	Jun-12	Released	—	11-Oct-12
5	Perth Basin North 2011	400 m; E/W	96 000	Jun-11	Jan-12	Released	—	2-Aug-12
6	Perth Basin South 2011	400 m; E/W	84 000	Mar-11	Mar-12	Released	22 Feb 12	20-Dec-12
7	Murgoo 2011	200 m; E/W	134 000	Mar-11	Nov-11	Released	9 Feb 12	9-Aug-12
8	Perenjori 2011	200 m; E/W	121 000	Oct-11	Jan-12	Released	—	28-Jun-12
9	Moora 2011	200 m; E/W	136 000	Jun-11	Jan-12	Released	—	26-Apr-12
10	Corrigin 2012	200 m; E/W	114 000	Jan-12	Mar-12	Released	—	26-Jul-12
11a	Cape Leeuwin 2011	400 m; E/W	28 000	Mar-11	Jan-12	Released	22 Feb 12	20-Dec-12
11b	Collie 2011	200 m; E/W	74 000	Mar-11	Jan-12	Released	22 Feb 12	6-Sep-12
12	Mt Barker 2011	200 m; N/S	123 000	Apr-11	Mar-13*	Survey 87%	24 May 12	Apr-13*
<b>2012-13 program</b>								
A1	Widgiemooltha South	100 m E-W	130 000	Nov-12	May-13*	Survey 25%	—	Aug-13*
<b>2013-14 program</b>								
GF100	Goldfields 100m surveys	100 m E-W	720 000	TBD	TBD	Proposal	—	—

### Ground gravity surveys

ID	Area/Name	Station spacing	Stations	Acquisition Start	Acquisition End	Current Status	Preliminary Release	Final Release
G1	West Murchison 2012	2.5 km grid	11 815	Sep-12	Nov-12	Released	—	20-Dec-12
G2	Esperance	2.5 km grid	7 000	TBD	TBD	Proposal	—	—

#### Notes

\* Asterisk indicates an estimated date based on delivery information currently available. Subscribe to the newsletter for release alerts.

1. Preliminary releases are made on a case-by-case basis and consist of ecw images and ERMapper grids of partially processed and unchecked data.

2. Prince Regent – Montague Sound 2011 flown at 800 m offset by 400 m from existing 800 m survey (P614). Data from both surveys were integrated to produce a single 400 m dataset.

#### Colour legend



Information current at: 2 January 2013

Fieldnotes January 2013 11

# Product releases

Any prices include GST

ISSN 1325-9377 ISBN (PRINT) 978-1-74168-479-7  
ISSN 1834-2272 ISBN (PDF) 978-1-74168-478-0

## MINERAL RESOURCES BULLETIN

Mineral Resources Bulletin 25

Gemstones of Western Australia

by J Michael Fetherston, Susan M Stockmayer, and Vernon C Stockmayer

## REPORT

Report 119 Cenozoic evolution of Nullarbor paleokarst, southern Australia

by CR Miller

## RECORDS

Record 2012/12 Hyperspectral characterisation of Rare Earth Minerals

by S Morin-Ka

Record 2012/9 The proposed Dawn of Life geotourism trail, Pilbara Craton, Western Australia — geology and evidence for early life

by K Grey, JDA Clarke, and AH Hickman

## GEOLOGICAL MAPS 1:100 000

JOHNSTON WA Sheet 3033 1:100 000 Geological Series map

by SS Romano

## DATA PACKAGES

Murchison Geological Information Series 2012

Western Australian geoscientific imagery 2012

Digital data packages are available on USB for \$55 (inc. GST). All other products are free to download as PDFs.



## Senior Geoscience Editor

MP090249

Specified Calling Level 2 \$81,348 - \$89,905 pa PSGOGA Permanent Appointment

This position undertakes copy editing of geoscience data for publication of quality maps, reports and datasets under limited supervision within the Department. You will be accountable for meeting agreed quality, quantity and time targets with available resources, and respond to public enquiries for information relating to the geology of Western Australia and GSWA products and services. The role requires that you provide professional advice to internal and external customers and professional organisations, maintaining up-to-date knowledge related to geoscience. You are expected to assist with ongoing improvement to the publishing process, assist in staff training and development, and provide geoscience editing leadership to less experienced staff.

To undertake this role successfully you require:

- Bachelor of Science Degree in geoscience.
- Understanding of and experience in the principles of editing geoscientific products, including copy editing and proof reading.
- Demonstrated scientific analytical ability.

This position is located in Mineral House, 100 Plain Street, East Perth, WA. Apply online on [www.jobs.wa.gov.au](http://www.jobs.wa.gov.au).

### Contact

For role queries, contact Robin Bower, Manager Editing and Publishing on 9222 3692.

For queries about the application process, contact Dale Hanbury on 9222 3078.

**CLOSING DATE: 5.00 pm on Friday 22 February 2013.**



## Geological Survey Open Day

Friday 22 February 2013

8.30 am – 4.30 pm

Followed by a Sundowner

Esplanade Hotel, Fremantle

Cnr Marine Tce & Essex St

This is a great opportunity to hear presentations on the latest results from GSWA's geoscience programs and see demonstrations of the Department of Mines and Petroleum online database developments.

Activities and results of the \$80 million Exploration Incentive Scheme will be outlined including the launch of Round 7 of the Government Co-funded Exploration Drilling program.

Throughout the day there will be geological presentations and an extensive poster display.

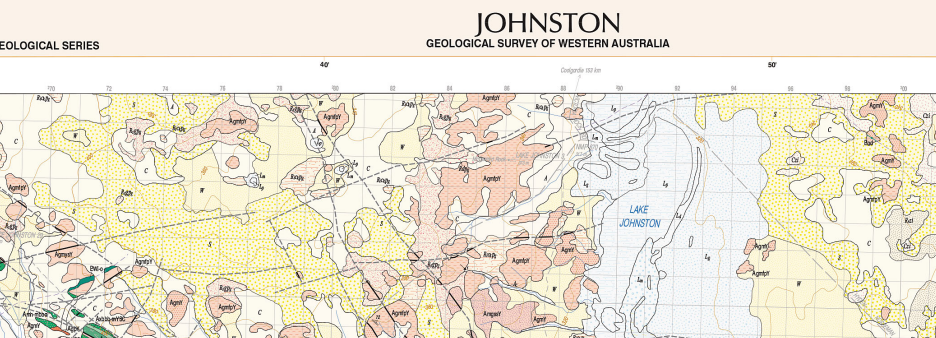
Register online at

[www.dmp.wa.gov.au/gswa2013](http://www.dmp.wa.gov.au/gswa2013)

For further information, call (08) 9222 3168



Government of Western Australia  
Department of Mines and Petroleum



Almost all printed publications are available free as PDF files on our website at [www.dmp.wa.gov.au/GSWApublications](http://www.dmp.wa.gov.au/GSWApublications). GIS files (ESRI and MAPINFO formats) from all maps are available for free download from the datacentre.

Further details of geological publications and maps produced by the Geological Survey of Western Australia can be obtained at [www.dmp.wa.gov.au/GSWA](http://www.dmp.wa.gov.au/GSWA).

Hardcopy publications including products on CD, DVD, and USB are available from the Information Centre, First Floor, Mineral House, 100 Plain St, East Perth, WA 6004, AUSTRALIA. Phone: +61 8 9222 3459; Fax: +61 8 9222 3444 or can be purchased online from the bookshop at [www.dmp.wa.gov.au/ebookshop](http://www.dmp.wa.gov.au/ebookshop).