Department of Primary Industries and Regional Development

GOVERNMENT OF WESTERN AUSTRALIA

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Mapping groundwater from a helicopter in the Beaufort River area

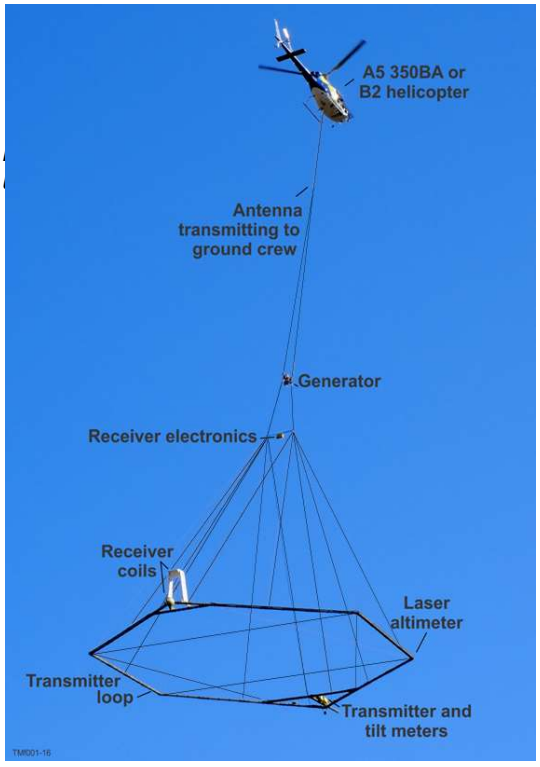
Department of Primary Industries and Regional Development (DPIRD) are working in partnership with Australia's national science agency, CSIRO, and local governments of Woodanilling, West Arthur and Kojonup to better understand the water resources of the Beaufort palaeochannel.

A helicopter will be used to conduct an aerial electromagnetic (AEM) survey in the area in May 2024. The survey will help to identify groundwater resources and suitability for agriculture and community use.

Beaufort River survey

The survey will be undertaken in May 2024 and will last for about 2 weeks. Updates will be made via Shire notices or social media.

A helicopter will fly low – about 60 m above the ground and will have a large circular frame underneath it. The helicopter tows the circular frame about 30-40 m above the ground. The helicopter will fly along parallel lines 300 m apart across the survey area (Figure 1).



What is AEM?

The scientific name of the survey method being used is airborne electromagnetics (AEM). The AEM system is carried by a helicopter and measures the changes in conductivity (an indicator of soil and water quality) of the ground.

The signals generated by the helicopter AEM system are weaker than those from mobile phones and TV antennas. AEM is non-invasive, which means that it does not change soil, groundwater or surface water in any way.

The community will hear noise from the helicopter while the survey is being done. The helicopter will keep approximately 300 m from houses and other structures.

Why use AEM?

A helicopter AEM system is a quick and cost-effective method to map the area as it can provide detailed information in a very short period.

AEM techniques were developed specifically for land and groundwater assessments. They have been used for over 30 years in the Wheatbelt to understand how salinity and groundwater vary beneath the landscape.

The AEM survey will be used to locate the Beaufort paleochannel. The data the helicopter collects will tell us more about the groundwater, so that both local and state government, and landowners, can better manage water in the region.

How do helicopter AEM systems work?

Helicopter AEM systems carry transmitter and receiver coils mounted in a frame that hangs beneath the helicopter. A weak electrical current goes through the transmitter coils. The current in the coil makes small, temporary currents in the ground, which in turn make small, temporary magnetic fields which are detected in the receiver coils hanging beneath the helicopter. If the groundwater changes (if it is deeper or if it is more saline), the magnetic field signals will change. Changes in the magnetic field across the survey help us to better map the groundwater and geology.

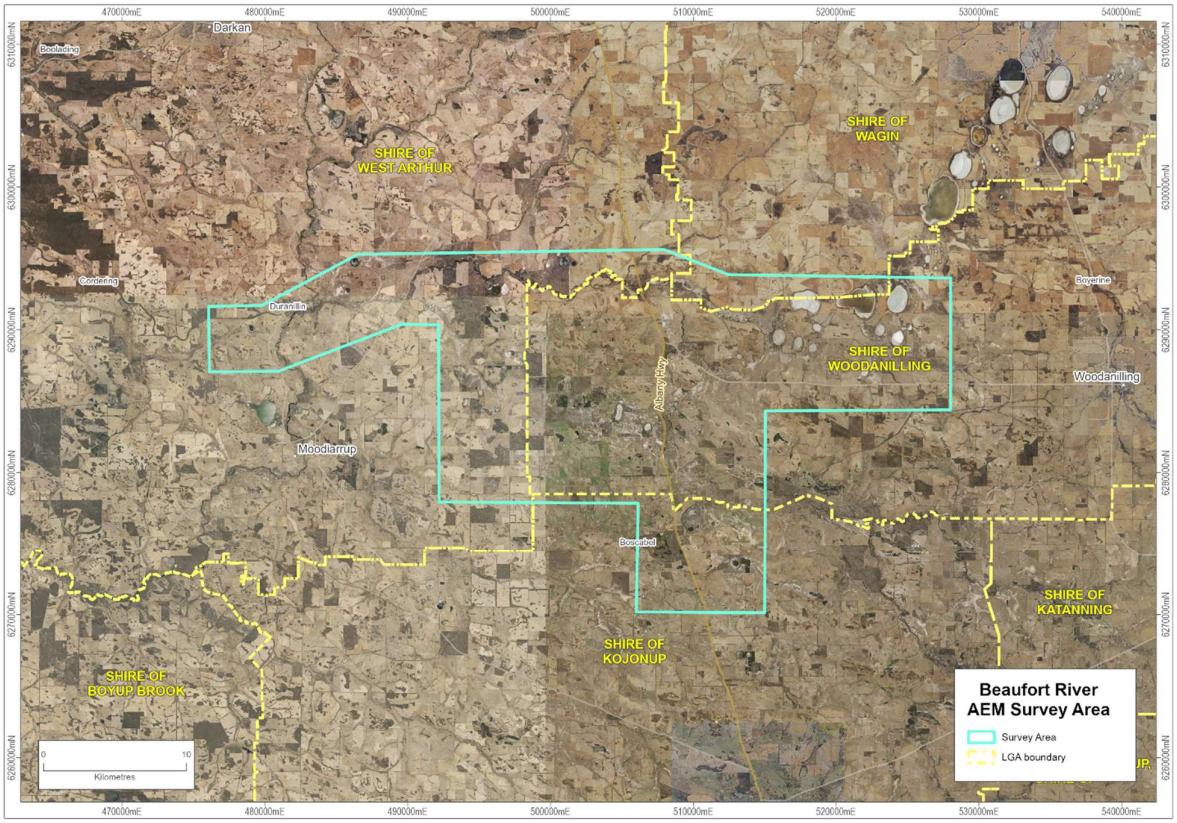


Figure 2 Proposed Beaufort River survey area

For further information

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