



ISSUE 26, NOVEMBER 2015

New Frontiers Cooperative Drilling round 2—invitation to apply

The NSW Government invites applications for round 2 grants through the New Frontiers Cooperative Drilling program. Applications opened on 16 November 2015 and will close 5pm AEST 29 April 2016.

The New Frontiers Cooperative Drilling program will provide grants to successful applicants for exploration drilling programs (Group 1, 6 and 10 minerals only) which demonstrate strong prospectivity, sound financial planning and a proven technical base. It will fund 50%, 75%, or 100% of drilling metre-rate costs for individual projects, with a maximum of \$200 000 awarded per project. The total government allocation for the program will be \$2 million in the 2016–2017 financial year.

[Visit the web page for further information; the Application; Guide for Applicants; Terms and Conditions and the full time frame for applications.](#)

Contact: Mike Hallett, Executive Officer, cooperative.drilling@industry.nsw.gov.au, 02 4931 6724

Sydney area coastal Quaternary geology map

The [Sydney area coastal Quaternary geology map](#) is the first of a series from the Newcastle to Wollongong Gap mapping project to be printed. The new mapping is based on geological interpretation of LiDAR DEM data, aerial imagery, soils data, geological records from the state water bore database and existing geological information. Price \$19.80.

Contact: geoscience.products@industry.nsw.gov.au

NSW coastal Quaternary geology data package

The [NSW coastal Quaternary geology data package, Version 3](#) is an updated Quaternary geology data set covering all coastal regions of New South Wales. It includes the latest mapping from the Newcastle to Wollongong Gap mapping project. Price \$33.

Included in this data package are:

- GIS projects for ESRI® ArcGIS, MapInfo® and QGIS with detailed, seamless digital NSW Quaternary geology data
- Seamless, regional-scale digital bedrock geology data
- Field data for the Quaternary geology
- Sediment analysis data for the northern Comprehensive Coastal Assessment area
- Detailed metadata statements for all digital datasets

- PDF files of the Coastal Quaternary Geology LGA Map Series (1:100 000 or 1:50 000 & 1:25 000)
- Supporting reports, papers and presentations
- Resource analysis data and reports

Contact: geoscience.products@industry.nsw.gov.au

Koonenberry project 1:100 000 geological maps

[Wonnaminta](#), [Tibooburra](#), [Nuchea](#) and [Grasmere](#) 1:100 000 second edition geological maps from the Koonenberry mapping project are available as printed maps and as downloads from [new DIGS](#).

Contact: geoscience.products@industry.nsw.gov.au

Griffith–Oaklands Basin petroleum data package

The [Griffith–Oaklands Basin petroleum data package](#) includes high resolution 2D seismic data acquired by the NSW government in 2006 and 2009. Inclusions from the previous data package are DEM, magnetics and radiometrics with summary reports, geochemistry and seismic survey data. Data formats are: PDF, Excel, JPEG, TIFF, SEGY. [Quarterly Note 142](#) provides an interpretation of the surveys, adding to the knowledge of the structural evolution of the basin

Contact: John Davidson, john.davidson@industry.nsw.gov.au, 02 4931 6557

Commodity flyers

Two new commodity flyers covering [Coking Coal](#) and [Thermal Coal](#) are available as PDF downloads from the [Commodities webpage](#) and [new DIGS](#).

Contact: Phil Blevin, phil.blevin@industry.nsw.gov.au, 02 4931 6585

2014 NSW Coal Industry Profile, volume 2 released

The [2014 NSW Coal Industry Profile, volume 2](#) provides reference material for the 2013–14 financial year on the NSW coal industry. It includes detailed dossiers on all existing and proposed mines, coal terminals, steelworks and coal-fired power stations in NSW, and an index of mines, company equity and equipment. It is available in digital form only, using an online viewer.

Volume 1, produced earlier, includes over 100 tables and graphs covering production consumption, output, exports, employment and productivity details on the NSW coal industry for the 2011–12, 2012–13 and 2013–14 financial years.

Contact: lands.publications@industry.nsw.gov.au

3D geology lends a hand to mineral exploration

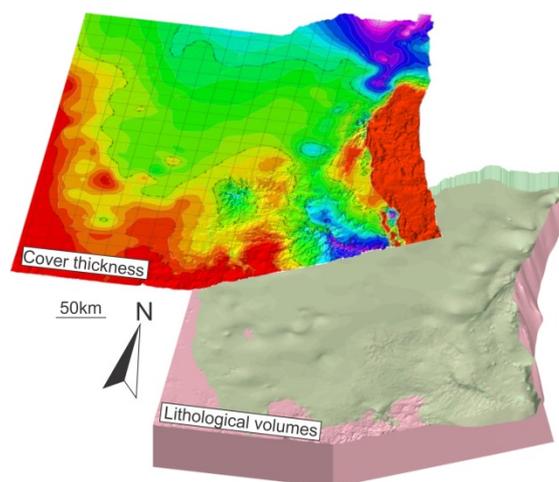
[3D mapping of post-Carboniferous cover in NSW](#) will help mineral explorers gauge the depth of sedimentary cover over the highly mineralised [Lachlan Orogen](#).

The Lachlan Orogen is basement to the [Surat](#) and [Gunnedah](#) basins in northern NSW. The project involved producing a model of the basement surface so that the distance between it and the topographic surface may be used to estimate thickness of cover. A significant area is in the south of the Surat Basin where cover over the Lachlan Orogen is expected to be relatively thin and where potential may exist for mineral exploration.

A 2D contour map of the cover over the basement, produced by calculating the vertical distance between the topographic surface and the basement surface, is included along with the lithological volumes and model confidence volumes in a data package.

- [3D Post Carboniferous data package download](#)
- [GS Report \(GS2015/1045\)](#)

Contact: Jamie Robinson, jamie.robinson@industry.nsw.gov.au, 02 4931 6730



Lithological volumes and contours of cover thickness for the Surat Basin and underlying Lachlan Orogen

3D southern New England Orogen downloads

[3D mapping of the southern New England Orogen](#) involved modelling of major litho-stratigraphic packages and four major fault zones: the Hunter–Mooki Fault System, the Peel–Manning Fault System, the Demon Fault and a previously unrecognised feature east of the Demon Fault, referred to as the Drake edge. Insufficient data prevented modelling of faults between the Peel and Demon Faults, despite evidence of major structures in the region.

[The data package](#) for the 3D mapping of the southern New England Orogen contains:

- Deep Crustal Structure: Topographic surfaces, major faults and confidence attribution volumes
- Western Tamworth Belt: Topographic surface, 1st, 2nd and 3rd order fault surfaces, lithological volumes and confidence volumes

Contact: Jamie Robinson, jamie.robinson@industry.nsw.gov.au, 02 4931 6730

Mapping of naturally occurring asbestos in NSW

A [report on the mapping of naturally occurring asbestos in NSW](#) is now available for download on the [NSW Workcover website](#). GSNSW worked with the NSW government's Heads of Asbestos Coordination Authorities to quality assure GIS data and metadata and translate it into the MapInfo and QGIS compatible formats. The digital data set of NSW was loaded into the corporate Spatial Database Engine and can be viewed as low, medium or high potential regions.

[View map](#)

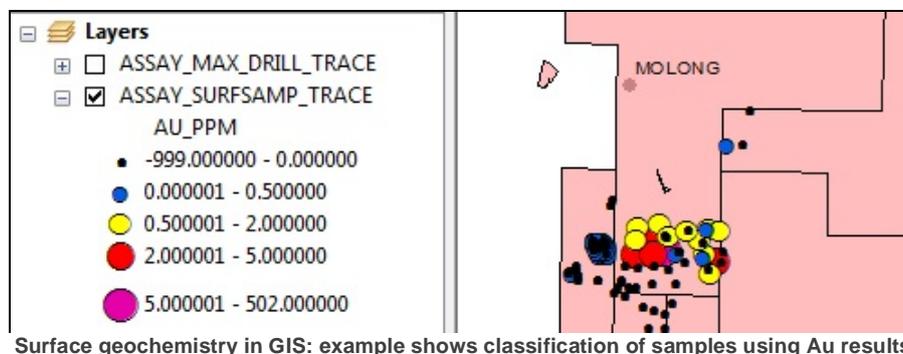
Contact: geoscience.info@industry.nsw.gov.au

Geoscientific Data Warehouse

Recent upgrades to the [Geoscientific Data Warehouse web pages](#) which provide access GSNSW's geoscientific data are:

- addition of historical exploration titles to the Google Earth layers
- improved descriptions of data tables and column
- new assay data download format:

Assay data is remodelled as GIS-friendly spreadsheet styles for easy data visualisation of surface and downhole geochemistry. The new layers pivot assay results for 70 trace elements reported, which are separated as drilling geochemistry 'ASSAY_DRILL_MAX_TRACE' and surface geochemistry 'ASSAY_SURFSAMP_TRACE'. For drilling geochemistry, the 'best of hole' results were calculated for elements reported in a given exploration report.



Surface geochemistry in GIS: example shows classification of samples using Au results

Contact: <http://dwh.minerals.nsw.gov.au/CI/warehouse/entry/feedback>

Mineral Resource Audit — presentations to government planners

Resource Audit Stage 1 of the Mineral Resource Audit — Presentations to Government Planners Project has completed 16 presentations to 52 NSW councils. The results and feedback from councils have helped provide a high quality and 'value added' customer service. Stage 2 comprises presentations in the energy-rich regions of the state.

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List of bore core accepted at Mineral Resources core libraries

View a [list of non-confidential bore core accepted](#) at the [WB Clarke Geoscience Centre](#), Londonderry, May–October 2015. No core was accepted at the [EC Andrews drill core facility](#), Broken Hill.

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Quarterly Notes 144

[Quarterly Note 144](#): *New lead isotopic and geochronological constraints on mineralisation in the Macquarie Arc — insights from the Lake Cowal district, New South Wales*, provides new dating of mineralisation in the region. It includes the only VAMS so far recognised in the arc as well as some of the least radiogenic lead isotope data so far recorded for the arc. The data suggests that the mineralisation has sourced metals from long lived reservoirs, indicating an extensive older substrate to the arc.

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Quarterly Notes 145

[Quarterly Note 145](#): *Seamless geology of New South Wales: approach, methodology and application* describes the project history; the geodatabase and its applications, including viewing and interrogation on smart phones and tablets; and how the geological model for Universal Transverse Mercator (UTM) Zone 56 was constructed.

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Statewide Geology Database: Gary Colquhoun, gary.colquhoun@industry.nsw.gov.au, 4931 6735

Quarterly Notes 146

[Quarterly Notes 146](#): *Coastal Quaternary mapping of the southern Hunter to northern Illawarra regions, New South Wales* summarises filling the mapping gap that remained after the completion of the Coastal Quaternary Geology project. Potential applications for the detailed and consistent NSW coastal Quaternary mapping are discussed with suggestions for future work.

Contact: Phil Gilmore, phil.gilmore@industry.nsw.gov.au, 02 4931 6533

East Riverina Mapping Project update

Mapping in the Ardlethan and Barmedman 1:100 000 map sheet areas is complete and field work was conducted in the Coolamon, Narrandera and Temora 1:100 000 map sheet areas. Reports on the 2014 field mapping season are available in DIGS GS2015/1170– 1173. Drillcore from 8 drillholes related to porphyry–gold mineralisation was scanned and uploaded to the AuScope portal.

[Further information](#) and reports [GS2015/1170](#), [GS2015/1171](#), [GS2015/1172](#), [GS2015/1173](#)

Contact: Phil Gilmore, phil.gilmore@industry.nsw.gov.au, 02 4931 6533

Southern Thomson Orogen Project update

This [collaborative project with Geoscience Australia and the Geological Survey of Queensland](#) furthers our understanding of the basement geology and mineral prospectivity of the mostly covered Thomson Orogen. New SHRIMP U–Pb zircon ages from the Cuttaburra and F1 prospects in northwest NSW provide constraints on metasedimentary rocks, magmatic activity and mineralisation in the area. Go to: [Geoscience Australia report](#).

Contact: Rosemary Hegarty, rosemary.hegarty@industry.nsw.gov.au, 02 4931 6597

Londonderry drillcore library extension update

Londonderry drillcore library extension now has a roof and external lining. Installation of pallet racking is 50% complete and the HyLogger™ is now in its new location with the X-ray diffractometer and X-ray fluorescence spectrometer. The project is on schedule for completion by Christmas 2015. Visitors must contact the Core Library Manager before visiting in case core is not accessible.

Contact: Steve Hall, steve.hall@industry.nsw.gov.au, 02 4777 0322

Metal Endowment of NSW Project

The project will collate ore deposit, mine production and geological province data to produce a definitive mineral production and resource dataset for NSW metals and related commodities. The dataset will be used to map significant metal endowments, define which types of deposits were productive, locate unmined resources, and date significant mineralisation events. It will also help constrain geological studies that assess mineral resource potential and inform land use planning decisions.

Contact: Phil Blevin, phil.blevin@industry.nsw.gov.au, 02 4931 6585

HyLogger™ projects

Drillcores of NSW porphyry copper–gold occurrences are being scanned to characterise alteration and host rock signatures. The recently acquired X-ray diffractometer uses state-of-the-art technology similar to that used by NASA's Curiosity rover on Mars, and will be used for validating mineralogy determined by HyLogger™ scanning.

The HyLogger™ is being trained to map metamorphic isograds from core and hand samples to help interpret complex metamorphic assemblages in Broken Hill type terranes.

The Cobar HyLogger™ project will boost the amount of virtual core for the Cobar area which is under-represented in the National Virtual Core Library (NVCL). The NVCL Access Committee recently approved National Collaborative Research Infrastructure Strategy funding to transport 9000m of drillcore from the area.

Contact: Phil Blevin, phil.blevin@industry.nsw.gov.au, 02 4931 6585

Dating New England Orogen granites

A SHRIMP U–Pb zircon dating report presents results for 12 granites from the New England Orogen, including the three main plutons of the Barrington Tops Granodiorite. Each of the three is geochemically and petrographically distinct with ages of 277, 272 and 268 Ma, confirming emplacement at different times. The Dumboy Gragin Granite (Sn, Cu, Bi, As) and Webbs Consols Leucogranite (Ag, Pb, Zn, Cu), previously regarded as Triassic, have returned ages of 252 and 256 Ma respectively, placing them within the main I-type granite magmatism event.

Go to: [New SHRIMP U–Pb zircon ages from the New England Orogen, New South Wales](#)

Contact: Phil Blevin, phil.blevin@industry.nsw.gov.au, 02 4931 6585

Coal Innovation NSW research collaboration aims to reduce CO₂ emissions

Coal Innovation NSW funded an \$886 000 research project with the University of Newcastle to develop a process called Chemical Looping Air Separation (CLAS). The technology relies on the principles of 'chemical looping' and uses the cyclic interaction of a metallic oxide carrier with air as a means of separating out the oxygen. Conventional air separation is very expensive and this technology may be a cost effective way of mitigating one of the major barriers to the adoption of carbon capture technologies such as oxy-firing.

Emphasis of the project was mainly on fundamental studies at bench-scale and pilot-scale under controlled laboratory settings. The project reached all its milestones, met its key targets and produced scientific evidence confirming the technical and economic viability of the CLAS process.

Specific power requirements of the CLAS system were estimated to be about 11% of the most advanced cryogenic air separation unit (including heat loss to ambient air temperature). The significant reduction in the energy and CO₂ emissions footprint of oxygen production means that CLAS technology could accelerate the commercial-scale deployment to low-emissions electricity generation using highly advanced and cost effective low-emissions coal technologies such as Oxy-Fuel Combustion.

[Read the final report.](#)

Contact: Rick Fowler, rick.fowler@industry.nsw.gov.au

Improved Management of Exploration Regulation (IMER)

- [Revised Guideline for Agricultural Impact Statements at the Exploration Stage](#)
- [Have your say on Exploration Code of Practice: Community Consultation](#). **Closing date 30th November**
- [Updates to DRE website, statements and forms AL1, AL3, EL1, AD2, ML8](#)

[Subscribe to IMER updates](#). Go to the [IMER webpage](#)

New Directors head GSNSW business units

Dr Brad Ilg has joined GSNSW as Director of Geoscience Information and Paul Dale as Director of Land Use & Titles Advice.

Brad Ilg is a structural geologist with 30 years' experience in the resources and energy sector specialising in Proterozoic rocks and terranes. He was Manager of Petroleum Strategy, Planning and Promotion at New Zealand Petroleum & Minerals 2010–2015.

Paul Dale is an economic geologist with 21 years' experience in exploration and mining in Queensland, the Northern Territory and Papua New Guinea. He was Principal Geologist and Country Exploration Manager for Barrick Gold in Papua New Guinea 2011–2015.

[Read more about our new Directors](#)

Mining 2015 Resources Convention – new opportunities talk

Dr Chris Yeats, ED Geological Survey of New South Wales, presented on 'New Opportunities' at the convention held in Brisbane 11–12 November. He summarised the commodities currently present in NSW, where new investment opportunities are located and GSNSW's role including examples of its recent works.

Go to [a video and powerpoint of Chris Yeats' presentation](#)

North East Asia Australian Mineral Investment Forum

Chris Yeats, ED Geological Survey and Charlie Dowsett, ED Industry Investment & Export Support (II&ES), attended a North East Asia, Australian Mineral Investment Forum on 13–24 October. It comprised a series of forums held at the Australian embassies in Korea and Japan, an event hosted in Beijing, followed by the team exhibiting at a booth and presenting at the China Mining conference in Tianjin.

Gold, copper and coal were the most queried commodities. Over the next few months II&ES will follow up contacts to help convert initial interest into a real investment in NSW.

Official state fossil emblem

Mandageria fairfaxi, a 370 million year old fish from Canowindra, [is now the official state fossil emblem for NSW](#). *Mandageria fairfaxi* is unique to NSW, measured up to 1.7 metres long and featured a movable neck that marked a critical stage in vertebrate evolution. The Late Devonian vertebrate exhibited the beginnings of the transition from fins to limbs, and from using gills in water to breathing air. It belongs to a group called Tetrapodomorphs significant because they are the ancestors of all land vertebrates, including humans.

Upcoming conferences

[RIU Sydney Explorers Conference, 24–25 February, Fremantle](#)

[PDAC 2016 6–9 March, Toronto, Canada](#)

[Mines & Money Hong Kong 2016, 14–18 March, Hong Kong](#)

Exploration in the House, TBA, Parliament House, Sydney

NSW Minerals Council Forum, TBA, Parliament House, Sydney

[RIU Sydney Resources Round-up 13–14 May, Sydney](#)

[APPEA Conference & Exhibition 2016, 5–8 June, Melbourne](#)

Staff movements

Cameron Ricketts has resigned from his position of Manager, MinLU

Hannah Lane has resigned from the Mineral Exploration Assessment team.

Will Hsin has joined the Titles Advice team from the previous Coal and Petroleum Geoscience

Products

[Digital Imaging Geoscientific Systems \(DIGS\)](#)

[Geophysical images and data](#)

[Online sales: \[www.shop.nsw.gov.au\]\(http://www.shop.nsw.gov.au\)](#)

[Quarterly Notes](#)

Enquiries

Maps and data packages:

Geophysical images and data: geophysics.products@industry.nsw.gov.au: Tel: 02 4931 6717

Counter sales: mineralpublication.orders@industry.nsw.gov.au Free call: 1300 736 122 Tel: 02 4931 6666

General product enquiries: Gavin Ayre, gavin.ayre@industry.nsw.gov.au, 02 4931 6426

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GSNSW: www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information

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View previous issues: www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/books-and-brochures/newsletter

Visit the [Geoscience Information webpages](#) where you will find access to online systems DIGS[®], MinView, EROL, GDW and GPC, upcoming GSNSW events, news, publications and product information.

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ISSN 1835–2200

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (November, 2015). However, because of advances in knowledge, users are reminded of the need to ensure that information on which they rely is up to date and to check the currency of the information with the appropriate officer of NSW Department of Industry, Skills & Regional Development or the user's independent advisor.

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