

Fieldnotes



Government of Western Australia
Department of Mines and Petroleum

Geological Survey of
Western Australia



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EIS Co-funded Exploration Drilling offers, Round 13 — 2016/17

The Department of Mines and Petroleum (DMP) has selected 48 companies and prospectors to be eligible to receive co-funding for innovative exploration drilling projects from a pool of 79 applications.

The offer of \$5.14 million in co-funding for Round 13 of the Exploration Incentive Scheme's (EIS) highly competitive Co-funded Drilling Program was announced on 9 June by the Minister for Mines and Petroleum Sean L'Estrange MLA.

The program, now in its eighth year, has offered co-funding to more than 640 projects of which 320 have been completed, resulting in more than 470 000 metres of drilling across Western Australia.

The Co-Funded Drilling Program has supported more than 20 new discoveries.

Among the discoveries supported are:

- the Nova nickel project, which will be an operating mine this year
- gold at Alloy Resources' Horse Well project
- deep gold mineralization at Gold Road Resources' Gruyere deposit in the Yamarna greenstone belt
- Panoramic Resources' Savannah North nickel project
- zinc at Millennium by Encounter Resources.

General

1 ACH Nickel Pty Ltd	27 Pathfinder Exploration Pty Ltd
2 ACN 159 782 537	28 Phosphate Exploration Pty Ltd
3 Apollo Minerals Limited	29 Pioneer Resources Ltd
4 Aruma Resources	30 Polar Metals Pty Ltd
5 Australian Mines Limited	31 Redstone Resources Limited
6 Australian Salt Lake Potash	32 Riedel Resources Limited
7 Beadell Resources Limited	33 River Rock Energy Limited
8 Black Raven Mining	34 Rox Resources Limited
9 Breaker Resources NL	35 Saracen Gold Mines Pty Limited
10 Buxton Resources Limited	36 Sinosteel Midwest Corporation Limited
11 Canning Potash Pty Ltd	37 Sipa Exploration NL
12 Canning Potash Pty Ltd	38 Sirius Gold Pty Ltd
13 Cassini Resources Limited	39 State Resources Pty Ltd
14 Dacian Gold Limited	40 Venus Metals Corporation Limited
15 Doray Minerals	
16 Encounter Resources	
17 Encounter Resources Ltd	
18 Enterprise Metals Limited	
19 Evolution Mining Ltd	
20 Impact Minerals Limited	
21 Independence Group NL	
22 Kin Mining	
23 Matsa Resources Limited	
24 Musgrave Minerals Ltd	
25 Northern Star Resources	
26 Panoramic Resources	

Prospectors

41 Christopher Potts
42 Graeme Johnston
43 Melrose Resources Pty Ltd
44 Michael John Photios
45 Mr William Robert Richmond
46 Rodney Arthur Higgins
47 Royce William Allen
48 Walter Scott Wilson

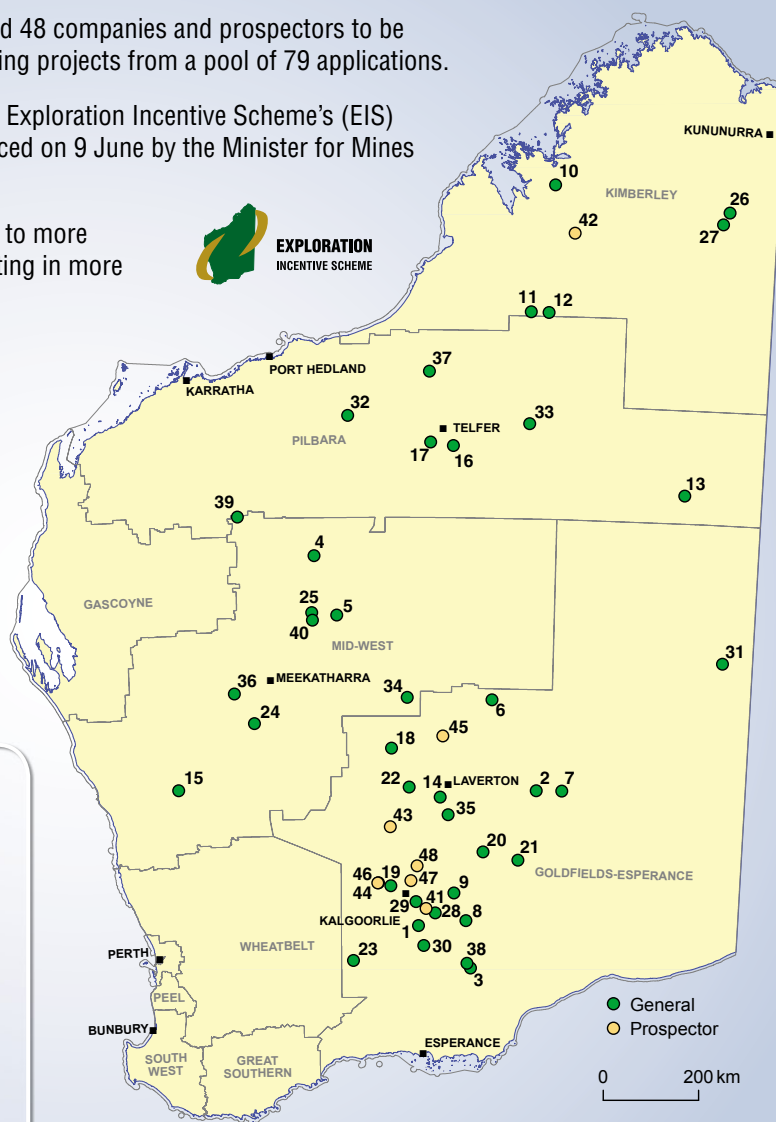


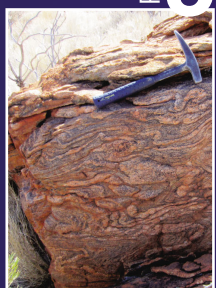
Figure 1. List of approved sites for Round 13

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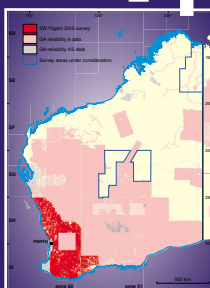
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Navigational tips for DMP website

The Department of Mines and Petroleum (DMP) website incorporates many new features and enhancements for quick retrieval of information and speedier navigation.

Home page features **1**

- Quicklinks and forms on the left-hand side allow rapid access to specific forms/documents for payments and notifications
- The most frequently accessed ONLINE SYSTEMS are shown on the right, and a full list of all systems is displayed by selecting VIEW MORE. From this page customers can opt to read ABOUT each system or ACCESS it directly
- a Recently Viewed tab is customized so that each user can retrieve the last 20 pages viewed during previous visits to the website (TIP: use VIEW MORE at the bottom to see the full list).

Search functionality **2**

The text search field is shown on the top right-hand side of each page, with results immediately filtered as typing progresses and the option of sorting by date or relevance. The menu on the left-hand side of the Search page allows further refinement by restricting the search to specific Business Sections (e.g. Geological Survey), Date, Document Format (e.g. pdf, docx). In addition to the website, the search functionality also scours various departmental repositories (e.g. eBookshop) which is an alternative way of accessing Geological Survey of Western Australia maps and publications on the fly.

The screenshot shows the DMP website home page. Annotation 1 points to the 'Quicklinks & forms' section on the left, which includes links for Payments, Renewals, Applications & lodgements, Notifications, Reports, Legislation & compliance, and Requests. Annotation 2 points to the 'Online Systems' section on the right, which lists various systems like EARS, GeoVIEW.WA, WAMEx, MTO, SRS, and TENGGRAPH Online. Annotation 3 points to the 'Recently Viewed' section at the bottom, which shows a list of recently viewed pages including 'Petroleum', 'Data and Software Centre', and 'Online Systems'. A red box highlights the 'VIEW MORE' link at the bottom of the 'Recently Viewed' section.

1 Skip to Main Content

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[Annual fee & Rent](#)
[Mining Rehabilitation Fund Levy](#) - payments are made through EFT
[Title payment](#) - Registration fee & Title administration fee
[Fine/Penalty](#) - Late payment fee
[Prospect Magazine](#) - subscribe, pay and update your contact details

Renewals >

Applications & lodgements >

Notifications >

Reports >

Legislation & compliance >

Requests >

Online Systems

Environmental Assessment and Regulatory System (EARS)
Interactive geological map (GeoVIEW.WA)
Mineral exploration reports (WAMEx)
Mineral Titles Online (MTO)
Royalties Online
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TENGRAPH Online

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Online Systems
GSWA shines in international scientific discovery
Gemstones of Western Australia
Contact us
Interactive geological map (GeoVIEW.WA)
2015 Golden Gecko awarded to innovative micro-tunnel project
VIEW MORE

Contacts **3**

Most web pages include a dedicated email at the end of the page, designed to link customers directly with staff responsible for that specific business area/topic. A list of contacts for various divisions and regional offices can be found under the About us & Careers tab (shown on the top right-hand side of all web pages).

For more information,
contact Angela Riganti
(angela.riganti@dmp.wa.gov.au).

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Location ID	Applicant Name	Drilling Project Title	Target Commodities
1	ACH Nickel Pty Ltd	Foster Deeps	Ni, Au
2	ACN 159 782 537	Lake Rason	SOP (sulphate of potash)
3	Apollo Minerals Ltd	Plato Drilling Project	Ni, Cu
4	Aruma Resources	Bulloo Downs Copper	Cu, Au, Ag
5	Australian Mines Ltd	Dixon gold prospect	Au
6	Australian Salt Lake Potash	Lake Wells Potash Exploration	SOP (Sulphate of Potash)
7	Beadell Resources Ltd	Targetted AC Drilling at Neale	Au, Cu, Ni
8	Black Raven Mining	Erayinia King NW	Zn, Cu, Au
9	Breaker Resources NL	Bombora Prospect, Lake Roe Project	Au, base metals
10	Buxton Resources Ltd	Double Magic Project	Ni, Cu
11	Canning Potash Pty Ltd	West McLarty	Potash
12	Canning Potash Pty Ltd	East McLarty	Potash
13	Cassini Resources Ltd	X17	Zn, Pb
14	Dacian Gold Ltd	Callisto	Au
15	Doray Minerals	Gearless Well Stratigraphy	Au, Cu, Ag, Pb, Zn
16	Encounter Resources	Dora	Au, Cu
17	Encounter Resources	Millennium Deeps	Zn, Ag, Pb, Cu
18	Enterprise Metals Ltd	Jarrah Well	Au, Cu, Zn, Pb, Ag
19	Evolution Mining Ltd	Blue Funnel Deep Hole	Au
20	Impact Minerals Ltd	Mulga Tank Dunite	Ni and PGE
21	Independence Group NL	Rising Dragon	Ni, Cu, Co, Pt, Pd
22	Kin Mining	Merton's Reward	Au
23	Matsa Resources Ltd	Mt Day	Ni
24	Musgrave Minerals Ltd	Eelya Hill VMS	Cu, Au, Zn
25	Northern Star Resources	Timor North Offset	Au
26	Panoramic Resources	Savannah North Intrusion	Ni
27	Pathfinder Exploration Pty Ltd	Garnet Hills Project	Garnet, Cu, Sn, W
28	Phosphate Australia Ltd	Randalls	Au
29	Pioneer Resources Ltd	Blair Dome	Ni
30	Polar Metals Pty Ltd	Polar Bear Project	Au
31	Redstone Resources Ltd	Blackstone Range (Tollu)	Cu, Ni, Co
32	Riedel Resources Ltd	Charteris Creek	Cu, Mo, Au
33	River Rock Energy Ltd	Percival Lakes Potash Project	K, Br, Li
34	Rox Resources Ltd	Fisher East project	Ni
35	Saracen Gold Mines Pty Ltd	Red October	Au
36	Sinosteel Midwest Corporation Ltd	Weld Range Project	Ni, Cu, PGE, Zn, Cu
37	Sipa Exploration NL	Paterson North	Cu, Au, Bi, Ni
38	Sirius Gold Pty Ltd	North Bore	Ni, Cu, Co Pt, Pd
39	State Resources Pty Ltd	Turee Creek Gold	Au
40	Venus Metals Corporation Ltd	Curara Well	Diamonds, Au, Cu
41	Christopher Potts	Messina	Au
42	Graeme Johnston	MHY 1 Diamond Project	Diamond
43	Melrose Resources Pty Ltd	Jasper Well	Au
44	Michael John Photios	Slattery Dam	Au, Ni
45	Mr William Robert Richmond	Duketon gold/base metals project	Au, Ag, Cu, Pb, Zn
46	Rodney Arthur Higgins	Slattery Dam	Au, Ni
47	Royce William Allen	Gordons	Au



Figure 2. List of successful applicants Round 13

Co-funded drilling applicants are selected through a transparent process subject to continuing probity audits.

The Co-funded Drilling Program refunds up to 50% 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.

Refunds are made to successful applicants after completion of drilling and submission of reports which are made available to the public on DMP's WAMEX database

after a six-month confidentiality period.

The State Government has committed \$10 million, including \$5 million to co-funded drilling, per year to the EIS until the end of June 2020.

Applications for R14 (2017) of the Co-funded Exploration Drilling Program will be open in September.

For more information, contact Margaret Ellis (margaret.ellis@dmp.wa.gov.au) or see <www.dmp.wa.gov.au/eisdrilling>.

Characterization and correlation of lower Permian strata, Canning Basin

The early Permian Poole Sandstone and Noonkanbah Formation are deposited across large areas of the northern Canning Basin.

Both formations crop out in the south-eastern areas of the Fitzroy Trough however, identification, correlation and interpretation of depositional setting in the more north-western areas of the basin is reliant on well data and cored sections.

Report 149 Characterization and correlation of lower Permian strata, Canning Basin, Western Australia, and implications for CO₂ sequestration has recently been released. The Poole Sandstone and Noonkanbah Formation are recognized as part of the first-order Late Carboniferous – Permian Megasequence in the Canning Basin. Within this megasequence, the two formations are part of the second-order Early–Late Permian Supersequence I. This Report presents facies analysis from core and outcrop, in combination with well-log data, that allows further subdivision into two third-order sequences in the Noonkanbah Formation and eight fourth-order sequences between the uppermost Grant Group and top of the Noonkanbah Formation. Third- and fourth-order sequences comprise a series of stacked, high-frequency cycles, the formation of which may be related to Milankovitch processes.

The Poole Sandstone displays a major facies variation from northwest to southeast. Five facies associations are identified in outcrop and cored sections: fluvial (FA1), tidal flat (FA2), shoreface (FA5), mid-ramp (FA9) and offshore (FA7). The Noonkanbah Formation is dominated by mudstone facies across the study area. Four major facies associations are identified in cored sections: tidal flat (FA3), shoreface (FA5), offshore transitional (FA6) and offshore (FA7). Facies associations in the Noonkanbah Formation have a consistent stratigraphic position across large areas. The depositional setting and character of the uppermost Grant Group (G1) are also discussed in this Report to assist stratigraphic subdivision and correlation, and tidal and fluvial facies associations are identified (FA1, FA4, and FA8).

Subsurface carbon dioxide (CO₂) sequestration is now considered a significant climate change mitigation strategy, as a result of which, a prospective CO₂ sequestration site was investigated in the northern Canning Basin near James Price Point. The Permo-Carboniferous Grant Group and Poole Sandstone are possible reservoirs, sealed by the Noonkanbah Formation. This Report comments on the suitability of these potential reservoir and seal units based on the findings of stratigraphic and facies analysis.

For more information, contact
Louisa Dent (louisa.dent@dmp.wa.gov.au).

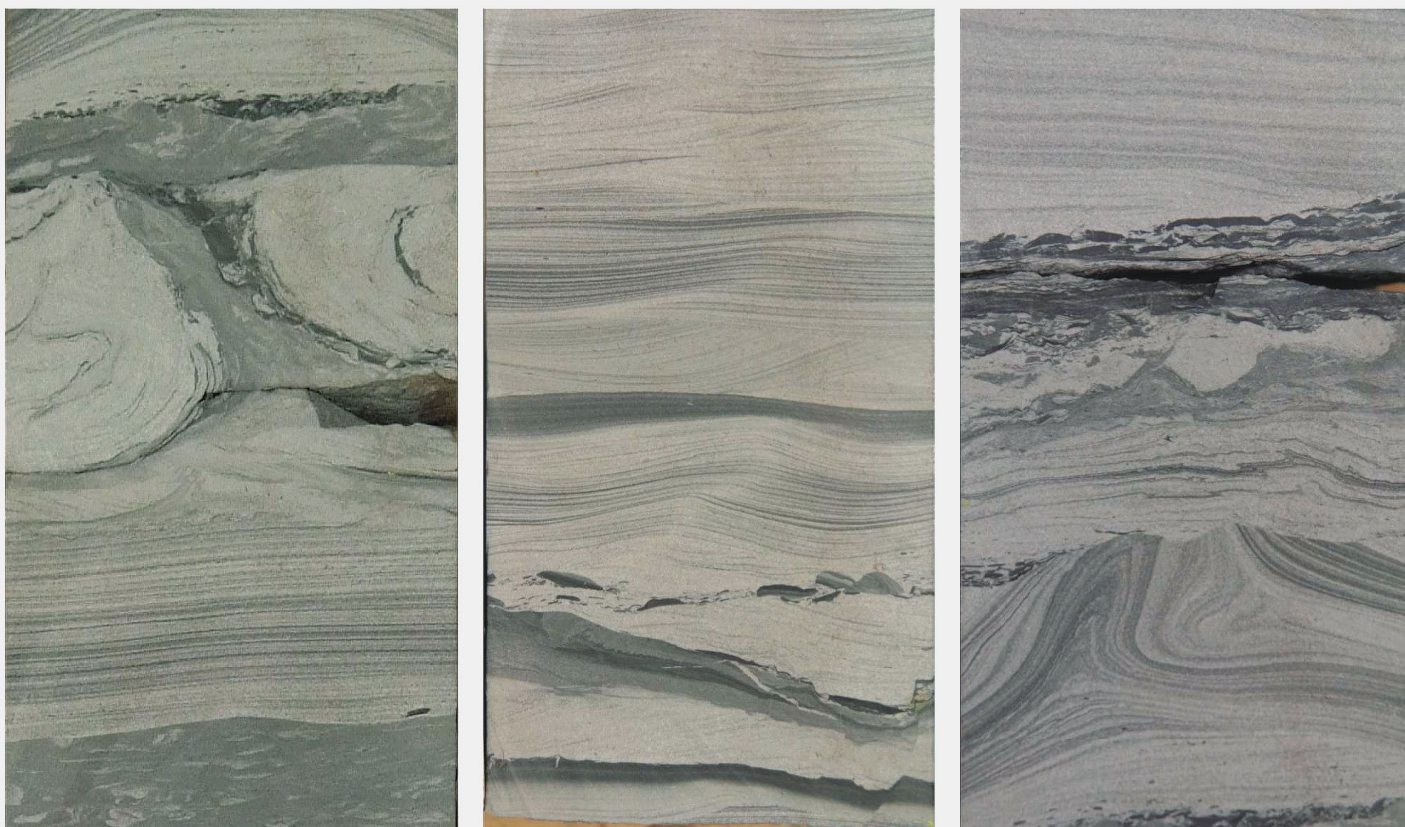


Figure 1. Sedimentary structures in cored section from tidal channel facies association in the Grant Group from the Sundown 3H well

Geology and geochronology of the Warlawurru Supersuite and MacDougall Formation

A new basement component of the west Musgrave Province (Fig. 1a) has been identified in the Wanarn area. The c. 1600 Ma Warlawurru Supersuite consists of gneissic metasyenogranites (Fig. 1b). These are the oldest known crystalline rocks in the west Musgrave Province. Their identification supports Hf isotope data, which suggest that a crust-forming event took place at 1600–1550 Ma. The Warlawurru Supersuite was only found within a northeast-directed thrust sheet in the Wanarn area where it is interleaved with psammitic gneisses of the MacDougall Formation. Elsewhere in the Wanarn area, northwest- to west-directed thrust sheets tectonically interleave metagranites of the 1220–1150 Ma Pitjantjatjara Supersuite with the MacDougall Formation.

Metasedimentary rocks of the Mitika and Wanarn areas are assigned to the MacDougall Formation, the basal unit of the Kunmarnara Group deposited within the Ngaanyatjarra Rift. Detrital zircon ages in nine samples define major age

components at c. 1611, 1566, and 1505 Ma, minor groups at c. 1428 and 1405 Ma, and a dominant component at c. 1179 Ma (Fig. 1c). The absence of zircons older than c. 1620 Ma precludes most of the surrounding regions as sedimentary sources to the MacDougall Formation. Good matches between detrital zircon age components and the ages of likely source regions, together with the absence of 1345–1293 Ma zircons from the west Musgrave Province, suggest that the source of MacDougall Formation detritus was the central and eastern Musgrave Province and/or basement rocks of the Madura or Coompana Provinces beneath the Eucla Basin.

Record 2016/4 Geology and U–Pb geochronology of the Warlawurru Supersuite and MacDougall Formation in the Mitika and Wanarn areas, west Musgrave Province is available to download from www.dmp.wa.gov.au/ebookshop.

For more information, contact
Raphael Quentin de Gromard
(raphael.quentindegromard@dmp.wa.gov.au).

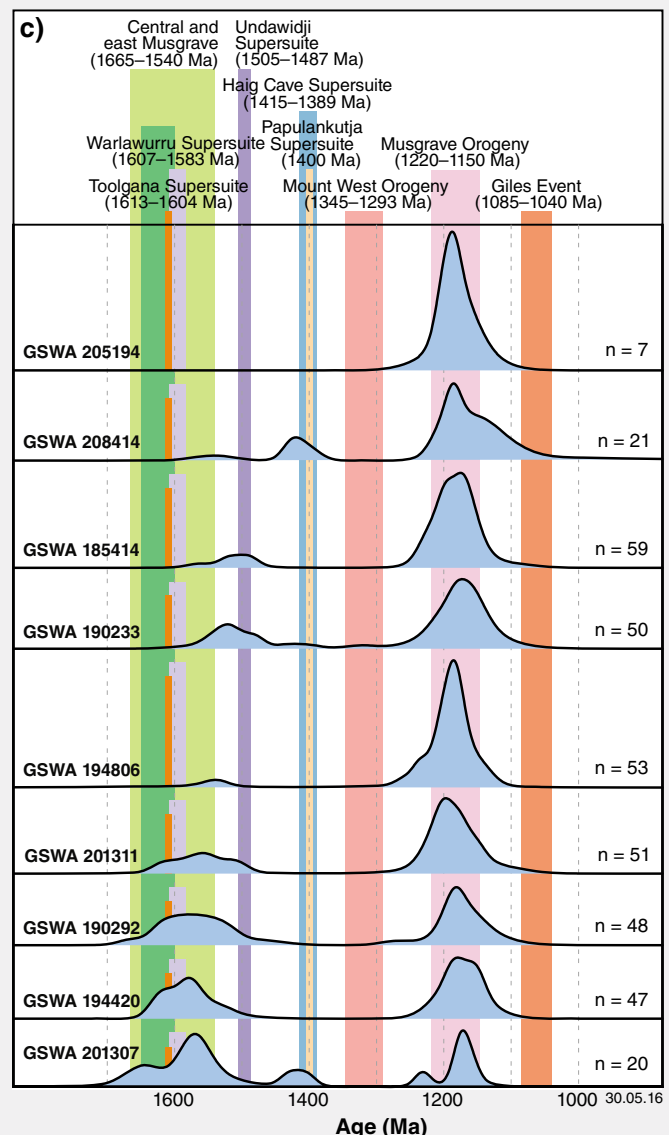
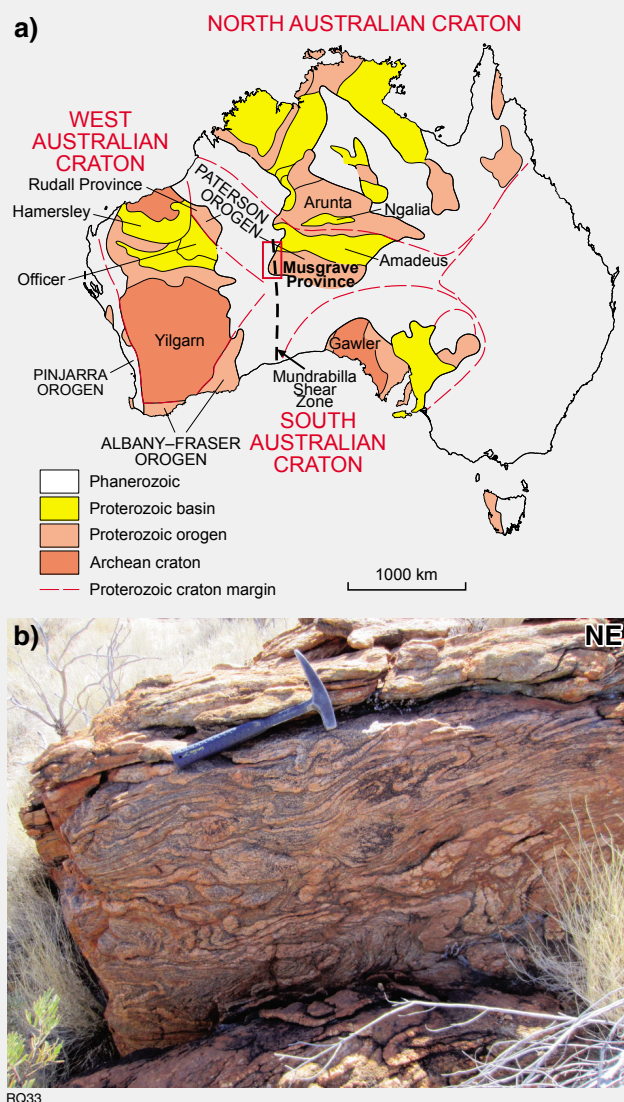


Figure 1. a) Tectonic map of Australia showing the location of the Musgrave Province; b) field photo of the Warlawurru Supersuite; c) normalized probability density curves of detrital zircon ages from the MacDougall Formation, showing crust-forming event (from Lu–Hf data)

Dambimangari regolith geochemistry project



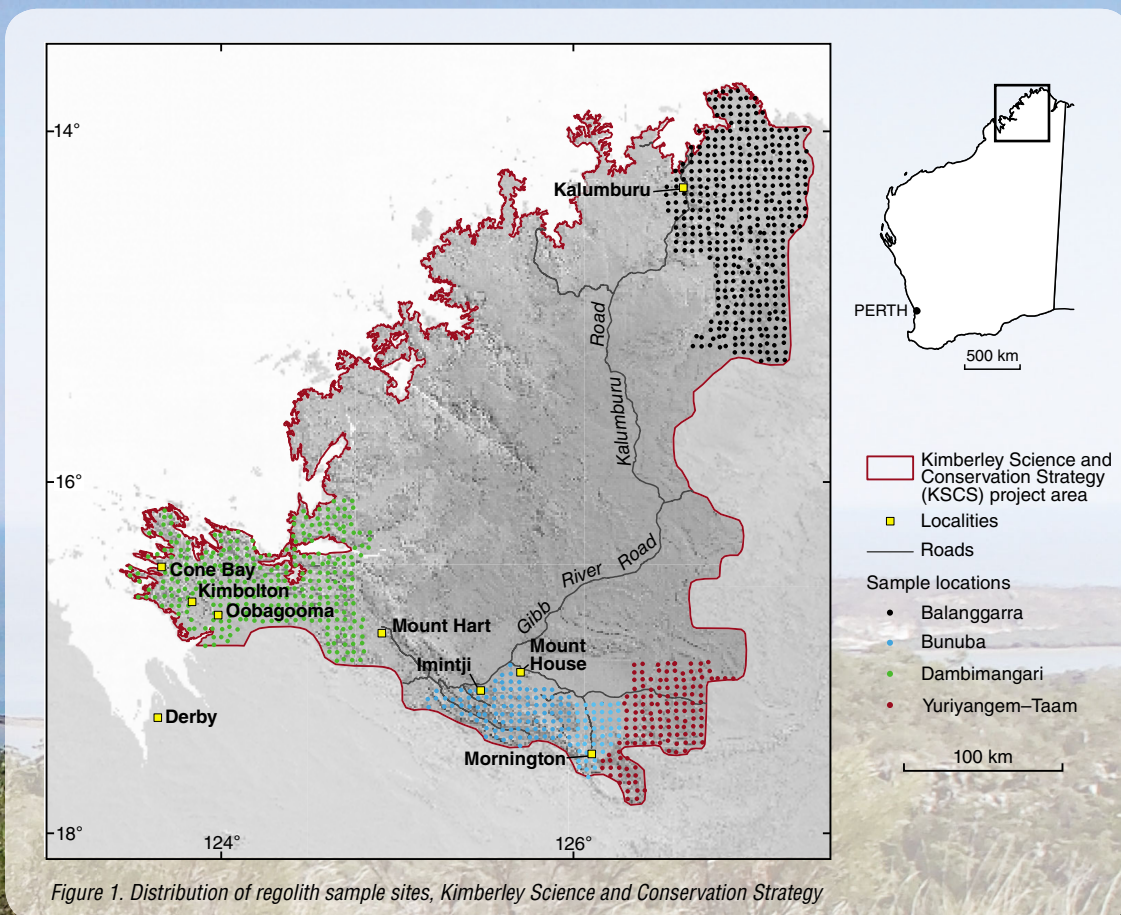
In June 2010, the State Government's Kimberley Science and Conservation Strategy (KSCS), a five-year program to provide a better understanding of the Kimberley region, provided the opportunity to examine an area where regolith is subordinate in extent to bedrock, and has only been transported a short distance. Thus, regolith represents the early stages of bedrock weathering, and if this is understood, regolith chemistry can be used to not only examine bedrock composition, but also bedrock-hosted mineralization. At the conclusion of the program in 2014, the Geological Survey of Western Australia (GSWA) had completed four regolith sampling programs comprising the collection of 1019 regolith samples, and completed a regolith–landform map of the strategy area. The last of these programs was carried out over Dambimangari country in the west Kimberley.

The Dambimangari project (Fig. 1) covers an area of approximately 10 000 km². Its rugged topography (Fig. 2) reflects several phases of bedrock deformation and ongoing downwarping of north Australia which has resulted in a drowned coastline. In areas of exposed bedrock, which accounts for approximately two-thirds of the project area, regolith is thin, poorly sorted and lithic rich. The remaining regolith is composed of roughly equal proportions of colluvium, alluvium, and tidal deposits. Residual (in situ) regolith is uncommon. In terms of

mineralization, this part of the Kimberley is best known for its iron-ore deposits developed on Cockatoo and Koolan Islands. However, base metal (predominantly copper), uranium, gold, and heavy mineral sand deposits are also found.

Following consultation with traditional owners, GSWA collected 323 regolith samples in the Dambimangari project area, at a density of one sample per 25 km². Each sample was analysed for 71 components. These data show that regolith in areas of bedrock, colluvium, and even some areas of alluvium are compositionally similar to nearby bedrock. Incipient weathering has resulted in the breakdown of feldspars, ferromagnesian silicates, and primary sulfides, but in some areas of alluvium, more intense chemical weathering has resulted in elevated concentrations of P₂O₅, rare earth elements (REE), Th and occasionally high field strength elements (HFSE). Base metal, gold and some heavy mineral sand deposits show a strong relationship to lithology, but some uranium and heavy mineral sand deposits, and uranium mineralization in the southwest of the project area probably result from erosion of granitic and sedimentary rocks. For example, a high proportion of regolith samples (both in areas of outcrop, and transported regolith) from granitic rocks have detectable Au and Ag, indicating elevated background levels of both elements. Similarly, elevated concentrations of TiO₂ and V in some samples from the Hart

Kimberley Science and Conservation Strategy



Dolerite indicate the potential of regolith for identifying mineralized sills within this unit. Although a few lithological units, such as the Marboo Formation, have elevated chalcophile element concentrations, samples from a variety of bedrock units with higher concentrations of these elements, shown by an additive index, are found close to regional faults, suggesting that structures may have some influence on mineralization.

Two sets of explanatory notes from GSWA's KSCS regolith geochemistry program have been released, covering the Balanggarra (**GSWA Record 2015/9**) and Bunuba and Yuriyangem-Taam (**GSWA Record 2015/15**) programs. Both Records are available for download from the Department of Mines and Petroleum's eBookshop (www.dmp.wa.gov.au/ebookshop).

Explanatory notes from the Dambimangari program are being compiled. Regolith geochemistry from all GSWA's Kimberley regolith geochemistry projects can be downloaded from GeoVIEW.WA or via GeochemExtract on the Department of Mines and Petroleum's website (www.dmp.wa.gov.au).

For more information, contact Paul Morris (paul.morris@dmp.wa.gov.au).



Expanding into WA's sedimentary basins



The regional regolith programs of the Geological Survey of Western Australia (GSWA), which aim to draw attention to the mineralization potential of greenfields areas, have usually been carried out either within or on the margins of Archean cratons or Proterozoic orogens. In a recent departure, the latest of these programs — carried out on Ngururrpa country south of Halls Creek — has sampled regolith covering Proterozoic to Mesozoic sedimentary rocks of the Murraba and Canning Basins (Fig. 1). This program followed an invitation from Parna Ngururrpa, the traditional owners of Ngururrpa country, to carry out a similar regional gravity and regolith geochemistry acquisition program to that completed in the Kiwirrkurra area to the south, which resulted in increased mineral exploration activity, leading to the identification by industry of Cu–Au, base metal, uranium, and diamond deposits, along with benefits to the Kiwirrkurra community.

The Ngururrpa area is underlain by Proterozoic siliciclastic and less common chemical sedimentary rocks of the Murraba Basin,

which are either unconformably overlain by, or in fault contact with, siliciclastic and less common carbonate sedimentary rocks of the Paleozoic–Mesozoic Canning Basin. Small areas of Paleoproterozoic rocks of the Granites–Tanami Orogen are found in the north of the area, and Murraba Basin sedimentary rocks unconformably overlie Paleoproterozoic sedimentary and igneous rocks of the west Arunta Orogen in the south. The Ngururrpa area is regolith dominated, with extensive areas of sandplain punctuated by strike ridges of sedimentary rocks (Fig. 2). Patches of ferruginous lag, variably ferruginized lithic fragments, and weakly altered subcrop indicate that sandplain is probably a thin veneer on bedrock. The area has been partly explored for hydrocarbons, but apart from gypsum deposits identified in lakes in the northeast of the project area, no mineral deposits have been identified.

Prior to gravity measurement and regolith sampling, a heritage assessment with Parna Ngururrpa traditional owners was carried out in October 2014. Gravity was acquired in May 2015, and

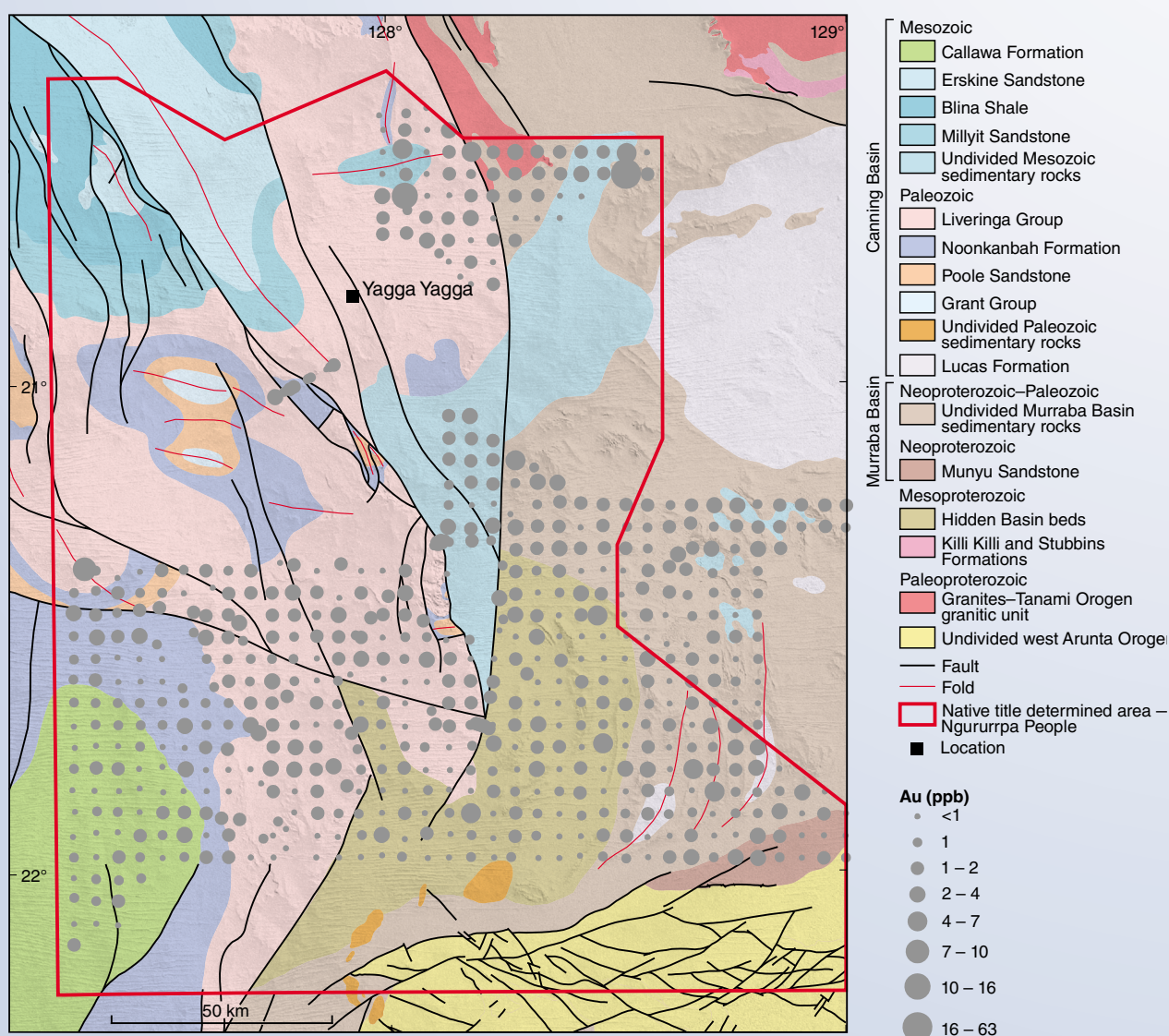


Figure 1. Gold (ppb) in the <50 µm fraction of regolith

regolith samples were collected from 633 sites at a density of one per 12.5 km² in September 2015 (Fig. 1), as well as over three short transects across regional structures. Where available, samples of ferruginous lag were also collected for analysis, and at some sites spinifex samples were also collected for analysis. The use of spinifex as a sample medium for mineral exploration in arid areas with extensive regolith cover has been investigated by CSIRO. The spinifex chemistry from the Ngururrpa program will be compared to that of regolith primarily to determine if either or both sample media have potential as a bedrock mapping tool. Passive seismic measurements were taken at some transect sites in order to determine if this approach — which has been successfully employed by GSWA to investigate the thickness of both regolith and sedimentary cover over basement elsewhere — can provide useful information on regolith thickness to help with the interpretation of both regolith and spinifex chemistry.

Based on analytical results of reconnaissance samples and protocols adopted by GSWA for regolith programs in sand-

dominated terrains, the <50 µm fraction of regolith was dry screened from each sample and analysed for 63 analytes following aqua regia digestion by Intertek-Genalysis. An example of maps to be produced from this program (Fig. 1) shows Au concentrations (parts per billion) in the fine fraction of regolith, which reaches a maximum concentration of 63 ppb in the north of the program area.

Interpretation of regolith chemistry will be undertaken in conjunction with a regolith–landform map (currently being compiled for the program area), and will benefit from a revised bedrock stratigraphy, resulting from targeted bedrock mapping traverses carried out during the regolith sampling program. Results will be published in a GSWA Record. Regolith geochemistry from the Ngururrpa program can be downloaded now from GeoVIEW.WA or via GeochemExtract on the Department of Mines and Petroleum's website (www.dmp.wa.gov.au).

For more information, contact
Paul Morris (paul.morris@dmp.wa.gov.au).



Figure 2. Gently dipping sedimentary rocks of the Murrumbidgee Basin

Hydrogeochemistry and biogeochemistry of the northern Yilgarn Craton and its margins



Since 2008, the Geological Survey of Western Australia (GSWA) has provided financial and logistical support to CSIRO to carry out water sampling in the northern part of the Yilgarn Craton and its margins. The purpose of this support was to validate hydrogeochemistry as both a viable mineral exploration tool, and a method to map bedrock lithology at the regional scale. These projects recognize CSIRO's demonstrated expertise in hydrogeochemistry, and fit well with GSWA's program of enhancing the mineral prospectivity of greenfields areas. The hydrogeochemistry program has involved the collection and analysis of more than 3000 groundwater samples covering an area of more than 400 000 km², mainly from water bores on pastoral leases (Fig. 1). Measurement of pH, Eh, electrical conductivity (EC), and temperature in the field were followed up by analysis for a variety of cations, anions, Au, PGE and U contents. These data have been particularly useful for identifying known areas of gold and uranium mineralization, whereas additive indices have been used for lithological discrimination, and to identify hydrothermal alteration footprints. Analytical data can also be used to assess water quality in relation to consumption by humans or animals, or mine closure.

A value-added component to this program has been the collection and subsequent analysis of samples of mulga (*Acacia aneura*) from more than 1200 locations where water was sampled, covering an area of approximately 100 000 km². These data (**GSWA Record 2010/4**) were used to identify known gold, uranium and base metal prospects, and is one of the few studies to use vegetation at the regional scale for mineral exploration.

The latest publications from the hydrogeochemistry series are an explanation of a data release (**GSWA Record 2016/7**), and a final report on the northwest Yilgarn Craton hydrogeochemical work (MRIWA Report M414), available as GSWA Record 2016/9. These products are available for download from the Department of Mines and Petroleum's website (www.dmp.wa.gov.au/ebookshop).

For more information about hydrogeochemistry, contact David Gray (david.gray@csiro.au), and for biogeochemical work, contact Mel Lintern (Mel.Lintern@csiro.au).

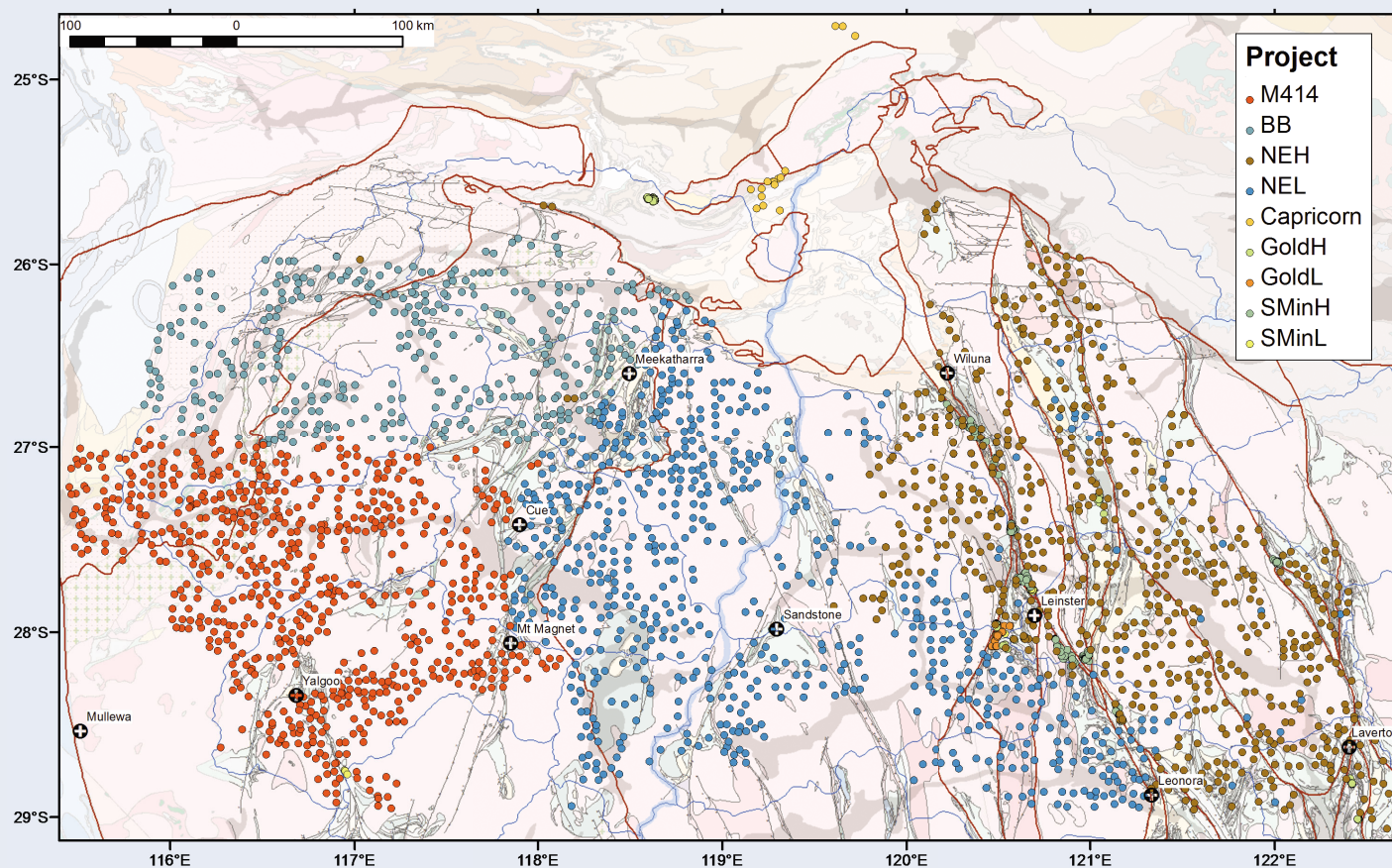


Figure 1. Sample locations for various hydrogeochemistry programs carried out in the northern Yilgarn Craton area

GSWA regional geophysics surveys: June 2016 update

Data downloads

Located data — Geophysical Archive Data Delivery System
<www.ga.gov.au/gadds>.

Grids and images — Search in GeoVIEW.WA under the
'Government Airborne Surveys' layer.

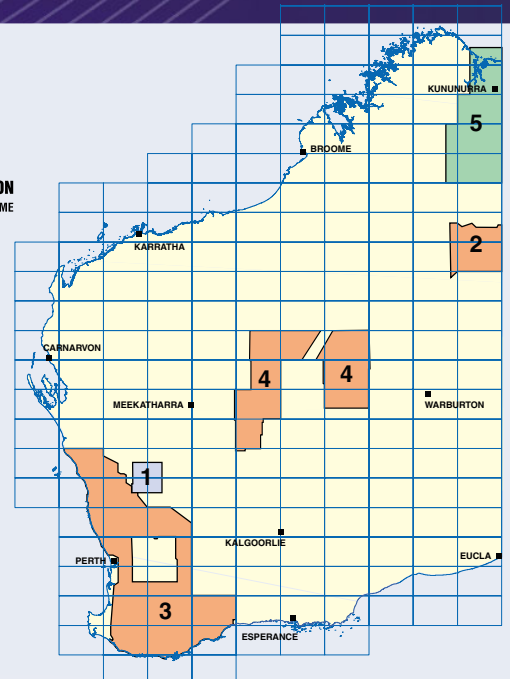
Subscribe to the GSWA eNewsletter for alerts of
preliminary and final data release dates. Go to
<www.dmp.wa.gov.au/enewsletter>.

Survey outline shapefiles are available online at <www.dmp.wa.gov.au/geophysics>.

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



- Airborne mag-rad surveys
- Ground gravity surveys
- Airborne gravity survey



ID	Area/Name	Method	Configuration	Size	Status	Start	End	Release
1	Yalgoo 2015	Mag-Rad	100 m; E/W	111 000 km	Released	31/05/15	27/09/15	10/12/15
2	Ngururra 2015	Gravity	Grid 2.5 km	4 964 stns	Released	10/05/15	13/06/15	30/07/15
3	SW Yilgarn 2015	Gravity	Roads 2 km	23 762 stns	Released	12/06/15	02/12/15	11/02/16
4	Wiluna 2016	Gravity	Grid 2.5 km	15 000 stns	Contract	tbd	tbd	tbd
5	E Kimberley 2016	Air Gravity	5000 m, E-W	19 000 km	Quotation	tbd	tbd	tbd

Information current at: 7 June 2016

Southwest Yilgarn 2015 Gravity Survey, Western Australia

The Geological Survey of Western Australia (GSWA) Southwest Yilgarn 2015 gravity survey was the fifth stage in the National Collaboration Project Agreement CMCG4003A PA5 between the Department of Mines and Petroleum (DMP) and Geoscience Australia (GA) — WA Reconnaissance Gravity Surveys 2013–20, with this fifth-stage project funded by Western Australia's Exploration Incentive Scheme. The objective of the project is to complete 'Generation 2' regional reconnaissance gravity coverage of Western Australia at a spatial wavelength resolution of 5 km or less. At the time the program commenced, approximately 60% of the area of Western Australia — about 1.5 million square kilometres — remained to be covered to the required standard.

The Southwest Yilgarn survey, covering an area of 175 000 km², added a total of 23 736 new gravity stations to the national gravity database (Fig. 1). Acquisition by Atlas Geophysics Pty Ltd using light-vehicle (LV) borne techniques occurred between June and December 2015 with project management conducted by GA. Observations were made at a nominal spacing of 2 km along public roads and tracks with location and elevation control using Global Navigation Satellite Systems (GNSS) technology. Data from the survey were released in February 2016.

A complete data package with point-located data, georeferenced grids, survey operations report and images of the new data merged with existing data has been compiled. It is available via the GeoVIEW.WA interactive map application on the DMP website (www.dmp.wa.gov.au/geoview; GSWA survey registration number 1020).

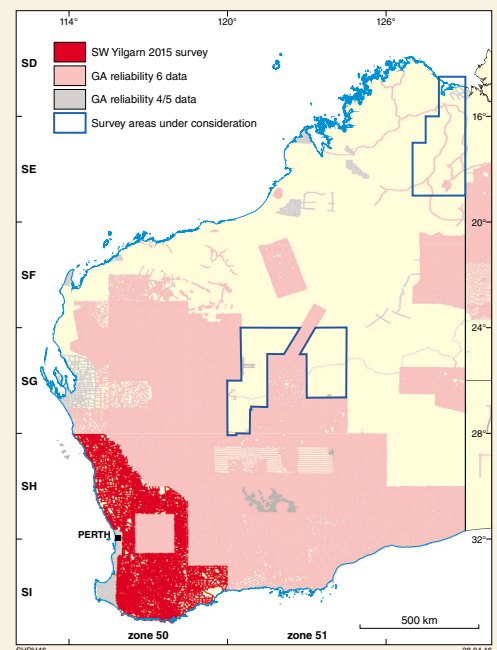


Figure 1. Second-generation gravity coverage of Western Australia as at April 2016

Located survey data are also accessible via the national Geophysics Archive Data Delivery System (www.ga.gov.au/gadds; GA Project number P201561).

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■ RECORDS

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Record 2016/4 Geology and U–Pb geochronology of the Warlawurru Supersuite and MacDougall Formation in the Mitika–Wanarn areas, west Musgrave Province
by Quentin de Gromard, R, Wingate, MTD, Howard, HM and Smithies, RH

Record 2016/5 Microstructural evolution of the Yalgoo Dome (Western Australia)
by Schiller, M

Record 2016/6 A field guide to the mafic–ultramafic layered intrusions of the northern Youanmi Terrane
by Ivanic, TJ

Record 2016/7 Hydrogeochemistry of Western Australia, data release: accompanying notes
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Record 2016/8 The evolution of mafic and ultramafic rocks of the Mesoproterozoic Fraser Zone, Albany–Fraser Orogen, and implications for Ni–Cu sulfide potential of the region
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Record 2016/9 Improved Hydrogeochemical Exploration in the northwest Yilgarn
by Gray, DJ, Reid, N, Noble and Ryan RP

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■ 1:100 000 GEOLOGICAL SERIES MAP

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by Zibra, I, Ivanic, TJ, Chen, SF, Clos, F and Li, J

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■ 1:250 000 GEOLOGICAL SERIES MAPS

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■ NON-SERIES MAPS

Iron ore deposits of the Yilgarn Craton, 2016

by Cooper, RW

Manganese deposits of the Pilbara Craton and Capricorn regions 2016

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■ PLATES

Four plates have been updated to accompany Record 2014/6 Albany–Fraser Orogen seismic and magnetotelluric (MT) workshop 2014: extended abstracts

by Spaggiari, CV and Tyler, IM

Plate 1 Interpreted pre-Mesozoic bedrock geology of the Albany–Fraser Orogen and southeast Yilgarn Craton including seismic line 12GA-T1

by Spaggiari, CV and Occhipinti, SA

Plate 2 Interpreted pre-Mesozoic bedrock geology of the Albany–Fraser Orogen and southeast Yilgarn Craton including seismic line 12GA-AF3

by Spaggiari, CV and Brisbourn, L

Plate 3 Interpreted pre-Mesozoic bedrock geology of the Albany–Fraser Orogen and southeast Yilgarn Craton including seismic lines 12GA-AF1 and 12GA-AF2

by Spaggiari, CV and Brisbourn, L

Plate 4 Geological interpretation of the Albany–Fraser Orogen and southeast Yilgarn Craton seismic lines 12GA-AF1, 12GA-AF2, 12GA-AF3, 12GA-T1

by Spaggiari, CV and Occhipinti, SA

■ DATA PACKAGES

Compilation of geochronology information, 2016

EAST ALBANY–Fraser Orogen Geological Exploration Package 2016

EAST YILGARN Geological Information Series 2016

MURCHISON Geological Information Series 2016

Sea to scarp — geology for land use planning in the northern Swan Coastal Plain, Lancelin to Geraldton

SOUTH YILGARN Geological Information Series 2016

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