

2016 National Research Infrastructure Roadmap Capability Issues Paper

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Question 1: Are there other capability areas that should be considered?

This submission is made on behalf of the Exploration Investment and Geoscience Working Group (EIGWG) of the COAG Energy Council, and endorses the full submission made on behalf of the UNCOVER Initiative, to which we have contributed, together with the submission from AuScope. EIGWG is made up of the Directors of the Australian State and Territory geological Surveys together with the Chief Executive Officer and the Chief of the Resources Division of Geoscience Australia. EIGWG is responsible for the implementation of the National Mineral Exploration Strategy (<https://scer.govspace.gov.au/files/2012/12/National-Mineral-Exploration-Strategy.pdf>).

The Chair of EIGWG is a member of the UNCOVER Executive Committee (<http://www.uncoverminerals.org.au/>), and the State and Territory geological surveys and Geoscience Australia, together with the exploration industry, CSIRO, academic institutions and representative bodies, have been instrumental in developing a comprehensive Roadmap through AMIRA International to identify the data acquisition, research programs and research infrastructure required to support innovative future mineral exploration in Australia (<http://www.uncoverminerals.org.au/documents/amira-uncover-roadmap>).

The minerals sector plays an important role in Australia's economic prosperity through employment, downstream industries and revenue to governments. In addition, it makes a significant contribution to regional and indigenous communities.

New discoveries are essential for the continuing growth in Australian mine production. Such growth is critical to retain our capacity to supply both domestic and export needs. Exploration for new greenfields discoveries are urgently required to ensure that an ongoing pipeline of mineral resource projects are available to meet future demands.

New mineral discoveries are becoming harder and more costly. In the decade from 2000 to 2010 there were 25 major deposits found in Australia, whereas in the 1980s and 1990s

over 5 major deposits were found each year on average. Despite increased exploration expenditures, Australia's discovery rate (excluding bulk commodities) has roughly halved since the start of the decade. This decline is a reflection of a profound decrease in the ratio of exploration dollars committed to greenfields programs compared to brownfields programs.

The National Mineral Exploration Strategy has three major initiatives:

- The generation and delivery of State and Commonwealth government-funded pre-competitive geoscience within Australia — the Australian geological surveys are world leaders in the provision of precompetitive geoscience,
- Promoting Australia as the lead destination for investment in mineral exploration and mining through a mineral exploration investment attraction plan, and
- The UNCOVER initiative as a national geoscience research initiative focused on delivering the applied geoscience needed for industry to better explore under the covered greenfields areas of Australia.

These initiatives are required to counter the perceptions internationally of Australia as a mature exploration destination where there are fewer opportunities for new discoveries. Most importantly there is a need to address the challenges in exploring for deposits in underexplored regions of Australia, particularly those buried under the overlying sand, soil and sediment that cover much of the continent.

The UNCOVER initiative, developed through the Australian Academy of Science, in collaboration with AMIRA International, is focused on the genesis, distribution and discovery of the nation's mineral wealth through activities concentrating on:

- characterising Australia's cover, with new knowledge developed to confidently explore beneath it,
- investigating Australia's lithospheric architecture by providing a whole-of-lithosphere architectural framework for mineral systems exploration,
- resolving the 4D geodynamic and metallogenic evolution of Australia and use this knowledge to better understand ore deposit origins for better prediction, and
- characterising and detecting the distal footprints of covered ore deposits, and thus provide a new toolkit that is best tuned for minerals exploration in Australia.

The existing AuScope earth imaging, National Virtual Core Library and geochemistry/geochronology programs have provided datasets critical to the activities of the State and Territory Geological Survey under the National Mineral Exploration Strategy that would not have been available without NCRIS funding. These datasets have facilitated researcher-government-industry collaborations and will continue to underpin the development of new national research initiatives such as the UNCOVER program.

EIGWG emphasises that we see the solid earth geosciences (including geophysics, geochemistry geodesy) as underrepresented in the Issues Paper.

- Solid earth geoscience is considered in Environment and Resource Management, but this grouping does not capture the full scope of the pure or applied research being

undertaken in the field and consideration of aspects the geosciences in the context of the Physics/Maths/Chemistry group would be appropriate.

- The industrial applications of geoscience research for mineral exploration and discovery, for energy resources, and water resources are not covered in any detail and are underrepresented in the research described in the Issues Paper especially in light of their national impact and their importance in the National Science priorities.