The Paterson Airborne Electromagnetic (AEM) survey is a major component of the Northern Western Australia (WA) regional project in the Onshore Energy Security Program (OESP) at Geoscience Australia. During 2007 Geoscience Australia, through Fugro Airborne Surveys, will acquire a TEMPEST survey with broad line spacings (up to 2 km) in the Paterson Province, WA. The area to be covered comprises sections of the Yarrie, Nullagine, Paterson Range, Balfour Downs, Rudall, Tabletop, Gunanya and Runton 1:250 000 map sheets. The survey results will help to improve our understanding of the area’s geology and mineral potential by mapping the conductivities of different geological and hydrogeological units under cover. The dataset will contribute to interpretations regarding the presence of graphitic units in the Rudall Complex; the location of major structures; and the extent of Permian palaeovalleys and other regolith features. This poster outlines the survey specifications and objectives, and describes some of the geophysical modelling and processing methods being developed by Geoscience Australia.