The effects of climate change on heat flow regimes in shallow bore holes in northern Australia are not well understood. Here we use a 700m borehole in the Proterozoic quartzite from the McArthur Basin, Northern Territory, Australia, which shows low temperature gradients, but high heat flow at depth. A thermistor probe temperature log was combined with Portable Electronic Divided Bar thermal conductivity measurements on core samples from ~30m intervals, saturated with water. The point-to-point (2, 4 and 10m intervals) average temperature gradient was multiplied by the thermal conductivity at each core sample point to derive heat flow. At 100m depth and deeper, the thermal gradient gradually increases from 8 K/km to ~12 K/km. Thermal conductivity is ~7 W/K m (quartzite) for most intervals. The resulting heat flow profile shows a steady increase from ~40 milliWatts per metre squared (mW/m²) at 100m depth to ~80mW/m² at 500m where it remains relatively steady for the remainder of the hole, consistent with approximately 1.5 K surface warming over the past 200-300 years. This heat-flow profile gives strong evidence of local climate warming, and adds data from an extremely remote location to the global climate record. A change of 40mW/m² over 400m depth highlights the importance of considering surface climate history in establishing true conductive heat flow regimes form shallow bore holes in Australia.