

# Geological Survey of NSW

## 2018 SMEDG Showcase

Thursday 22 November 2018

### MinEx CRC – unlocking prospectivity through cover

*Chris Yeats, Executive Director, Geological Survey of NSW*

The MinEx Cooperative Research Centre (MinEx CRC) is a 10-year, \$220 million collaboration between Federal and State Governments, CSIRO, leading Australian universities and the minerals industry that will unlock the covered terranes of the Australian continent to mineral exploration. MinEx CRC will develop cheaper, more environmentally friendly drilling methods and new real-time downhole sensing technologies. Through a National Drilling Initiative (NDI), it will also acquire previously unobtainable data on prospective rocks that are buried under deep, unprospective cover.

GSNSW is a major participant in the NDI and has committed \$16 million to the program. The NDI in NSW will focus on five New Frontier areas in the state's Central and Far West that are poorly characterised and underexplored undercover extensions to known mineralised terranes. Data acquired through the NDI will feed into the ongoing GSNSW program of developing a statewide geological framework, and will provide new information about the mineral exploration potential and groundwater resources of the areas investigated.

### Seamless Geology of NSW - a paradigm shift in geological mapping

*James Ballard, Geoscientist GIS, Geoscience Information*

Version 1 of the NSW Statewide Seamless Geology was released in October 2018, marking the culmination of a project that formally commenced in 2013, but had a long gestation before then.

The Seamless Geology of NSW brings together the best available mapping into a consistent geodatabase for 11 geological provinces across NSW, creating one of the most complex geological maps ever produced. It provides a statewide geological framework that will form the basis of all future GSNSW geological mapping and marks the first fundamental shift in the way in which the survey compiles and delivers geological mapping since its foundation in 1875. The Seamless Geology is freely available in a range of formats and has enabled the generation of numerous value-add products, including fault attribution, stratigraphic tables, mineral potential mapping, and metamorphic and accurate outcrop maps.

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### **Mineral potential mapping – it works!**

*Phil Blevin, Manager Mineral Systems*

The first round of GSNSW's mineral potential mapping has been completed in the New England Orogen (Sn-W, orogenic Au-Sb and intrusion related Au), Curnamona Province (BHT and IOGC) and Delamerian Orogen (VAMS and orogenic Au), and work is currently underway in the Lachlan Orogen (porphyry Cu-Au, skarns, VAMS and orogenic Au) to the east of the Gilmore Fault Zone. Results to date are very encouraging for data-rich areas, but are less convincing where prospective basement geology is obscured by younger cover sequences. Work is underway to adapt mineral potential mapping methodologies using more limited data inputs (i.e. under cover). MinEx project areas will be a priority.

### **Geochronology of mineralisation in the Cobar Basin: where and when are we now, and where to next?**

*Joel Fitzherbert, Senior Geoscientist, Mineral Systems*

Abundant hydrothermal titanite and rutile intergrown with sulfides has allowed direct U-Pb dating of the northern Cobar orebodies (e.g. CSA & Perseverance) at 408-413Ma, while in the south, the Hera orebody formed between 403-400 Ma. These new dates for mineralisation necessitate a rethink of where and how Cobar type mineralisation fits within the tectonic history of the central Lachlan Orogen.