As part of the Australian Government's Onshore Energy Security Program (2006-2011), Geoscience Australia (GA) has acquired magnetotelluric (MT) data along 12 deep crustal seismic reflection transects in Queensland, South Australia, the Northern Territory and Western Australia. These data, along with the seismic reflection, total magnetic intensity, gravity and geological data form the basis for multi-disciplinary investigations of energy and mineral potential and crustal architecture, providing pre-competitive information to industry and researchers. The MT projects, which total more than 500 stations over 3000 km in distance, have been undertaken by GA in collaboration with relevant state and territory geoscience agencies and The University of Adelaide. MT data were collected using AusScope instrumentation through ANSIR (National Research Facility for Earth Sounding) agreement and by a contractor. Survey acquisition parameters were optimised according to interpretations of the pre-existing geophysical and geological data. While processing, analysis and modelling of the MT data are ongoing, preliminary two-dimensional models inverted from the data provide subsurface electrical conductivity estimates from near-surface to the upper Mantle. It is often difficult to represent the complex electrical conductivity distribution with simple one or two dimensional models. The conductivity models provide complementary information to the multi-disciplinary interpretations based on the seismic data. A multi-disciplinary interpretation is demonstrated by data acquired in Queensland across the eastern Mt Isa region, in which the expression of a major structure occurs in all geophysical data.