

Empowering Exploration with National Scale Maps

Nichole Knepprath¹, Eloise Beyer¹, Guillaume Sanchez¹, Colleen Bryant¹, Madeline Buddee¹, Murray Woods¹, Lindsay Highet¹, Cathy Brown¹, Marie-Aude Bonnardot¹, Jackie Hope¹

¹Geoscience Australia, Symonston, Australia

Geoscience Australia (GA) is committed to enabling a strong resources sector through its landmark Resourcing Australia's Prosperity initiative. A focus for this initiative is integrated and standardised geoscientific mapping to improve understanding of what lies on and beneath the land surface. National-scale surface and subsurface geological maps and derivative thematic maps that highlight geology of interest provide the framework needed to map Australia's onshore resource potential, including for critical minerals and strategic materials, thereby reducing exploration risk and accelerating new discoveries. Digital flagship products such as the national-scale Layered Geology of Australia and Alkaline Rocks Atlas of Australia are compiled from published datasets at a variety of scales and with geological information harmonised across state and territory borders. The 1:1 million scale Layered Geology dataset extrapolates Australia's surface geology beneath cover to produce seamless geology for five time slices. Geological units captured in these layers are attributed with rich information sourced from the Australian Stratigraphic Units Database. Augmenting these layers with depth points using GA's Estimates of Geological and Geophysical Surfaces database will add that critical third dimension and fundamentally change the exploration landscape, opening up that depth component and broadening the resource search space. Higher resolution products such as the Alkaline Rocks Atlas capture smaller scale units of interest, like alkaline igneous rocks, which are volumetrically minor but a significant source of critical minerals such as rare earth elements. Thematic maps like this can provide vectors to regions of potential mineralisation and are important inputs for national resource prospectivity assessments.