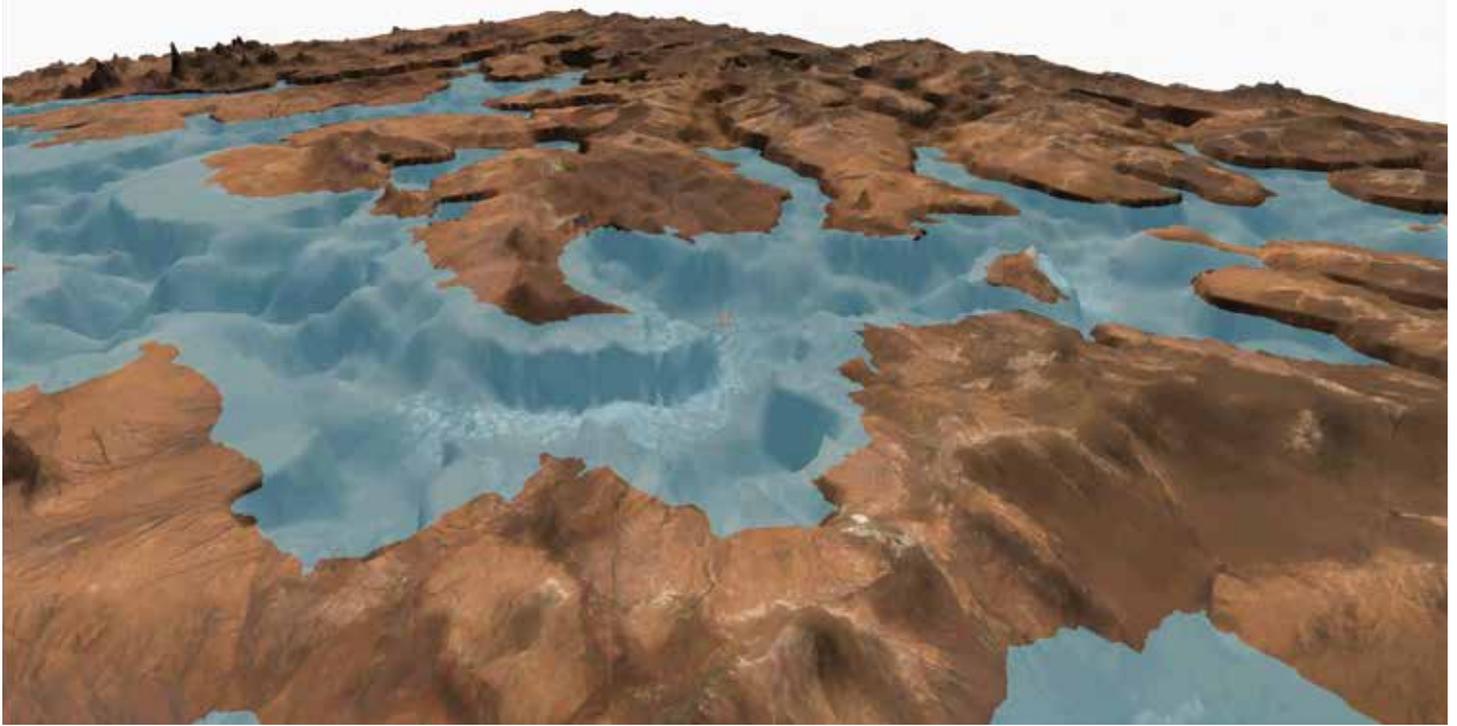


## Groundwater resources in palaeochannels of the Murchison



3D image of a Murchison palaeochannel

Palaeochannels, or ancient buried river beds, are one of the few reliable sources of water in arid zones of Western Australia like the east Murchison. The alluvial sands that fill the ancient palaeochannels store groundwater. Tapping into this groundwater will help mining companies, pastoralists and towns like Meekathara, Cue and Mt Magnet to thrive and grow into the future.

The Department of Water's \$1.9 million groundwater investigation, funded through Royalties for Regions as part of a regional water availability program, has pieced together the information needed to understand these hidden water resources.

The Murchison's palaeochannels were carved into the Archean bedrock of the Yilgarn Craton around 2.5 million years ago. Our project has discovered that they are quite thick compared to other systems in WA and can be up to 200 metres deep and up to a kilometre wide. In many cases water can be found just a few metres below the surface. Groundwater-dependent ecosystems across the region rely on this groundwater, and people already make use of some of the water.

We have compiled data from bores used by pastoralists and mining companies across the project area that show water quality ranges from drinking water standard in the north and generally becomes saltier to the south.

A specially designed airborne electromagnetic (AEM) survey was flown over approximately 52 000 square kilometres of palaeochannels adding to geological and groundwater quality information sourced from more than 2000 existing boreholes across the project area. The survey told us important information about the underground geology and groundwater of the area. Expert geophysicists from CSIRO have used processing techniques specifically designed for this project to transform the AEM results into three-dimensional images and maps of the palaeochannels that are the most detailed ever created for this area.

The maps will simplify access to this ancient groundwater for productive and sustainable use by showing exactly where the palaeochannels are, the depth to groundwater and the quality of the groundwater stored in the riverbed sands.

## By the numbers



### 52 000 Km<sup>2</sup>

The area mapped using AEM



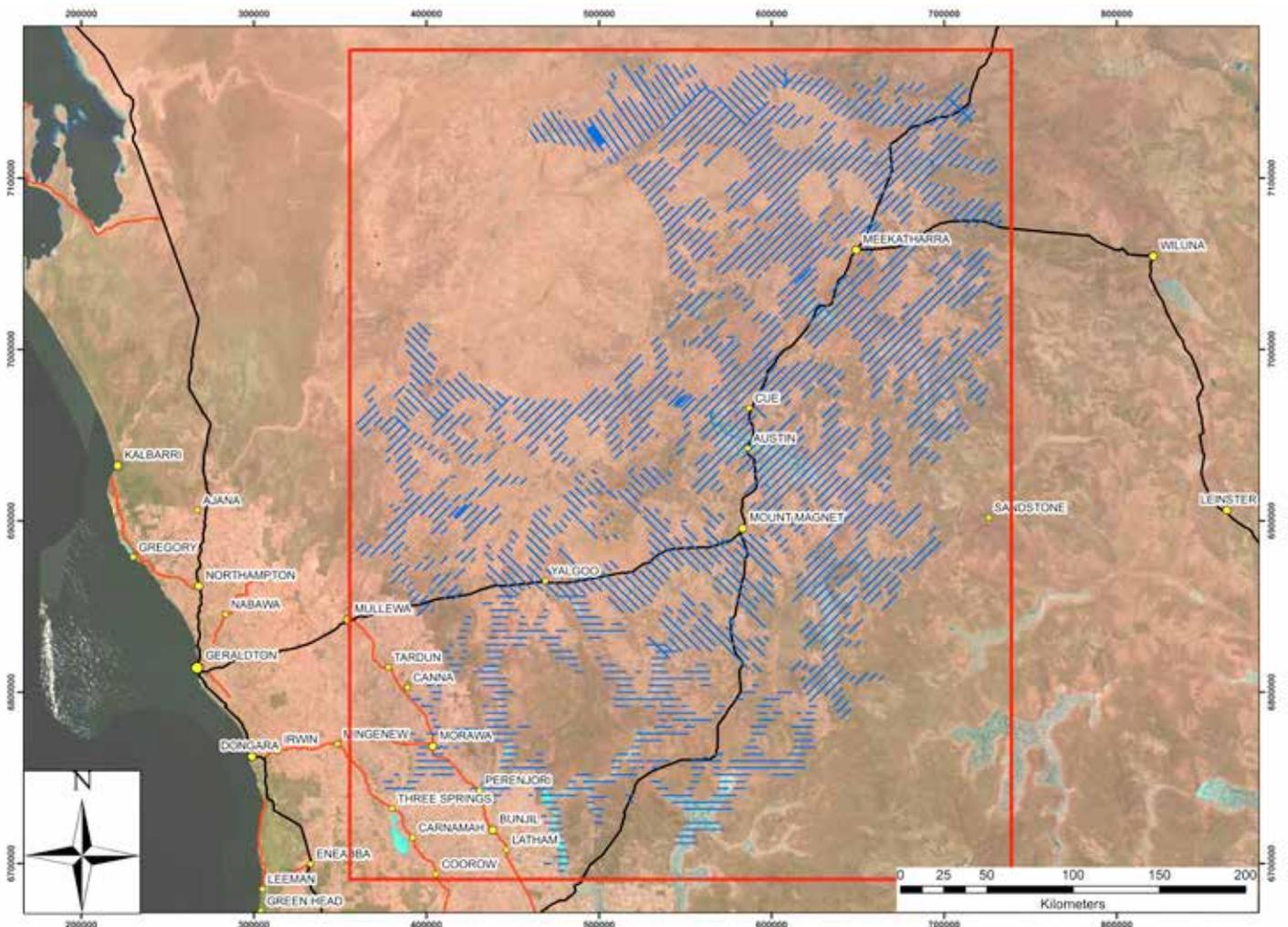
### 2.5 Million years

The age of the Murchison's palaeochannels



### 2000

The number of bores across the project area used for hydrogeological information. We collected water quality data from 857 of these.



Map of Murchison project area with AEM flight lines

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