AIRBORNE GRAVIMETRY TAKES OFF IN THE WESTERN AUSTRALIA 'GENERATION 2' RECONNAISSANCE GRAVITY MAPPING PROJECT

SHD Howard[1], John Brett[2], Richard Lane[3], Murray Richardson[4], Stefan Elieff[5], Malcolm Argyle[6]*

Geological Survey of Western Australia, david.howard@dmp.wa.gov.au[1], Geological Survey of Western Australia, john.brett@dmp.wa.gov.au[2], Geoscience Australia, murray.richardson@ga.gov.au[3], Geoscience Australia, richard.lane@ga.gov.au[4], Sander Geophysics Ltd, selieff@sgl.com[5], Sander Geophysics Ltd, argyle@sgl.com[6]

In 1974, the Australian Bureau of Mineral Resources, Geology and Geophysics completed a 15-year systematic reconnaissance gravity survey of Australia with stations spaced at 11 km. The 1976 Gravity Map of Australia was a seminal product; half a century later, the data still provide the only coverage for substantial parts of the continent.

In 2005, the Geological Survey of Western Australia, supported by Geoscience Australia, commenced a program of regional ground gravity surveys with 2.5 km station spacing, a sixteen-fold improvement of resolution over the 'first generation' BMR data. In 2013, GSWA declared its aim of completing 'second generation' reconnaissance gravity coverage of WA by 2020.

In 2016, with 45% of the State yet to be surveyed in the north and east, and ground access issues slowing progress and making uniform coverage increasingly difficult, GSWA and GA undertook the first government-commissioned regional aerogravity survey in Australia, using the Sander Geophysics' AIRGrav system. The 38,000 line-km survey covering 84,000 km^2 in the East Kimberley was flown at 2.5 km line-spacing for compatible spatial resolution with GSWA's regional ground surveys.

We compare airborne with ground gravimetry in the context of the East Kimberley project and conclude that, for reconnaissance surveys: aerogravity costs now approach those of ground surveys; spatial resolution is equivalent; lower aerogravity precision is not a critical factor; and airborne and ground data can be merged seamlessly for interpretation.

Consequently, two new aerogravity surveys were undertaken over 264,000 km^2 of northern WA in the Tanami–King Leopold and Kidson regions.