

CHAPTER 1 Executive summary

PS Heithersay

South Australia has a long-term strategy of working with industry and providing quality pre-competitive geoscientific information to achieve results that will deliver long-term benefits to all South Australians.

The provision of low-cost, high-quality and up-to-date geoscientific data to industry has boosted exploration and the discovery of mineral deposits throughout the state, and generated enormous economic benefits for South Australia. The South Australian Government response to the Resources Task Force Report committed to the target of making South Australia a preferred destination for explorers and resource developers. The agreement to fund a new exploration initiative called TEISA 2020 is evidence of that commitment.

In that report, a specific time-bound vision was articulated — **A resurgent South Australian minerals industry growing to \$3 billion of mineral production and \$1 billion of mineral processing per year by 2020, winning sustainable wealth for Australians.**

As part of a broad range of products for the minerals industry, the PIRSA Office of Minerals and Energy Resources has compiled the 2002 *South Australian mineral explorers guide*. This is an extensively updated version of the *Mineral exploration and development in South Australia* volume compiled by Warwick Newton and published in 1996.

The Explorers Guide is CD-based due to the large amount of text, figures and data contained within it. It attempts to review the geology of South Australia and place mines, mineral deposits and prospects in their correct geological context. It draws on the knowledge and experience of all the geoscientists in the Office of Minerals and Energy Resources, but still only represents the tip of the iceberg in terms of data and knowledge available to mineral explorers through the agency.

South Australia is enjoying an upsurge in exploration activity in 2002 due in part to new discoveries in the state, including Minotaur's Prominent Hill discovery and Perilya's high-grade zinc at Aroona and Beltana. The opening of the Dominion's



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Challenger gold mine in the Gawler Craton is a significant milestone for the state and heralds a resurgence in gold exploration and mining.

The newly announced plans by WMC to examine the feasibility of a significant expansion at Olympic Dam highlights the truly world-class nature of that orebody and, by implication, the prospectivity of the host terrain in the Gawler Craton.

Chapters 2 and 3 set the broad scene for the largely province or basin-specific discussion that follows. **Sue Daly** and **Colin Conor** commence with a brief overview of the key exploration analogues available in South Australia and indicators of opportunities in areas that have received little exploration attention to date. **Wayne Cowley** then provides a very succinct overview of the geology of South Australia, including time–space plots that are fundamental in any project generation exercise.

The Gawler Craton is reviewed by the team including **Michael Schwarz**, **Malcolm Sheard**, **Sue Daly**, **Gary Ferris** and **Marc Davies**. Their contribution provides a comprehensive review of the current understanding of the geology, tectonics and metallogeny of the Gawler Craton. The results of recent drilling in the newly defined Harris Greenstone Belt are discussed and some new, challenging ideas on the tectonic setting of key metallogenic elements of the Gawler Craton are presented.

The Curnamona Province is examined by a very experienced team including **Stuart Robertson**, **Colin Conor**, **Wolfgang Preiss**, **Alistair Crooks** and **Malcolm Sheard**. Along with a useful review of this complex terrain, new dating results are discussed which provide much more clarity to the stratigraphic relationships in the province. They provide convincing evidence for the prospectivity of Broken Hill type deposits as well as Mount Isa style lead–zinc and ironstone copper–gold systems. Once again, essential new time–space plots are included.

An overview of the Musgrave Block has been compiled by **Justin Gum** and **Colin Conor** who provide some very practical insights into dealing with the Anangu Pitjantjatjara, the legal custodians of the Musgrave Block. Recent drilling results have highlighted the prospectivity of the region for ultramafic-related mineral systems.

The Adelaide Geosyncline and Stuart Shelf is reviewed by **Wolfgang Preiss**, a world authority on this terrain, and **Stuart Robertson**. The review highlights increased knowledge about the sedimentology and tectonic setting of the Adelaide Geosyncline which will in turn assist in developing new models for Zambian-style copper mineralisation, as well as new insights into lead and zinc



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deposits in the Adelaidean and Cambrian sequences. The overview of the Nackara Arc is a timely contribution given a resurgence of exploration activity in that area.

Andy Burtt provides an excellent overview of the Kanmantoo Trough and highlights the opportunities that lie within this basin including SEDEX silver, lead, zinc and gold, porphyry copper–gold systems and nickel–copper PGE mineralisation within layered and zoned ultramafic intrusions.

The sedimentary basins are examined by **Paul Rogers**, **Adrian Fabris**, **Baohong Hou** and **Wen-long Zang**, and reveal some interesting indications of SEDEX-style lead and zinc mineralisation in the Officer Basin, and significant zinc and copper indications in the Cambrian basins.

To complete the commodity list, **Brian Morris** provides a valuable review of industrial minerals, diamonds and opal. Coal in South Australia is covered by **Rob Shaw**.

The Geoscientific Information Management team is a recently formed group within the Geological Survey Branch. The article authored by Program Leader **Dom Calandro** covers the progress made by this group to provide ready access to geoscientific data, particularly through SARIG (South Australian Resource Information Geoserver).

To complete the volume, **Iris Dobrzinski** from the Land Access Branch provides a comprehensive review of the relevant Acts and Regulations applying to mineral exploration in South Australia. Her review also covers environmental responsibilities, Aboriginal heritage issues, and access to parks and reserves.

The *South Australian mineral explorers guide* is a reference work that the Geological Survey Branch intends to expand and keep up to date. Future versions will see expanded individual deposit descriptions, geophysical signatures and GIS linkages. Any comments, corrections or ideas for the future are sought after and most welcome.

The Appendix of this guide includes a section entitled '[South Australia at a glance](#)' and provides a comprehensive summary of the competitive advantages and key statistics of the state.