



# Australian Mineral Exploration Review 2012

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## OVERVIEW

- Exploration expenditure in the period July 2011 to June 2012 rose by \$1002 million to \$3953 million, an increase of 34%.
- All jurisdictions recorded increases in exploration expenditure.
- Western Australia dominated exploration spending in Australia with 53% of total expenditure followed by Queensland with 25% and South Australia with 8%.
- Exploration spending in the search for new mineralisation in greenfields districts rose by 20% for the year.
- Some significant exploration discoveries were made this year in new mineral provinces including the Nova nickel-copper deposit and the Dampier heavy mineral sands deposit in Western Australia and the Mallee Bull copper-silver-gold discovery in New South Wales.

## EXPLORATION EXPENDITURE REVIEW

Based on data released by the Australian Bureau of Statistics total mineral exploration expenditure for the 2011–12 financial year was \$3953 million, an increase of 34% compared to the 2010–2011 financial year (\$2951 million). Exploration expenditure increases for individual commodities were greatest in dollar terms for iron ore which was up 73% to \$1150.7 million, followed by coal (up 61% to \$834.3 million), base metals (including copper, lead, zinc, silver, nickel and cobalt; up 19% to \$795.5m), and gold (up 18% to \$768 million). Mineral sands exploration spending jumped 62% to \$42.3 million. Although exploration spending on a group of other commodities that includes tungsten, vanadium, rare earth elements and molybdenum was 5th overall at \$199 million, this increased just 1.5%. Spending on uranium exploration was down 28% to \$153.7 million, the lowest since 2006–07.

All States and the Northern Territory recorded increases in exploration spending in 2011–12 relative to 2010–11. Once again Western Australia received the largest exploration spending at \$2106.8 million (up 33%). Queensland increased its share of Australian exploration spending to 25% in the financial year (up 46% to \$967.5 million), and New South Wales spending jumped 58% to \$242.2 million. Solid increases were also recorded by South Australia (up 29% to \$328.4 million) and the Northern Territory (up 8% to \$210.4 million). Spending in Tasmania and Victoria showed modest increases of 5% (to \$39.3 million) and 2% (to \$58.4 million), respectively.

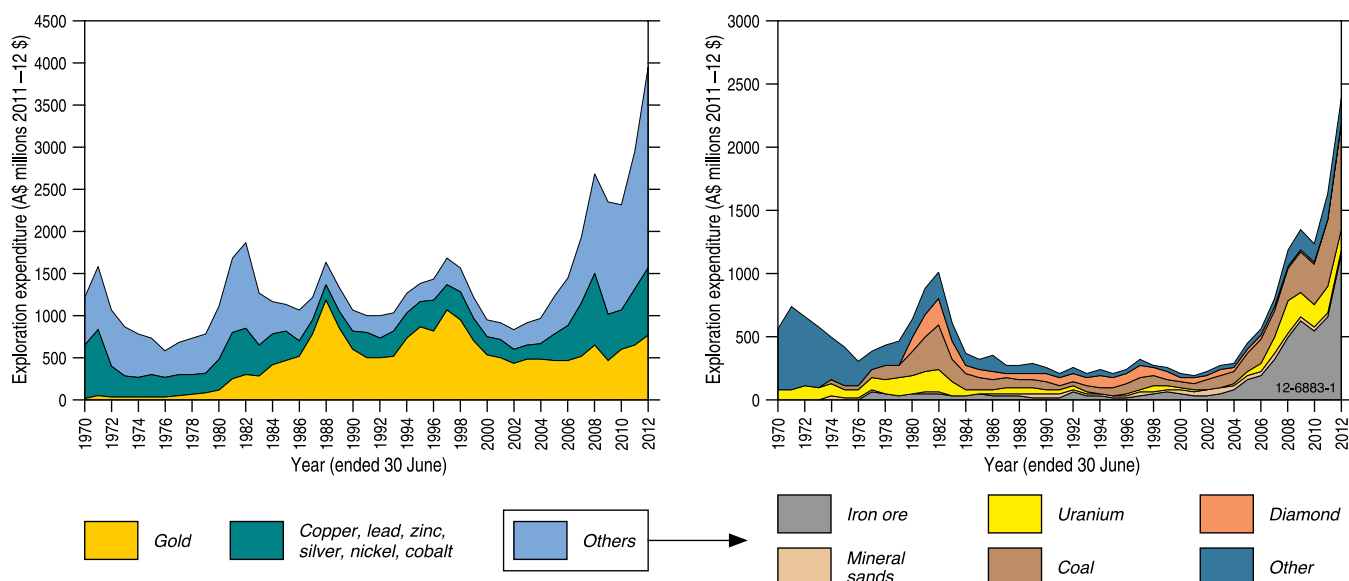
Substantial increases in expenditure was recorded for 2011–12 compared to the previous financial year at both existing deposits (brownfields, up 42% to \$2710 million) and at new deposits (greenfields, up 20% to \$1243 million). Total metres drilled also increased at both brownfields (up 23% to 7709 kilometres) and greenfields projects (up 8% to 3700 kilometres).

## GEOSCIENCE AUSTRALIA

Geoscience Australia is a prescribed agency within the Resources, Energy and Tourism portfolio of the Australian Government. The Minister is The Honourable Martin Ferguson AM MP.

Geoscience Australia is a world leader in providing first-class geoscientific information and knowledge which enables government and community to make informed decisions about:

- the use of resources,
- management of the environment,
- community safety and
- protection of critical infrastructure.



**Figure 1:** Australian mineral exploration expenditure in constant 2011–2012 dollars (Based on Australian Bureau of Statistics data deflated by Consumer Price Index).

Geoscience Australia provides pre-competitive geoscientific information that supports and facilitates mineral and energy exploration in Australia. This is achieved through integrated programs of data gathering and assessment, conducted at the national and regional scales.

## SELECTED EXPLORATION RESULTS 2012

Exploration results over the period December 2011 to December 2012 have been selected by Geoscience Australia from publicly available information sources, based on their likely future significance for the Australian exploration and mining industries.

The results are listed by commodity in alphabetical order: base metals and silver, bauxite, copper and copper-gold, gold, graphite, heavy mineral sands, iron ore, lithium, manganese, nickel, phosphate, rare-earth elements, tin, tungsten, and uranium.

For each commodity, the results are presented in alphabetical order of States and the Northern Territory. The locations of the exploration projects are shown in the figures. Exploration projects discussed in the text with significant drill hole intersections or newly upgraded mineral resources are also identified in the centrefold map.

### BASE METALS AND SILVER

#### New South Wales

**Silver Mines Ltd's** diamond drilling program at the **Webbs** silver project in the New England region will assist with geological interpretation of the deposit and provide drill core samples for metallurgical test work. Reported results include:

**6.45 m @ 200 grams per tonne (g/t) Ag, 0.33% Cu, 1.57% Pb and 1.23% Zn**

**7.8 m @ 464 g/t Ag, 0.78% Cu, 2.17% Pb and 1.69% Zn**

**Kingsgate Consolidated Ltd** announced a 40% increase in mineral resources at its **Bowdens** project which is located 240 km northwest of Sydney near the village of Lue. The total resource now stands at:

**88 Mt @ 47.4 g/t Ag, 0.29% Pb, 0.39% Zn, 64.4 g/t for 134.1 million ounces of Ag**

#### Northern Territory

**Rox Resources Ltd** advised that assay results from the re-sampling of two historic drill holes from the newly identified **Teena** zinc prospect, located 10 km west of the world class zinc-lead McArthur River deposit, have confirmed Teena as a significant medium to high grade zone of Zn-Pb-Ag mineralisation. Best results of the re-sampling include:

**11.3 m @ 10.9% Zn +Pb and 14 g/t Ag**

**8.6 m @ 9.84% Zn + Pb and 23 g/t Ag**

**Kentor Gold Ltd** reported shallow Cu-Ag-Pb-Zn-Au mineralisation from RC drilling at their **Jervois** project, confirming the open pit potential of the deposit. Kentor Gold Ltd is planning to commence mining in 2014. Results from the drilling were:

**33.8 m @ 1.79% Cu, 0.28% Pb, 0.34% Zn, 28.48 g/t Ag and 0.29 g/t Au**

**Kidman Resources Ltd** reported on assay results from a reverse circulation (RC) drilling program undertaken at their **Home of Bullion** project located near Barrow Creek. The program identified multiple high-grade polymetallic (Cu-Ag-Pb-Zn-Au) intercepts. Mineralisation is close to surface. Results include:

**4 m @ 4.7% Cu, 5.1% Zn, 84.6 g/t Ag, 1.3% Pb and 0.52 g/t Au**

**3 m @ 2.7% Cu, 2.3% Zn, 45.5 g/t Ag, 0.45% Pb and 0.46 g/t Au**

**Table 1:** A selection of Australian mineral discoveries since 2002

Year	State	Deposit/Project	Commodities	Status
2002	WA	Jaguar	Cu, Pb, Zn, Ag	Mine; July 2010 resource: 0.823 Mt @ 4.2% Cu, 0.7% Pb, 8.8% Zn, 124g/t Ag
2002	WA	Copernicus	Ni, Cu, Co	Mine not currently operating; June 2010 resource: 6164 t Ni, 4401 t Cu, 255 t Co
2004 and later	WA	Alec Mairs orebodies	Ni	Mine with production from AM1 orebody
2004	WA	Trident	Au	Mine; January 2010 resource: 0.9 Mozs Au
2004	SA	Jacinth & Ambrosia	Mineral sands	Mine; December 2007 resource: 239 Mt @ 4.0% HM
2005	WA	Tropicana	Au	Feasibility studies; December 2009 resource: 5.01 Mozs Au
2005	SA	Four Mile	U	Decision to mine Four Mile West; January 2010 resource 5.7 Mt @ 0.34% U <sub>3</sub> O <sub>8</sub>
2005	SA	Tripitaka	Mineral sands	Feasibility study; September 2006 resource: 28 Mt @ 2.3% HM
2005	SA	Carrapateena	Cu, Au	Exploration; 905 m @ 2.17% Cu, 0.9g/t Au, 11.5g/t Ag
2005	WA	Caliwingina	Fe	Exploration; November 2010 resource; 1540 Mt @ 57.25% Fe; Channel Iron Deposit and Detrital ore; Pilbara Region
2006	SA	Gullivers	Mineral sands	Exploration; Part of Eucla Basin Mineral Sands Project
2006	QLD	Mount Carlton	Au, Ag, Cu	Feasibility study; October 2009 resource: 22.8 Mt @ 1.60g/t Au, 51g/t ag, 0.3% Cu
2006	NSW	McPhillamys	Au	Feasibility study; July 2010 resource: 3 Mozs Au, 61 000 t Cu
2006	WA	Cooljarloo North	Mineral sands	Scoping study completed; Current resource: 260 Mt @ 2.4% HM
2006	QLD	Rocklands	Cu	Feasibility study; September 2010 resource 0.51 Mt Cu, 43 160 t Co, 0.34 Mozs Au
2007	WA	Spotted Quoll	Ni	Mine; December 2010 resource: 108 120 T Ni
2007	SA	Dromedary	Mineral sands	Exploration; Eucla Basin
2007	WA	Cyclone	Mineral sands	Exploration; October 2010 resource for Cyclone 132 Mt @ 2.33% HM; Eucla Basin
2008	VIC	Chewton	Au	Exploration; June 2008 resource: 0.57 Mozs Au
2008	VIC	Stavelly	Cu, Pb, Zn, Ag, Au	Exploration; June 2010 resource: 480 300 t Cu
2008	QLD	Merlin	Mo, Re	Exploration; August 2010 resource: 6.7 Mt at 1.34% Mo, 23.2/t Re
2008	WA	Bentley	Cu, Pb, Zn, Ag, Au	Developing mine; November 2010 resource: 3.05 Mt @ 2.0% Cu, 9.8% Zn, 0.6% Pb, 139 g/t Ag, 0.7 g/t Au
2008	NT	Mount Peak	V, Fe, Ti	160 Mt grading 0.3% V <sub>2</sub> O <sub>5</sub> , 5.0% TiO <sub>2</sub> and 23% Fe
2009	WA	DeGrussa	Cu, Au, Ag	Pre-feasibility study; November 2010 resource: 10.67 Mt @ 5.6% Cu, 1.9 g/t Au, 15 g/t Ag & 3.74 Mt @ 1.2% Cu, 0.5g/t Au
2010	SA	Maldorky	Fe	Advanced Exploration; December 2011 resource: 147 Mt @ 30.1% Fe
2010	NT	Barrow Creek	P	Advanced Exploration; 253 Mt @ 15% P <sub>2</sub> O <sub>5</sub>
2012	WA	Nova	Ni, Cu	Advanced Exporation
2012	WA	Dampier	Mineral sands	Exploration; 33 m @ 6.3% HM
2012	NSW	Mallee Bull	Cu, Ag, Au	Exploration; September 2012

**HM** = Heavy minerals

**Resource** = Mineral resource (measured, indicated or inferred). Please refer to company reports for full details.

## STATE AND TERRITORY GOVERNMENT INITIATIVES SUPPORTING MINERAL EXPLORATION

### Northern Territory



Northern Territory Government's 7 year (2007–2014), \$25.8 million BRINGING FORWARD DISCOVERY initiative is designed to highlight and promote the Territory's under-explored mineral and petroleum potential.

Bringing Forward Discovery includes extensive regional gravity surveys and field-based geological mapping and prospectivity assessments, with an emphasis on under-explored greenfields regions such as the Arunta region and Amadeus Basin in central Australia. The initiative also provides funding for collaborative drilling with explorers, along with collaborative funding for regional-scale geophysical surveys and improving web-based delivery of information. [www.minerals.nt.gov.au/ntgs](http://www.minerals.nt.gov.au/ntgs)

### Western Australia



The May 2012 Western Australian State budget included a commitment in the forward estimates to continue the highly regarded Exploration Incentive Scheme (EIS) from July 2013 until at least June 2016. This will mean that by mid 2016, the government will have invested \$138 million over seven years into encouraging discovery of resources in greenfield areas of the State.

Major components of the EIS include the completion of the State's coverage by airborne magnetic and radiometric surveys at 400 m or less line spacing, a major expansion of the area covered by gravity surveys, government co-funding of innovative exploration drilling by companies in under-explored areas, stratigraphic drilling, deep seismic lines, and 3D geological and mineralization mapping.

Using EIS and Australian Government (Carbon Capture and Storage Flagships Program) funding, GSWA will publish pre-competitive geoscience information relating to the potential to store CO<sub>2</sub> in the Perth and Canning Basins. As part of the Western Australian government-initiated Kimberley Science and Conservation Strategy, GSWA has been provided \$3 million over three years beginning in 2011–12 to undertake baseline geophysical surveys (gravity and magneto-telluric) and regolith mapping and soil geochemistry surveys over the northwestern Kimberley region. [www.dmp.wa.gov.au](http://www.dmp.wa.gov.au)

### South Australia



PACE 2020 builds on the globally recognised Plan for Accelerating Exploration initiative (2004–2011; \$30.9 million) by providing an additional \$10.2 million specifically designed to drive forward mining development, unlock new areas of South Australia for exploration, further streamline

the process from exploration to mine development, and provide first class data delivery services to the resources industry. PACE 2020 will continue to act as the primary mechanism in building South Australia's international profile and strengthening investor confidence in the State's resources sector. Anticipated 2012 releases include new mapping from the Musgraves province and Statewide paleochannel map, a 3D cover sequence reconstruction and depth to basement map of the Eastern Gawler Craton plus the release of a Statewide ASTER dataset. The new release of SARIG will be expanded to include new infrastructure layers; seismic imagery and more diversified geophysical data layers. PACE 2020 will also benchmark the State's exploration and mining policies, guidelines and approvals processes to ensure world's best practice for South Australia. Collaborative opportunities are diversified through PACE 2020 with PACE Targeting (collaborative geophysics) and PACE Geochronology (mineral system dating) joining the highly successful PACE Discovery Drilling program. [www.pir.sa.gov.au](http://www.pir.sa.gov.au)





## Queensland



In 2012 the Geological Survey of Queensland (GSQ) completed the annual mineral land release in northwest Queensland and the provision of new grants for innovative exploration activities under the Collaborative Drilling Initiative. It also released new gravity, magnetic, and radiometric geophysical data over the Galilee Basin and Thomson area. The GSQ worked in collaboration with CSIRO to produce a mineral map using ASTER satellite data; geological age dating of Queensland rocks using zircon SHRIMP dating done in collaboration with Geoscience Australia, as well as Ar/Ar dating of samples from the Hodgkinson Basin by the University of Melbourne—School of Earth Sciences. The GSQ also applied a high resolution inversion model for prospectivity analysis on the Lawn Hill platform and has been working with The University of Queensland to compile geochemistry and geochronology data across Queensland from post-graduate studies. A project has commenced redefining the southern Thomson Orogen including geochronology in collaboration with Geoscience Australia. Work has also commenced on depth to basement analysis of the southern Thomson Orogen and Red River Province, including a prospectivity study of Red River. [www.dnrm.qld.gov.au](http://www.dnrm.qld.gov.au)

## New South Wales



Industry & Investment

The NEW FRONTIERS initiative is an exploration enhancement to further stimulate mineral and petroleum investment in under-explored terranes of New South Wales. New Frontiers builds on the successes of the Exploration NSW initiative. New Frontiers has been extended by three years (2008–2011) to continue the government program of pre-competitive funding of geophysical surveys, data compilation, mapping, data interpretation, and data delivery. The New Frontiers program focuses on applying new technologies and interpretative processes to the remote and under-explored regions of the State. These leading edge geophysical, geochemical, and modelling technologies will lower risk and challenge the exploration frontier. [www.dpi.nsw.gov.au/minerals](http://www.dpi.nsw.gov.au/minerals)

## Victoria



Department of Primary Industries

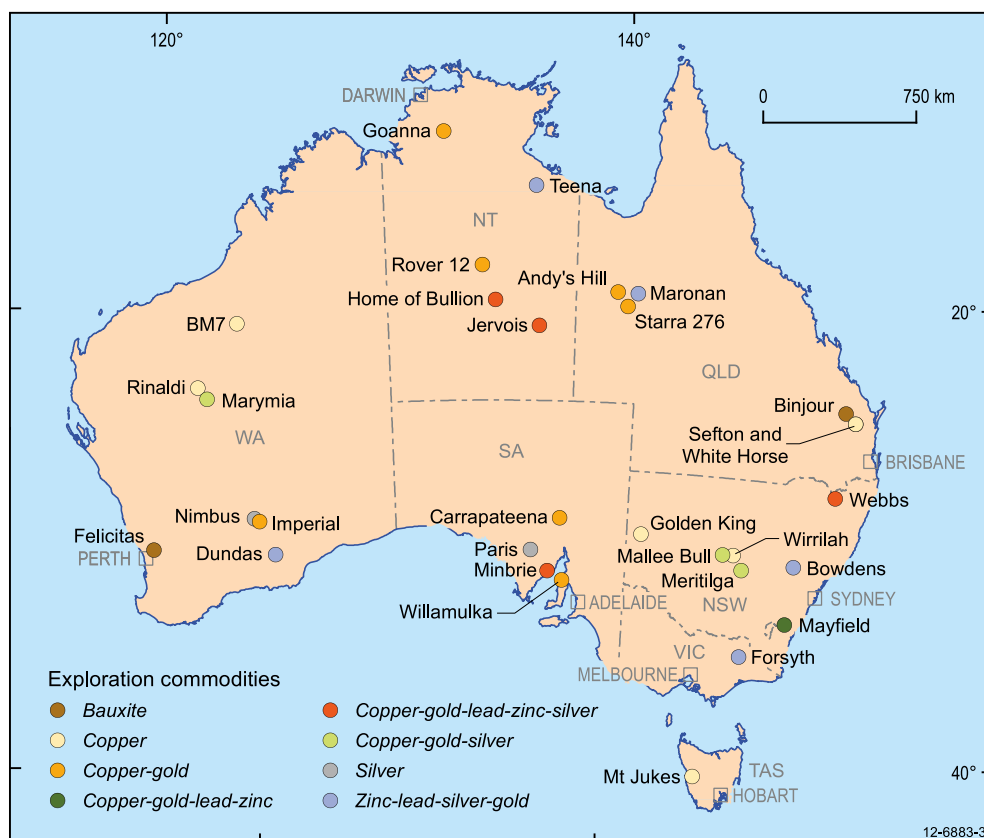
The three-year, \$9 million Gold Undercover initiative was completed in 2009. It delivered new geoscientific information to help explorers to search for gold deposits under the sedimentary cover in northern Victoria. The program aimed to: (a) capture and interpret new data on geophysics, crustal architecture, geochronology, geochemistry, mineralogy, and gold deposit models in central and western Victoria; (b) estimate probable undiscovered gold endowment; and (c) improve geological databases and provide better access to geoscience data. Reports and associated data may be downloaded at [www.dpi.vic.gov.au/minpet/store](http://www.dpi.vic.gov.au/minpet/store). The four year (until June 2011), \$5 million Rediscover Victoria initiative comprised a drilling grant project that reimbursed exploration companies a proportion of approval drilling costs, and the 3D Victoria project that will produce a 3D model of the State. [www.dpi.vic.gov.au/minpet](http://www.dpi.vic.gov.au/minpet)

## Tasmania

Mineral Resources Tasmania  
Department of Infrastructure, Energy and Resources



Detailed 3D models of NE Tasmania were completed in 2012. Projects designed to enhance the prospectivity of Western Tasmania under the Western Tasmania Geoscience Initiative have commenced. These include a gravity survey to infill areas of sparse coverage in NW Tasmania, a LIDAR survey in the Cleveland mine area, targeted mapping in the Sundown and Luina areas and refinement of the Tasmanian 3D model over the central north and parts of the West Coast. Work has commenced on the SE Australian 3D model project with Geoscience Australia and GeoScience Victoria, which will result in the development of a unified model of SE Australia by June 2015. [www.mrt.tas.gov.au](http://www.mrt.tas.gov.au)



**Figure 2:** Selected base metals, bauxite, copper and copper-gold exploration projects, 2012.

## South Australia

**Investigator Resources Ltd** announced high-grade silver intersections at the **Paris** silver prospect on the Eyre Peninsula. Six diamond drill holes and forty-three RC percussion holes were completed, with the following assay highlights:

**22 m @ 1318 g/t Ag (including 9 m @ 2799 g/t Ag)**

**3.4 m @ 1564 g/t Ag**

**Lincoln Minerals Ltd** advised a new base metals discovery comprising intersections of significant copper-lead-zinc and silver mineralisation, from a diamond drilling program conducted at **Minbrie** near Bungalow on the east coast of the Eyre Peninsula. The drill core contained visible copper, lead and zinc sulphides (chalcopyrite, galena and sphalerite) observed in association with pyrite-pyrrhotite mineralisation. Field portable XRF results include:

**27 m @ 0.71% Cu, 2.8% Pb, 1.9% Zn and 8.5 g/t Ag**

**7 m @ 1.85% Cu, 6.9% Pb, 2.9% Zn, and 17.3 g/t Ag**

## Queensland

**Red Metal Ltd** announced results from a diamond drill hole at their **Maronan** silver-lead project in the Mount Isa Inlier. Although the drill hole deviated from the target two zones of silver and lead mineralisation were intersected at a deeper level within banded iron formation. A daughter hole is planned to intersect the original target. Results to date include:

**5.1 m @ 6.45% Pb and 35.9 g/t Ag**

**4.3 m @ 2.59% Pb and 97.5 g/t Ag**

## Victoria

**Synergy Metals Ltd** provided an update on the results from the company's exploration program at the **Forsyth** prospect located 4 km from Omeo. Results have been received from an initial three-hole diamond drilling program totalling 466 m. The program was designed to obtain geological information and test for mineralisation identified in historic prospecting. Results include:

**5.35 m @ 334.2 g/t Ag, 4.70 g/t Au, 0.29% Pb and 0.68% Zn**

## Western Australia

**MacPhersons Resources Ltd** announced successful drilling results at its **Nimbus** silver-zinc-gold project located 10 km east of Kalgoorlie. Drill results include:

**25 m @ 222 g/t Ag and 2.8% Zn**

**(including 1.5 m 1553 g/t Ag and 20.7 % Zn)**

**16 m @ 161 g/t Ag (including 4 m @ 326 g/t Ag)**

**5.1 m @ 454 g/t Ag**

**AusQuest Ltd** advised that results from the recently completed reconnaissance RC drilling program at the **Dundas** project, 100 km east-southeast of Norseman, has identified broad zones (~30 m) of highly anomalous base metal mineralisation, with peak values up to 26 g/t Ag, 4200 parts per million (ppm) Zn, 772 ppm Pb, 2570 ppm Cu and 101 parts per billion (ppb) Au plus several narrow intersections of gold-only mineralisation with values up to 4.1 g/t Au. The drilling program comprised 20 holes for

1916 m, and was designed to provide an initial test of gold (+/- Cu, Zn and Ag) anomalies outlined by an earlier shallow rotary air blast (RAB) drilling program. Drilling depths varied from 80 to 100 m. Thick zones (up to 30 m) of highly anomalous silver and base metal values were reported from the central targets, and include the following higher grade intervals:

**5 m @ 14 g/t Ag, 2582 ppm Zn, 594 ppm Pb and 58 ppb Au**  
**11 m @ 2.5 g/t Ag, 434 ppm Zn, 1657 ppm Cu**  
**and 16 ppb Au**

## BAUXITE

### Queensland

**Australian Bauxite Ltd** reported on laboratory and exploration results from drilling and surface exploration at its **Binjour** bauxite project, 100 km southwest of Bundaberg. The program of 133 holes drilled in 2012 intersected a thick layer of bauxite located beneath a surface clay horizon. Some exceptionally high grade, thick gibbsite-rich bauxite was discovered including:

**4 m @ 36.66 %  $\text{Al}_2\text{O}_3$**   
**8 m @ 48.78%  $\text{Al}_2\text{O}_3$**

### Western Australia

An exploration drilling campaign was completed at the **Felicitas** deposit by **Bauxite Resources Ltd**, north of Wundowie on the Northern Darling Range, with the aim of defining additional bauxite resources. The drilling program comprised 3406 vertical holes for a total of 22 941 m. The data indicate that approximately 55% of holes containing available alumina have grades of **greater than or equal to 25%  $\text{Al}_2\text{O}_3$  over thicknesses of 2 m or more**. The mineralisation is present within 0.5 m of surface, and bauxite thicknesses of up to 16 m were intersected.

## COPPER (INCLUDING COPPER-GOLD)

### New South Wales

**Arks Mines Ltd** reported encouraging copper intercepts at shallow depths, on a drilling program at the 100% owned **Wirrilah** project which is situated between the Mineral Hill and Hera/Nymagee Mines at Nangerybone in the Lachlan Fold Belt. Shallow RC holes were drilled near old mine workings to test for the presence of copper mineralisation. Copper was detected in three drill holes at shallow depths. Results include:

**27 m @ 0.2% Cu**

**Silver City Minerals Ltd** announced results from an RC drill program at the **Golden King** project northeast of Broken Hill. Drilling intersected some of the best copper mineralisation recorded in the Broken Hill district. Results included:

**22 m @ 0.61% Cu**  
**12 m @ 0.41% Cu**  
**12 m @ 1.34% Cu**

**Capital Mining Ltd** released a resource update for their **Mayfield** gold, copper, silver, zinc and iron prospect based on a recent air core (AC) and RC drilling program which has lifted the gold grade of the gold-copper dominant mineralisation by 14% to 0.7 g/t and the estimated contained gold by 23% from 77 000 oz to 94 800 oz. The resources of oxide and sulphide mineralisation in the JORC Inferred and Indicated categories now stand as follows:

Gold-copper dominant mineralisation:

**4.0 million tonnes @ 0.4% Cu, 0.7 g/t Au, 8.8 g/t Ag, 0.2% Zn and 25.4% Fe**

Zinc dominant mineralisation:

**0.9 million tonnes @ 2.36% Zn, 5.9 g/t Ag and 0.1% Cu**

Significant intercepts from the drilling program include:

**20 m @ 6.86 g/t Au, 2.1 g/t Ag, 0.27% Cu and 46.3% Fe**  
**36 m @ 1.81 g/t Au, 4.3 g/t Ag, 0.1% Cu and 29% Fe**

A new gold, silver and copper discovery has been made by **Clancy Exploration Ltd** at their **Meritilga** prospect at Condobolin. Associated with the previously untested Meritilga Fault Zone the mineralisation has a strike length of 1 km, much of which remains untested. Results from the reverse circulation RC drilling program include a high grade gold shoot and a broad zone of lower grade gold-copper-silver mineralisation:

**4 m @ 20 g/t Au, 0.26% Cu and 30.2 g/t Ag**  
**(including 1 m @ 62 g/t Au and 60 g/t Ag)**  
**31 m @ 0.4 g/t Au, 0.18% Cu and 16 g/t Ag**  
**(including 11 m @ 0.8 g/t Au, 0.5% Cu and 19.5 g/t Ag)**

**Peel Mining Ltd** reported very good assay results from the **Mallee Bull** prospect located 105 km south of Cobar. The drill hole intersected a broad zone of stringer/breccia mineralisation including a high grade chalcopyrite-dominant mineralised zone. A down-hole electromagnetic (EM) survey defined an extremely strong conductor response. Copper-dominant sulphide mineralisation now extends from 150 m below surface to at least 600 m below surface and remains open in multiple directions including down dip/plunge. Drill results include:

**69 m @ 3.48% Cu, 34 g/t Ag and 0.14 g/t Au**  
**(including a high grade zone of 18 m @ 9.35% Cu, 83 g/t Ag and 0.43 g/t Au)**

### Northern Territory

**Adelaide Resources Ltd** reported assays from a recent diamond drill program at their **Rover 12** prospect about 85 km southwest of Tennant Creek. The drilling program has confirmed the presence of gold and copper mineralisation. Mineralisation is hosted within ironstone although the highest grades are hosted by a shear zone sub-parallel to the ironstone body. The ironstone system is open at depth and to the east and west.

The shear zone remains open along strike and at depth. Typical results include:

Shear zone:

**4 m @ 1.22% Cu and 5.57 g/t Au**

Ironstone:

**17 m @ 0.76% Cu and 0.02 g/t Au**

**Emmerson Resources Ltd** announced new high grade copper and bismuth results from a diamond drilling program at their **Goanna** prospect near the Gecko mine in the Tennant Creek goldfield. These results confirm that mineralisation remains open at depth. Drill results include:

**24 m @ 1.95% Cu  
(including 9 m at 3.18% Cu and 984 ppm Bi)**

**24 m @ 2.18% Cu and 29.3% Fe  
(including 4.7 m at 3.37% Cu and 0.13 g/t Au)**

## Queensland

A diamond drilling program by **Syndicated Metals Ltd** at their **Andy's Hills** project located 60 km southeast of Mount Isa has identified a wide zone of intense alteration with disseminated and vein style chalcopyrite and significant rare-earth element mineralisation. Drilling reached 494 m and terminated in altered and mineralised rock. Initial assays returned:

**1.3% Cu, 0.5 g/t Au and up to 0.21% lanthanum**

In a 31-hole resource definition drilling program by **Ivanhoe Australia Ltd** at the **Starra 276** prospect in the southern Cloncurry district of the Mt Isa Inlier, significant high grade copper-gold intersections were identified in three drill holes, including:

**20 m @ 2.56% Cu and 0.75 g/t Au  
(including 1.6 m @ 9.45 Cu and 1.62 g/t Au)**

**18 m @ 2.01% Cu and 0.91 g/t Au  
(including 2 m @ 4.5% Cu and 3.51 g/t Au)**

**Copper explorer Coppermoly Ltd** announced successful completion of a three-dimensional induced polarisation (3DIP) geophysical programme at the **Sefton** prospect in the New England Fold Belt, identifying a significant anomaly. The IP anomaly is interpreted to be related to iron, and possibly copper and molybdenum sulphides, centred on a porphyry intrusion at depth beneath a thin layer of gravels. A 1300 m by 400 m copper-in-soils geochemical anomaly that occurs partly coincident with and south of the sulphide target likely represents transported mineralisation in the near-surface gravels.

**ActivEX Ltd** announced results of RC drilling at **White Horse** in the Esk Trough Joint Venture area with **Coppermoly Ltd**. The drilling program is part of a program aimed to test porphyry prospects in the New England Fold Belt. White Horse was identified in historical drilling and refined by recent 3DIP surveys. The drill program consisted of 9 holes totalling 654 m. Highlights of the program include:

**26 m @ 0.85% Cu**

**28 m @ 0.96% Cu**

**92 m @ 0.36% Cu (including 15 m @ 1.09% Cu)**

## South Australia

**Adelaide Resources Ltd** announced assays results from a RC drilling program at the **Willamulka** prospect located in the Moonta district of the southeastern Gawler Craton on the Yorke Peninsula. Drilling confirmed the presence of shallow copper-gold mineralisation over a 1200 m strike length, and includes a shoot of thicker, higher grade mineralisation located in the south western part of the prospect with a strike length of at least 550 m and a shallow plunge to the southwest. It persists to the base of thin cover sediments on some drill sections and remains open at depth on most drill sections. Exploration at this project is on-going with AC drill testing of northern extensions of the mineralised zone. Two diamond drill holes were designed to test if mineralisation persists below the depth reached by previous AC drilling. Assays from the drilling highlighted a number of significant intersections including:

**11 m @ 0.98% Cu and 0.93 g/t Au**

**10 m @ 0.7% Cu**

**14 m @ 1.04% Cu and 0.32 g/t Au**

**OZ Minerals Ltd** reported exploration results from an infill drilling program aimed at converting Inferred Resources to Indicated at their **Carrapateena** project, 100 km southeast of the Olympic Dam Cu-U-Au deposit. The new drilling extends the mineralisation at depth beyond the current resource boundary. Results include:

**1131 m @ 1.52% Cu and 0.63 g/t Au  
(including 111 m @ 2.96% Cu and 0.4 g/t Au)**

**1492 m @ 0.9% Cu and 0.38 g/t Au**

## Tasmania

A significant copper discovery has made at the **Mt Jukes** project, a joint venture between **Jaguar Minerals Ltd** and **Corona Gold Ltd**. The Mt Jukes project is located in the Mt Read Volcanics south of Queenstown. The first diamond drill hole reaching the target, a magnetic high, intercepted copper mineralisation, with further holes awaiting assay. Results from the first hole are:

**122 m @ 0.4% Cu**

## Western Australia

**Encounter Resources Ltd** has identified a large scale copper oxide anomaly at their **BM7** project in the Paterson Province. The project is located at the intersection of the northeast trending Queen Fault and the regionally extensive McKay Fault. Mineralisation has been defined by AC drilling over a 3.5 km strike length along the Queen Fault and remains open at both extremities. A recent diamond drilling program at BM7 intersected extensive zones of copper-cobalt sulphide mineralisation with results including;



227 m @ 0.22% Cu and 338 ppm cobalt  
102 m @ 0.19% Cu and 243 ppm cobalt  
7 m @ 0.25% Cu and 250 ppm cobalt

**Integra Mining Ltd** has completed a drilling project at their **Imperial** prospect, located 500 m northwest of the Majestic gold deposit, 50 km east-southeast of Kalgoorlie. Mineralisation is hosted within the same granodiorite unit as that hosting the Majestic deposit, and similar porphyry dykes are present at both Majestic and Imperial. True width of the mineralised zone at the Imperial prospect has not been determined, and is open along strike to the north. Assays from diamond drilling included:

19 m @ 4.39 g/t Au  
(including 6.2 m @ 13.43 g/t Au and 1.5% Cu)

An RC drilling program of 20 holes has been completed by **Horseshoe Metal Ltd** at the **Rinaldi** prospect in the Gascoyne region. This program defined copper mineralisation along a north-south orientated fault zone. Mineralisation was observed in 17 of the 20 holes and the company is planning a follow-up diamond drilling program. Best results of the RC drilling include:

13 m @ 2.7% Cu (including 2 m @ 14.4% Cu)  
28 m @ 1.8% Cu (including 3 m @ 7.5% Cu)

**Riedel Resources Ltd** reported assay results from an extensive soil and rock chip geochemical sampling program at their **Marymia** projects located 30 km east of Sandfire Resources NL's DeGrussa copper-gold mine. The survey comprised 1832 soil samples and 21 rock chip samples in previously unexplored or underexplored areas within the exploration lease. Future work is planned including infill geochemical sampling, detailed geological mapping and AC drilling. The geochemical survey yielded significant gold, copper, silver, tungsten and iron ore results including:

Soil samples:

247 ppb Au, 117 ppm Cu and 3.71 ppm Ag

Rock chip samples:

45.9% Fe and 61.9 ppm W

## GOLD

### New South Wales

In the Majors Creek Goldfield, **Cortona Resources Ltd** advised that recent drilling has intersected further high-grade gold mineralisation at the **Ruby Lode**, 150 m north of the Dargues Reef Main Lode at Cortona's flagship Dargues Reef project. The latest results include shallow intercepts from both of the holes drilled at Ruby and have extended the mineralisation at Ruby Lode along strike and at depth. These results have enhanced the potential to further increase resources and reserves in close proximity to the planned mining operation at Dargues Reef. Drill results include:

2 m @ 12.3 g/t Au  
5 m @ 6.77 g/t Au

**Rimfire Resources Ltd** reported drill results from their **Sorpresa** project that produced the highest grade gold intersections so far identified in the project. Drill hole intersections included:

14 m @ 24.4 g/t Au (including 2 m @ 118 g/t Au)

**White Rock Minerals Ltd** has more than doubled its silver resources and lifted its gold resources by 50% at its **Mt Carrington** project near Drake after a successful resource expansion drilling program. Key features in the resource update are:

Total gold resource is 284 000 ounces (oz), Indicated Resource of 153 000 oz Au and an Inferred Resource of 131 000 oz Au.

Total silver resource is 23.3 (million ounces) (Moz), Indicated Resource of 4.3 Moz and an Inferred Resource of 19 Moz.

**Sovereign Gold Company Ltd** has located the original historic mining shaft at **Fraser's Find** in the Rocky River Uralla Goldfield. This shaft is located 2.8 km along strike from another historic shaft confirming the large scale of the newly identified mineralised system. Sovereign Gold is planning a drilling program. Assays of samples collected from the mineralised high-grade sulphide vein (quartz, arsenopyrite, pyrite and galena) have returned the following ranges of gold, silver and lead values:

18 g/t to 77 g/t Au  
214 g/t to 1110 g/t Ag  
0.9% to 5.46% Pb

### Northern Territory

**ABM Resources NL** announced results from its phase 3 sampling program at the **Old Pirate** prospect which is part of the company's Twin Bonanza Gold Camp Project in the Tanami goldfield. The sampling is part of an ongoing systematic bulk sampling and longitudinal trenching program, and targeted quartz veins. An additional mineralised zone was identified in the trenching:

24 m strike length @ 83.9 g/t Au

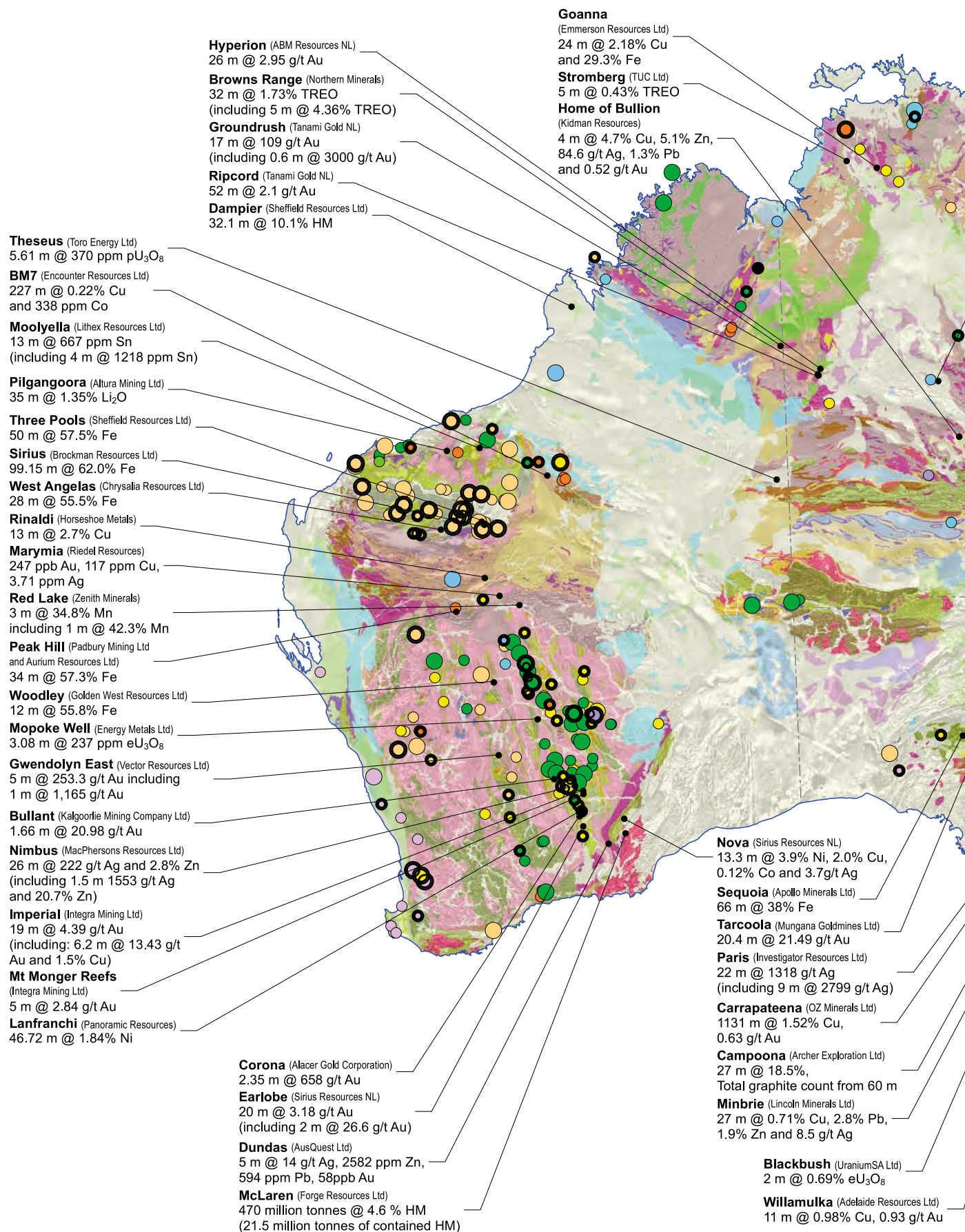
This result extends the identified zone in trenching to:

582 m strike length @ 23.98 g/t Au

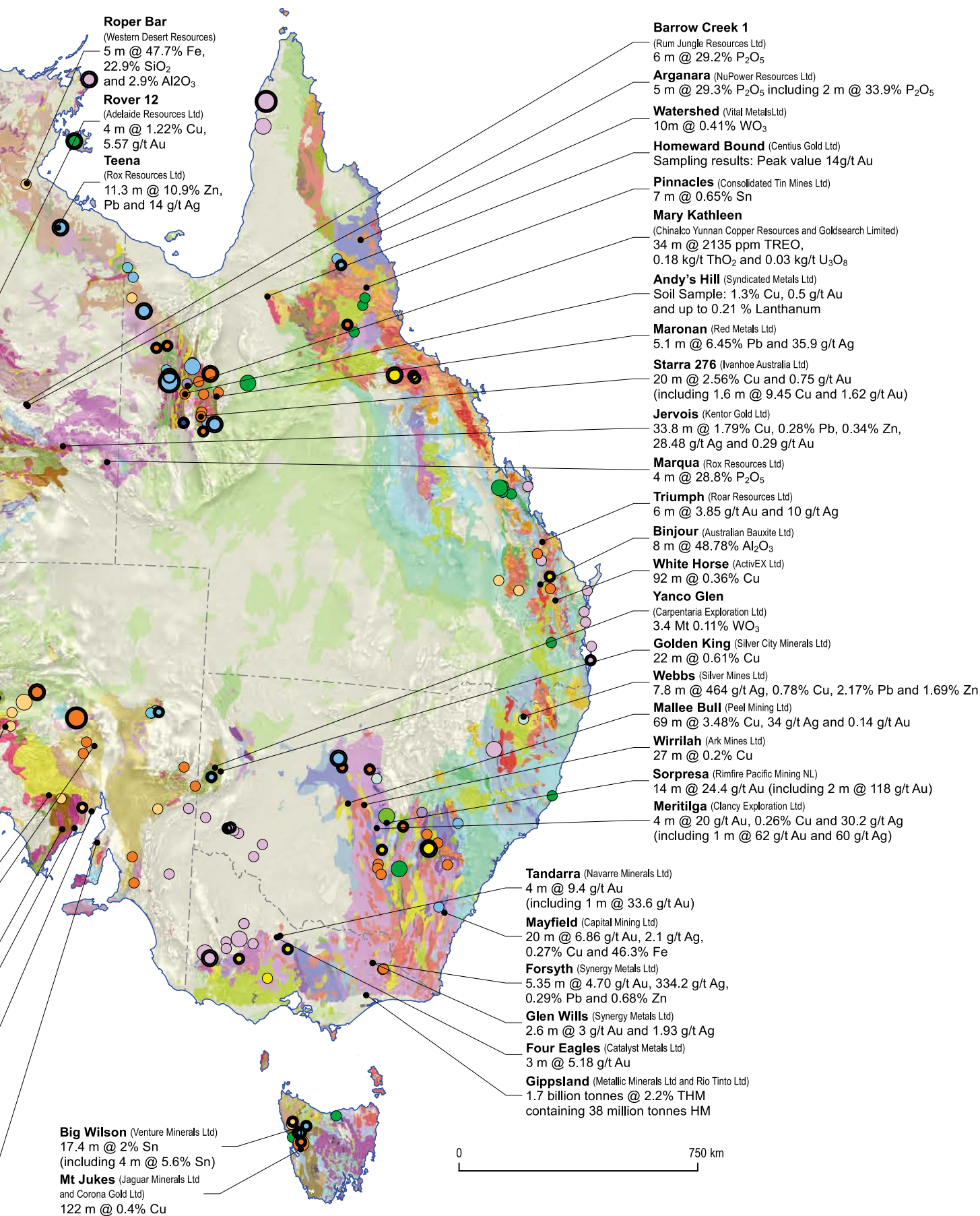
**ABM Resources NL** also reported drilling results from its **Hyperion** gold prospect in the Tanami goldfield. Gold mineralisation at Hyperion is principally hosted in structurally controlled quartz-carbonate veins associated with felsic dykes and dolerite within a sedimentary rock sequence. The drill program consisted of 20 RC drill holes for a total of 3354 m of drilling for extensional exploration and resource estimation purposes. Drill results include:

26 m @ 2.95 g/t Au (including 17 m @ 4.36 g/t Au)  
35 m @ 1.27 g/t Au (including 1 m @ 8.44 g/t Au)

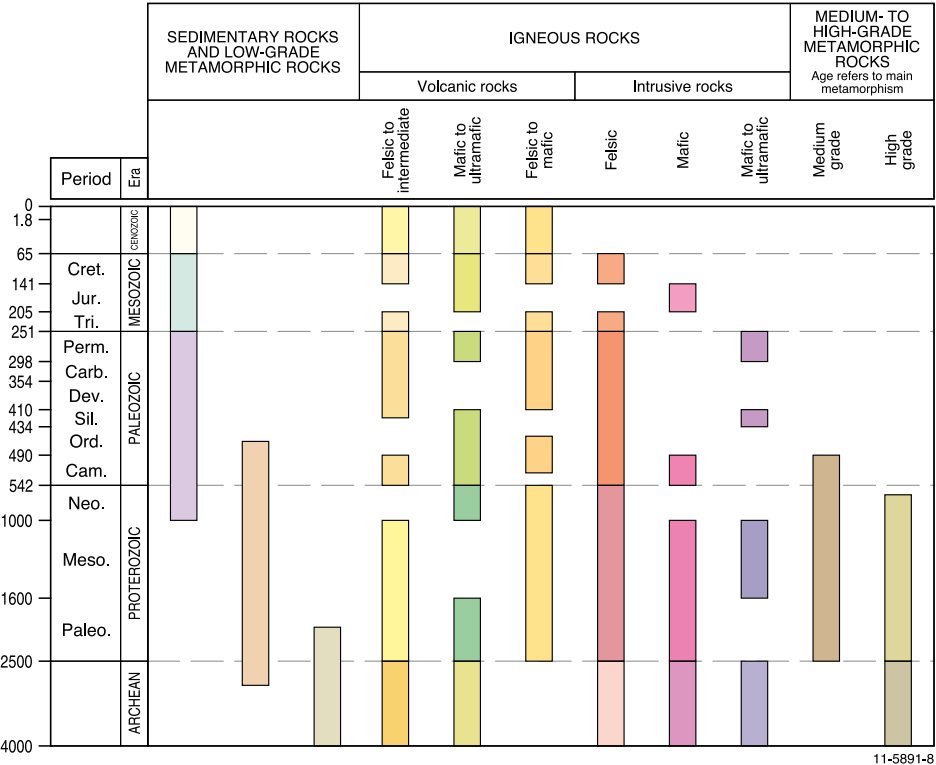
## EXAMPLES OF MAJOR MINERAL EXPLORATION RESULTS 2012





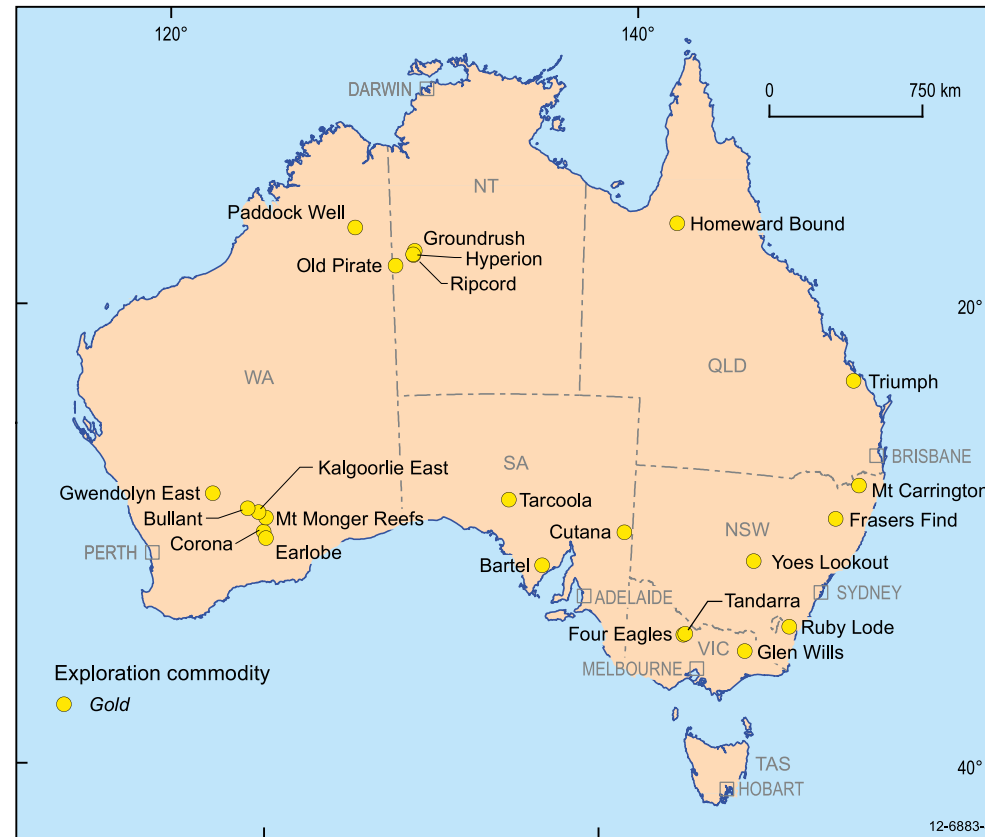


MAP LEGEND



- COMMODITY TYPE
- Iron ore - Fe
  - Precious metals - Au, Ag
  - Base metals - Cu (Zn, Pb, Ag, Au)
  - Base metals - Zn, Pb (Cu, Ag)
  - Steel metals - Ni, Cr, V, Co, Mo, Mn
  - Energy metals - U, Th
  - Light metals - Al, Li, Ti, Mg, Zr
  - Rare-earth elements - La, Ce, Nd, Dy, etc
  - Platinum-group elements - Pt, Pd
  - Diamond
  - Phosphate - P
  - Other metals - Sn, As, Sb, Sc, W, Ta
- SIGNIFICANCE OF DEPOSIT  
Size based on the value of the  
remaining in-ground resource
- Giant resource
  - Very major resource
  - Major resource
- Drill intersection/  
resource estimate
- Operating mine
- Deposit  
(non-operating mine)

Map: This map of Australia shows major mineral deposits (circles) on generalised surface geology (coloured areas; see legend above). The greyscale background represents aeromagnetic data (0.5 first vertical derivative of total magnetic intensity).



**Figure 3:** Selected gold exploration projects, 2012.

Australian gold producer **Tanami Gold NL** announced that the second hole of a major step-out drill program at their **Groundrush** deposit targeting the down-plunge extension of the recently announced intersections has located two broad zones of intense alteration and veining with visible gold. Significant results include:

**17 m @ 109 g/t Au (including 0.6 m @ 3000 g/t Au)**  
**25 m @ 3.2 g/t Au**  
**18 m @ 3.3 g/t Au**  
**1.8 m @ 53.9 g/t Au**

Additionally, **Tanami Gold NL** has confirmed significant mineralisation at their **Ripcord** prospect in the Tanami goldfield. A first-pass RC drilling program yielded intersections of:

**52 m @ 2.1 g/t Au**  
**11 m @ 4.0 g/t Au**  
**12 m @ 2.2 g/t Au**

#### Queensland

**Centius Gold Ltd** reported that it has completed an extensive mapping and sampling program at the **Homeward Bound** prospect in the Croydon region. The samples were collected at this prospect and along the Pride of the Hills ridgeline, including the dumps alongside the 147 historic workings at the prospect and from outcrops. Encouraging results included seventy-two samples with greater than **1.0 g/t Au** and values greater than **14.0 g/t Au**

from the majority of the samples in the north of the prospect. The target extends over a zone 200 m long. Based on these results, Centius will focus its ongoing drilling program in this zone.

**Roar Resources Ltd** reported on an initial drill campaign at a new gold discovery named **Triumph** in the Milton goldfield. The drill program comprised six diamond drill holes totalling 2134.6 m, and focused on a 1.7 km trend identified from rock chip sampling and surface Induced Polarisation (IP) geophysics in 2011. The program was designed to test for gold mineralisation at three priority targets in the south of the newly defined ~15 km<sup>2</sup> Triumph gold system. In total, drilling returned 70 ≥1 m intercepts at ≥0.1 g/t gold which emphasises the broad nature of mineralisation. The results have confirmed gold mineralisation occurs in sheeted quartz-sulphide veins associated with an intrusive phase and remains open in all directions. Significant intersections include:

**6 m @ 3.85 g/t Au and 10 g/t Ag**  
**(including 1 m @ 21.5 g/t Au and 44.6 g/t Ag)**  
**1 m @ 5.98 g/t Au and 16.1 g/t Ag**

#### South Australia

**Mungana Goldmines Ltd** announced results from a drill hole at its **Tarcoola** project in the central Gawler Craton. The drilling forms part of a program currently underway to establish a maiden JORC resource for the project and also serves to provide material for metallurgical test work, confirm oxide ore densities, and validate historical drill results in the Perseverance area. The hole targeted



a domain of known high-grade oxide mineralisation in weathered sediments above an irregular granite contact. The drill hole has confirmed the expected high-tenor of the gold mineralisation. Significant intersections include:

**20.4 m @ 21.49 g/t Au**

**20.4 m @ 8.36 g/t Au**

**Archer Exploration Ltd** has identified a new gold system at their **Bartel** project on the Eyre Peninsula in the southern Gawler Craton. Gold up to **2 g/t** was reported within a large hydrothermal alteration halo. Mineralisation is polymetallic comprising gold, silver, arsenic, copper, molybdenum and cerium. Further exploration is planned for the area.

**Renaissance Uranium Ltd** reported results of an infill multi-element soil geochemistry program over the **Cutana** project near the White Dam gold mine in the Curnamona Province, which confirmed the presence of a major anomalous gold zone. Up to **53 ppb** gold was reported over an area of approximately 2000 by 500 m. The sampling continues Renaissance's program of geochemical assessment of prospective gold areas within the Cutana project.

## Western Australia

Diamond drilling at the newly discovered **Corona** prospect owned by **Alacer Gold Corporation** has intersected laminated quartz veins with abundant free gold. This prospect is located 2.5 km to the south of the Higginsville Processing Plant in the Eastern Goldfields of the Yilgarn Craton. Drill results include:

**2.35 m @ 658 g/t Au**

**1.9 m @ 225.2 g/t Au**

**Bulletin Resources Ltd** announced results from ongoing reconnaissance exploration at the **Paddock Well** prospect 40 km southwest of Halls Creek. Rock chip geochemical sampling was undertaken as part of an extensive program of geological mapping and sampling, aimed at validating numerous documented gold occurrences as well as testing conceptual targets. The results of the rock chip sampling extend the strike length of the Paddock Well target to 1 km, and include values up to:

**10.5 g/t Au**

Rock chip sampling along subsidiary structures returned results of:

**24.1 g/t Au and 11.3 g/t Au**

**Sirius Resources NL** announced it had discovered high grade gold mineralisation in its first RC drilling program at the **Earlobe** prospect at its Polar Bear project in the Eastern Goldfields of the Yilgarn Craton. The distribution of gold intersections on two lines of drilling at the Earlobe North zone suggests that there are several gently to moderately east-dipping lodes that are open down-dip to the east and along strike of the drilling to date. Key intercepts are:

**20 m @ 3.18 g/t Au (including 2 m @ 26.6 g/t Au)**

**19 m @ 1.56 g/t Au (including 4 m @ 6.09 g/t Au)**

**Integra Mining Ltd** reported results from initial RC drilling at the **Mt Monger Reefs** prospect. The drilling tested anomalous gold results of previous AC drilling. The Mt Monger prospect is located 13 km northwest of Integra's Randalls gold processing facility located 50 km southeast of Kalgoorlie. The gold mineralisation appears to be a similar style to that at the neighbouring Daisy Milano Mine and is interpreted to be hosted in splays of the Goddard Fault. Mineralisation occurs along two north-northwest trends, which remain open at depth and are currently unconstrained along strike. Assay results from the RC drilling include:

**5 m @ 2.84 g/t Au**

**4 m @ 2.12 g/t Au**

**MRG Metals Ltd** announced the completion of further soil geochemistry sampling at its **Kalgoorlie East** project. Sampling was conducted as infill to anomalous areas identified in the MRG'S previous soil sampling programme and from further review of historical exploration completed in the area. A total of 1495 samples were collected along either 40 m x 20 m or 50 m x 50 m GPS located grids. A number of anomalous areas for both Au and Ni have been identified from the soil sampling results, including eight gold and five Ni targets. Of the eight gold targets, seven are located within the main Kalgoorlie East tenement area whilst one gold anomaly was identified within licence, located a further 10 km east of the main area. MRG Metals Ltd plans to test the Au targets with initial RAB drilling, whereas ground electromagnetics (EM) will be used to test a number of combined geochemical and geological targets for nickel sulphide mineralisation. Twenty-five of the 1495 samples returned assay values above **100 ppb Au**, with the highest soil geochemistry value of:

**547 ppb Au**

**Vector Resources Ltd** announced that it has received assay results from an RC drilling program at its **Gwendolyn East** project in the Southern Cross region. Mineralisation remains open in all directions. Significant intercepts include:

**5 m @ 253.33 g/t Au (including 1 m @ 1165 g/t Au)**

**1 m @ 56 g/t Au**

**1 m @ 17.99 g/t Au**

**2 m @ 16.6 g/t Au**

**12 m @ 8.38 g/t Au**

**Kalgoorlie Mining Company Ltd (KMC)** announced the results from recent drilling at its 100% owned **Bullant** project 50 km northwest of Kalgoorlie. The program was designed to follow up on the success of a previous diamond drill program conducted by KMC in June 2011. The primary aim was to test for extensions of the Bullant Lodes south from current underground development. The target area is located approximately 500 m south of the Bullant Mine. Three drill holes with a total of 323 m of RC pre-collars with 922 m of diamond core were completed. Results include:

**1.66 m @ 20.98 g/t Au**

**3.21 m @ 5.65 g/t Au**

## Victoria

**Catalyst Metals Ltd** announced that a recently completed AC drilling programme intersected a new zone of gold mineralisation east of the known zone at the **Four Eagles** gold project, in the Bendigo goldfield. The reconnaissance drilling programme of 49 holes was completed for a total of 4275 m. The results confirm that gold mineralisation occurs close to the projected position of the Whitelaw Fault. Visible gold was observed in a drill hole in quartz rich gravels just above the basement contact. Drill hole results in the zone include:

**3 m @ 0.41 g/t Au**

**3 m @ 1.1 g/t Au**

**3 m @ 5.18 g/t Au**

Gold exploration company **Navarre Minerals Ltd** announced a further high grade drill intercept on the Tomorrow Line of quartz reef at the **Tandarra** prospect, part of the Bendigo North project, located 40 km north of Bendigo. Navarre's 25 000 m RC drilling programme targeted shallow gold-bearing quartz reefs, with the aim of defining a mineral resource at the project by the end of 2012. Diamond drilling also has been undertaken to help define the geology of the Tandarra prospect. Results include:

**4 m @ 9.4 g/t Au (including 1 m @ 33.6 g/t Au)**

**Synergy Metals Ltd** announced assay results from a drilling programme at **Glen Wills** within the Glen Wills goldfield. Results of drilling indicate that mineralisation extends to the north of the current area tested. Results include:

**0.70 m @ 6.14 g/t Au and 1.47 g/t Ag  
(including 0.39 m @ 10.85 g/t Au and 2.50 g/t Ag)**

**2.60 m @ 3 g/t Au and 1.93 g/t Ag  
(including 0.95 m @ 5.67 g/t Au and 2.50 g/t Ag)**

## GRAPHITE

### South Australia

RC drilling by **Archer Exploration Ltd** at the **Campoona** project 12 km north of Cleve in the southern Gawler Craton confirmed the presence of a discrete high grade graphitic shear zone hosted by lower grade graphitic proto-gneiss. The high grade graphite unit averages 10 m to over 40 m in true width. The hangingwall section is particularly high grade, averaging >15% graphitic carbon and carrying visible flake. The first assays from the drilling returned the following highlights:

**27 m @ 18.5% total graphite count (TGC)**

**20 m @ 13.3% TGC**

**28 m @ 17.1% TGC**

**Lambo Resources Ltd** advised of the confirmation of strong flake graphitic schist at their **McIntosh** project in the East Kimberley region. Auger drilling of Target 2 has confirmed the presence of high grade flake graphite with field estimates of **at least 30% flake graphite** within the holes. Target 2 extends over a strike length of 2 km and contains flake graphite schist horizons over a thickness of 50 m, based on historic RAB drilling.

## HEAVY MINERAL SANDS

### Victoria

**Metallic Minerals Ltd** announced a maiden mineral resource for the Rio Tinto owned Glenaladale deposit at the **Gippsland** heavy mineral sands (HMS) project of:

**1.7 billion tonnes @ 2.2% total heavy mineral (THM)  
containing 38 million tonnes of heavy mineral (HM)**

### Western Australia

Mineral sands explorer **Sheffield Resources Ltd** announced drilling results from its **Dampier** HMS project in the Canning Basin near Derby. The Thunderbird discovery was the first target to be drilled by Sheffield Resources Ltd within the Dampier HMS project area, and represents a significant development in the Canning Basin in terms of both the grade and scale of HMS mineralisation. Results from 47 holes have returned high grade mineralised intervals including:

**32.1 m @ 10.1% HM (including 28.5 m @ 10.9% HM)**

**40.5 m @ 7.8% HM (including 18 m @ 13.4% HM)**

**41.5 m @ 7.3% HM (including 32.5 m @ 8.6% HM)**

**42 m @ 6.3% HM (including 31.5 m @ 7.6% HM)**

**Forge Resources Ltd** announced a significant maiden JORC compliant HM resource estimate for the **McLaren** HMS deposit within the Eucla West Mineral Sand project tenements:

**470 Mt @ 4.6 % HM (21.5 Mt of contained HM)**

## IRON ORE

### Northern Territory

**Western Desert Resources Ltd** reported assay results from 2011 RC drilling at the **Roper Bar** iron ore project in the McArthur Basin. Scout drilling in 2010 established the potential of this new area to yield additional hematite resources. Assays from 133 holes completed in 2011 confirm the thickness and typical grade of the mineralisation. The hematite-rich horizon is open in all directions and further drilling was planned to quantify the lateral extent. Results of the 2011 drilling include:

**5 m @ 47.7% Fe, 22.9% SiO<sub>2</sub> and 2.9% Al<sub>2</sub>O<sub>3</sub>**

**4 m @ 46.7% Fe, 25.6% SiO<sub>2</sub> and 1.9% Al<sub>2</sub>O<sub>3</sub>**

### South Australia

**Apollo Minerals Ltd** reported on discovery of iron mineralisation at **Sequoia** in the central-northern Gawler Craton. Geophysical surveys identified a series of magnetic and gravity anomalies. Drilling of the anomalies was undertaken and mineralisation remains open at depth with geophysics indicating that higher grade mineralisation continues to depth beyond 400 m. Drilling results include:

**66 m @ 38% Fe**

**24 m @ 41.0% Fe**

**6 m @ 42.4% Fe**

**8 m @ 40.2% Fe**

**PepinNini Minerals Ltd** undertook reconnaissance surface sampling at their **Kalabity** project and identified three prospect areas: Billeroo, Ironstone and Dome Rock. The company views the shallow or at-surface magnetite mineralisation at these prospects as having potential for direct shipping ore (DSO). The Billeroo prospect comprises four discontinuous iron-rich outcrops up to 300 m in length and up to 40 m wide across an east–west trend of approximately 3 km. Iron grades from samples collected at the Billeroo prospect are variable and range **up to 65.7% Fe**. At the Ironstone prospect two discontinuous outcrops up to 200 m in length and 15 m in width and separated by approximately 1 km have been identified. All three surface samples from the Ironstone prospect returned high grades of **greater than 67.3% Fe** with low levels of contaminants. The Dome Rock prospect contains discontinuous outcrops up to 300 m in length and 40 m in width covering a trend distance of approximately 5 km. Samples from the Dome Rock prospect returned variable grades ranging from **47.9% Fe to 55.5% Fe**.

## Western Australia

**Brockman Resources Ltd** announced assay results from reconnaissance diamond drill holes completed at the **Sirius** prospect within its 100% owned Ophthalmia project tenements, located 15 km north of Newman in the Pilbara region. Most of the holes have intersected thick zones of DSO grade hematite iron ore mineralisation with better intersections including:

**99.15 m @ 62.0% Fe**

**70.05 m (cumulative thickness from two zones) @ 60.6% Fe**

**Enterprise Metals Ltd** received exploration data from its **Booylgoo Range** airborne magnetic/radiometric survey, and rock chip results from reconnaissance outcrop sampling. WA Geological Survey mapping and historical airborne surveys had previously outlined the main banded iron formation (BIF) units in the Booylgoo Range. Enterprise's new high resolution survey (100 m line spacing, 50 m mean terrain clearance) has more clearly defined the known BIF units and areas of demagnetisation which have potential to host high grade goethite and/or hematite mineralisation. Approximately 28 km strike length of multiple BIF units was mapped by the airborne data. Non-systematic outcrop sampling of magnetic BIF on the eastern and western limbs of the syncline (18 samples) returned assays of between **25–40% Fe**. However, 2 samples from outcrops of BIF enriched in iron by goethite alteration have assayed **between 59% and 62% Fe**.

**Sheffield Resources Ltd** announced broad iron intersections from a 25 hole RC drilling program at its **Three Pools** iron ore project, 20 km north of Newman in the Pilbara region. A total of 1212 m was drilled at five prospects. Significant results include:

Top Forge Prospect:

**50 m @ 57.5% Fe**

**42 m @ 57.6% Fe**

Crucible Prospect:

**52 m @ 56.9% Fe**

**46 m @ 56.2% Fe**

**Chrysalis Resources Ltd** reported a recent 37 hole, 2214 m RC drilling program has identified significant widths of channel iron deposits at their **West Angelas** project in the Pilbara region. Results include:

**22 m @ 48.1% Fe**

**28 m @ 55.5% Fe (including 12 m @ 51.3% Fe)**

**12 m @ 51.3% Fe**

**Padbury Mining Ltd** and **Aurium Resources** reported encouraging results from a drilling program at Telecom Hill East prospect which is part of the **Peak Hill** project in the Robinson Range Iron Formation. The drilling showed that mineralisation is continuous over a strike length of 1300 m and extends beneath cover and remains open to the west and southeast. Results include:

**34 m @ 57.3% Fe**

**27 m @ 57.8% Fe**

**Golden West Resources Ltd** announced results from a maiden 21 hole, 1608 m RC drilling program undertaken at the **Woodley** project, located 600 km north of Perth in the mid-west region. Results include:

**12 m @ 55.8% Fe**

**10 m @ 58.2 % Fe**

**16 m @ 58.8% Fe**

## LITHIUM

### Northern Territory

**Litex Resources Ltd** reported geochemical data from rock chip samples collected at their **Moolyella** project within the Pilbara region, including highly anomalous values for lithium as well as anomalous tin, tantalum and a broad suite of heavy rare-earth elements. Best assay results for lithium ranged from:

**0.49% to 1.82% Li<sub>2</sub>O**

### Western Australia

**Altura mining Ltd** announced that on-going RC drilling at their **Pilgangoora** project with in the Pilbara region outside the current defined resource has expanded the mineralised zone by 250 m southwards. Drill intersections include:

**35 m @ 1.35% Li<sub>2</sub>O**



**Figure 4:** Selected graphite, heavy mineral sands, iron ore, lithium, manganese and nickel exploration results, 2012.

## MANGANESE

### New South Wales

**Bligh Resources Ltd** announced that a number of the rock chip samples collected from the historical manganese workings at the **Manilla** project returned high grade manganese assays. The sampling program confirmed that economic grades of manganese were produced from the historical workings, the highest grades being 46.5% Mn from the Bendemeer 2 Mine and 45.4% Mn from Manganese Mountain.

### Western Australia

**Brumby Resources Ltd** announced promising geochemistry results from surface rock chip sampling at the previously untested **Taya** prospect within the company's Oakover project. Eleven surface rock chip samples were obtained over a strike length of 530 m. The highest assay was 42.1% Mn, with six of the samples containing >30% Mn.

**Zenith Minerals Ltd** reported results of follow-up RC drilling completed at the **Red Lake** manganese discovery in the Earahedy Basin. A total of 43 holes were drilled for 1674 m, with infill of the discovery area to nominal 100 m drill centres and drill traverses to the northeast at approximately 400 m intervals. Results include:

**3 m @ 34.8% Mn (including 1 m @ 42.3% Mn)**

**6 m @ 24.1% Mn (including 2 m @ 32.8% Mn)**

**3 m @ 32.6% Mn (including 2 m @ 38.4% Mn)**

## NICKEL

### Western Australia

Assays reported by **Sirius Resources NL** from the first of several drill holes at its **Nova** nickel-copper discovery confirms the presence of thick intervals of high grade nickel-copper mineralisation. The Nova deposit is a blind deposit concealed by transported sediments and is located in the Albany-Fraser province on the southeast margin of the Yilgarn Craton. A drill hole with an interval comprising 5.9 m of disseminated sulphides, 3.9 m of stringer and breccia sulphides, 5.4 m of massive sulphides, and finally 4.4 m of breccia and stringer sulphides, returned the following assay results:

**13.3 m @ 3.9% Ni, 2.0% Cu, 0.12% Co and 3.7g/t Ag (including 7.15 m @ 5.1% Ni, 2.35% Cu, 0.15% Co and 4.0g/t Ag)**

**Panoramic Resources Ltd** announced the discovery of new mineralisation at the Skinner orebody which is part of the **Lanfranchi** project, 42 km south of Kambalda. Six drill holes returned broad intervals of disseminated and matrix style nickel sulphide mineralisation. The mineralisation remains open both up and down plunge. Best results include:

**39.5 m @ 1.79% Ni**

**34.18 m @ 1.93% Ni**

**46.72 m @ 1.84% Ni**



## PHOSPHATE

### Northern Territory

**Rox Resources Ltd** reported RC drilling results from its **Marqua** phosphate project located in the Georgina Basin, 300 km southwest of Mount Isa. A 29 hole, 1900 m RC drilling program was undertaken to confirm high grade areas of mineralisation. Phosphate mineralisation extends over a 30 km strike length. Drilling assay results include:

3 m @ 29.8%  $P_2O_5$

4 m @ 28.8%  $P_2O_5$

3 m @ 22.6%  $P_2O_5$

1 m @ 21.8%  $P_2O_5$

Drilling by **Nupower Resources Ltd** at the **Arganara** prospect extended the phosphate footprint and mineralisation to an area measuring 4 km by 4.4 km, which remains open to the east and south. Assay results from 63 holes include high grade phosphate intersections of >30%  $P_2O_5$ . Better intersections include:

5 m @ 29.3%  $P_2O_5$  including 2 m @ 33.9%  $P_2O_5$

6 m @ 26.7%  $P_2O_5$  including 3 m @ 32.5%  $P_2O_5$

**Rum Jungle Resources** announced numerous high-grade  $P_2O_5$  intercepts in a program of close-spaced, 50 m deep drill holes at the **Barrow Creek 1** phosphate deposit in the Georgina Basin. These new intercepts will provide the data to estimate a new resource for this easily mined material, with the aim of delineating sufficient ore material to prepare an initial, low-cost, direct shipping phosphate rock product prepared by simple mechanical beneficiation. Results include:

6m @ 29.2%  $P_2O_5$

2m @ 34.0%  $P_2O_5$

3m @ 33.7%  $P_2O_5$

4m @ 30.7%  $P_2O_5$

## RARE-EARTH ELEMENTS (REE)

### Northern Territory

**Crossland Uranium Mines Ltd** advised that a JORC-compliant estimate of Indicated and Inferred Resources has been completed for two areas within the extensive alluvial REE-bearing heavy mineral sands deposits at its **Charley Creek** project, located 100 km northwest of Alice Springs.

**Total Indicated Resource of 387 million tonnes containing:**

27 275 tonnes xenotime

160 900 tonnes monazite

195 580 tonnes zircon

**Total Inferred Resource of 418 million tonnes containing:**

30 690 tonnes xenotime

167 235 tonnes monazite

219 980 tonnes zircon

**TUC Resources Ltd** reported results of a 16-hole RC drilling program at their **Stromberg** prospect in the Pine Creek region. The drilling confirmed the presence of significant near-surface heavy rare-earth element (HREE) mineralisation in flat tabular bodies. Mineralisation remains open in cross section and along strike. Significant intersections include:

5 m @ 0.43% total rare-earth oxide (TREO) of which 81.9% is heavy rare-earth oxide (HREO), and including 1 m @ 0.92% TREO

3 m @ 0.52% TREO (88.6% HREO/TREO)

### Queensland

**Chinalco Yunnan Copper Resources Ltd** and **Goldsearch Ltd** announced results from a regional scout diamond drilling program at the Elaine 2 and 3 prospects that forms part of the **Mary Kathleen** joint venture project in the Mt Isa region. The five drill holes totalled 725.4 m and focussed on the evaluation of copper, REE and thorium potential of areas targeted on historic drilling, ground scintillometer/radiometric and soil geochemistry anomalies. Highlights include:

19 m @ 2050 ppm TREO, 0.17 kg/t  $ThO_2$  and 0.04 kg/t  $U_3O_8$

22 m @ 1633 ppm TREO, 0.22 kg/t  $ThO_2$  and 0.03 kg/t  $U_3O_8$

34 m @ 2135 ppm TREO, 0.18 kg/t  $ThO_2$  and 0.03 kg/t  $U_3O_8$

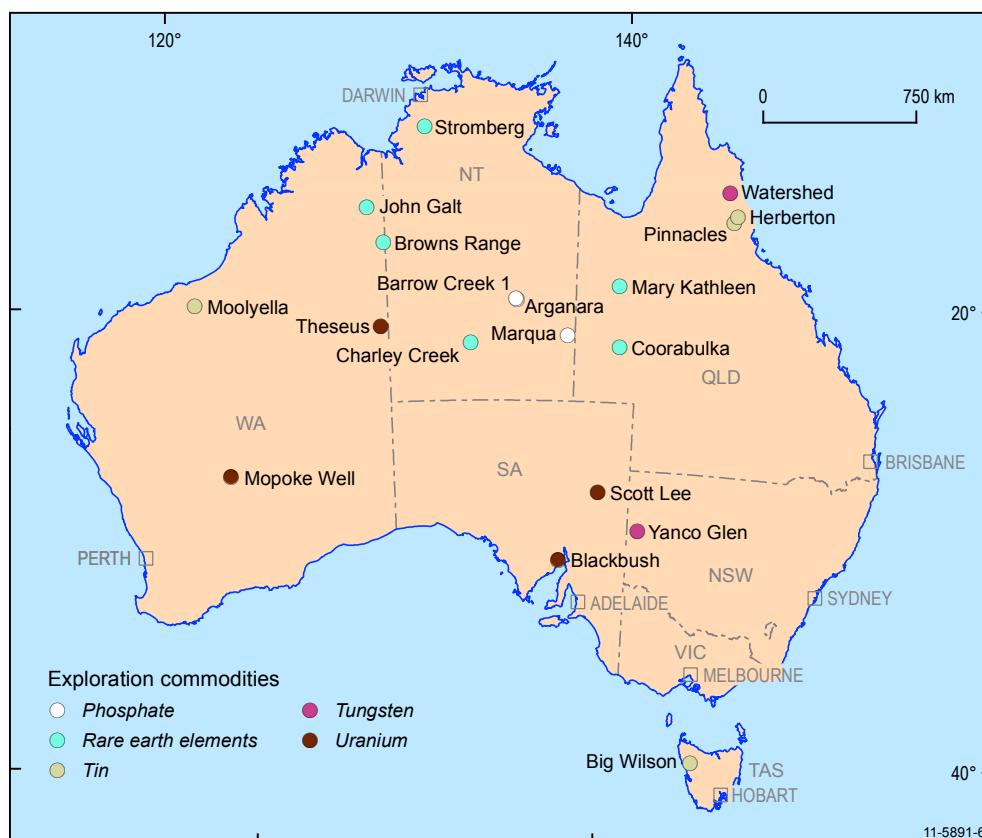
**Krucible Metals Ltd** announced geochemical results from surface sampling of large vanbergite concretionary nodules near Pigeonah waterhole at **Coorabulka**, located 330 km south-southeast of Mt Isa. Assay results have returned values of up to:

1.2 kg/t yttrium oxide, 4.02 kg/t neodymium oxide, 1.08 kg/t praseodymium oxide and 0.23 kg/t dysprosium oxide

### Western Australia

**Northern Minerals** announced early exploration and metallurgical results from its **John Galt** project in the Halls Creek mobile zone. The results include exceptional grades of up to 42% TREO including 3.68% dysprosium oxide ( $Dy_2O_3$ ) from rock chips, with the majority of samples returning consistent high grades above 1% TREO. The REE distribution is dominated by the HREE, with approximately 95% of the TREO as HREO. Petrological studies of rock chip samples confirm the similarity of the mineralisation style to that of the Browns Range project, with xenotime identified in quartz veins and quartz-arenite breccias.

Rare-earth element developer **Northern Minerals** announced results from drilling at its **Browns Range** project, which have confirmed exciting new mineralised zones with high grade HREE mineralisation. The drilling delivered particularly encouraging results from the new



**Figure 5:** Selected phosphate, rare-earth elements, tin, tungsten and uranium exploration results, 2012.

Gambit West prospect, returning wide HREE intersections with high grades and good continuity. The mineralisation also remains open along strike and at depth, and extends the Gambit mineralised trend to a strike length of nearly 1 km. Best results from the drilling include:

**32 m @ 1.73% TREO (including 5 m @ 4.36% TREO)**

**20 m @ 2.36% TREO (including 9 m @ 4.92% TREO)**

**13 m @ 1.72% TREO (including 5 m @ 4.07% TREO)**

## TIN

### Queensland

**Consolidated Tin Mines Ltd** completed a drilling program comprising 54 holes for a total of 1734 m at the **Pinnacles** deposit near Mt Garnet, 100 km southwest of Cairns. The drilling has identified new near-surface tin mineralisation with significant fluorine content as well as iron, which is a feature of tin skarn deposits in the Mt Garnet area. Best results include:

**7 m @ 0.65% Sn**

**8 m @ 0.69% Sn**

**9 m @ 0.44% Sn**

**16 m @ 0.59% Sn**

**Monto Minerals Ltd** reported regional soil geochemistry results at the **Herberton** project, 70 km southwest of Cairns. The soil geochemical survey represents the first large systematic exploration programme to be undertaken in the area. The entire Mount Misery exploration permit

area was covered by 2900 soil samples, collected on 200 m spaced lines at 50 m intervals. Two parallel anomalies measuring 1600 m x 500 m have been identified, known as the Scandinavian anomaly and Carney's anomaly, in an area previously not recognized for hard rock tin mineralisation. Tin values in soil across the anomalies are typically high, ranging up to 0.39% Sn.

### Tasmania

**Venture Minerals Ltd** announced a major new high grade tin discovery at their **Big Wilson** prospect in the Mt Lindsay area. A maiden drill hole targeting a 1100 m long soil geochemical anomaly intersected high grade skarn-related tin mineralisation as well as greisen style mineralisation:

**17.4 m @ 2% Sn (including 4 m @ 5.6% Sn)**

### Western Australia

**Lithex Resources Ltd** announced the results of an auger drilling program at the company's **Moolyella** project, located 23 km east-northeast of Marble Bar in the Pilbara region. The objective of the auger drill program was to obtain new and accurate data to provide the basis to enhance historical resource estimates calculated by previous explorers. Historical estimates (not JORC compliant) exist for tailings stockpile material, un-mined alluvial and eluvial deposits, and for pegmatite-hosted tin and tantalum deposits in the area. Results include:

**13 m @ 667 ppm Sn (including 4 m @ 1218 ppm Sn)**

**12 m @ 572 ppm Sn (including 4 m @ 1218 ppm Sn)**

17 m @ 363 ppm Sn (including 1 m @ 1670 ppm Sn)  
6 m @ 970 ppm Sn (including 3 m @ 1535 ppm Sn)  
5 m @ 1104 ppm Sn (including 1 m @ 1890 ppm Sn)

## TUNGSTEN

### New South Wales

**Carpentaria Exploration Ltd** announced a new Inferred Resource for the **Yanco Glen** prospect located 40 km north of the established mining centre of Broken Hill. The Inferred Resource contains more than double the tungsten metal than previously estimated. The deposit, which remains open down-dip and along strike, comprises:

**3.4 Mt @ 0.11% WO<sub>3</sub> (tungsten trioxide) at a 0.05% WO<sub>3</sub> cut-off, containing 3950 t WO<sub>3</sub>**

### Queensland

**Vital Metals Ltd** announced tungsten assay results from a diamond drilling program and trench sampling program at their **Watershed** project, located 160 km northwest of Cairns. The drilling intersected multiple vein swarms typical of the scheelite mineralisation found at Watershed. The mineralisation remains open at depth and along strike. Significant results from the diamond drilling include:

10 m @ 0.41 % WO<sub>3</sub>  
1 m @ 6.37 % WO<sub>3</sub>  
20 m @ 0.22 % WO<sub>3</sub>  
14 m @ 0.39 % WO<sub>3</sub>  
10 m @ 0.25 % WO<sub>3</sub>

Trench sampling across a vein swarm yielded the following results:

13 m @ 1.07 % WO<sub>3</sub>  
30 m @ 0.31 % WO<sub>3</sub>

## URANIUM

### South Australia

**Core Exploration Ltd** has identified very high levels of uranium in outcrop at its 100% owned **Fitton** project, located 25 km north of the Beverley uranium mine. A sample of chloritised schist within a shear zone contained **3370 ppm U<sub>3</sub>O<sub>8</sub>** which is a four-fold increase on the previous highest uranium value identified. In addition, a number of new samples contained highly anomalous uranium above 100 ppm for a strike length of over 800 m.

Uranium grades up to 3.8% equivalent grade (eU<sub>3</sub>O<sub>8</sub>) have been intersected in drilling by **Uranium SA Ltd** below its established **Blackbush** deposit within the Samphire uranium project, located 20 km south of Whyalla on the Eyre Peninsula. The company undertook a maiden drilling program targeted on mineralisation in basement granites. The Blackbush deposit has an Inferred Resource of 45.5 million tonnes (Mt) at 280 ppm U<sub>3</sub>O<sub>8</sub> which is contained in sediment layers overlying granite basement.

The drilling targeted granite immediately below the Inferred Resource and persistently high grades of mineralisation were found at the sediment/granite unconformity in the areas investigated. Selected high grade intercepts include:

2.0 m @ 0.69% e U<sub>3</sub>O<sub>8</sub>  
1.0 m @ 1.15% e U<sub>3</sub>O<sub>8</sub>  
4.0 m @ 0.36% e U<sub>3</sub>O<sub>8</sub>

### Western Australia

**Toro Energy Ltd** announced the results of drilling at its **Theseus** project in the Great Sandy Desert. Drilling was undertaken in the southern part of the prospect. The drilling program has identified large new mineralised areas up to 600–700 m wide, 2 km long and open to the south. Results included:

4.49 m @ 293 ppm pU<sub>3</sub>O<sub>8</sub>  
2.22 m @ 477 ppm pU<sub>3</sub>O<sub>8</sub>  
5.61 m @ 370 ppm pU<sub>3</sub>O<sub>8</sub>  
2.76 m @ 1347 ppm pU<sub>3</sub>O<sub>8</sub>

**Energy Metals Ltd** announced exploration drilling results from the **Mopoke Well** projects located 60 km west of Leonora. One-hundred vertical, 10 m deep holes were completed and consisted of eleven infill traverses (97 holes) to increase the drill density over the main mineralised zone, and three holes to test for strike extensions to the known mineralisation. Each hole was gamma probed to determine the uranium eU<sub>3</sub>O<sub>8</sub>. Some of the more significant intersections include:

2.64 m @ 282 ppm eU<sub>3</sub>O<sub>8</sub>  
3.08 m @ 237 ppm eU<sub>3</sub>O<sub>8</sub>  
3.64 m @ 197 ppm eU<sub>3</sub>O<sub>8</sub>  
1.86 m @ 258 ppm eU<sub>3</sub>O<sub>8</sub>  
2.02 m @ 221 ppm eU<sub>3</sub>O<sub>8</sub>

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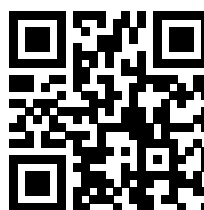
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[http://www.ga.gov.au/minerals/projects/  
current-projects/exploration-promotion.html](http://www.ga.gov.au/minerals/projects/current-projects/exploration-promotion.html)

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