The Cleve earthquake, South Australia, magnitude 4.8, is the largest natural earthquake in onshore Australia since 2007. It occurred in a thinly populated rural area, but caused no significant damage, even though it was felt in Adelaide 240 km away. Four portable instruments were quickly deployed, to measure the weak aftershock sequence that followed. Well placed portable instruments resulted in well constrained aftershock depths of about 24 km, the deepest reliably measured events in this area. The mainshock focal mechanism suggests a reverse fault with compression in a north-west, south-east direction. Activity on Eyre Peninsula is mainly confined to two areas. In the north-east a broad area of hills and highlands has recorded regular activity since European settlement over a century ago. The two largest have magnitudes over 5. In the south central part of the peninsula a number of swarms have been identified since about 1960, coinciding with the beginning of recording in South Australia. The 2010 earthquake was clearly in the north-east zone, with a non-swarm pattern. It suggests similarities between northeastern Eyre Peninsula, and the Flinders - Mount Lofty Ranges where most of the state’s events occur. There is a vague activity gap between the zones which approximately coincides with Spencer and St Vincent Gulf’s. The depth of this event is likely to have an effect on future hazard studies.