

# PROJECT DATA SHEET *Ord River Irrigation Area Stage 2 Expansion Groundwater Fauna Study*

## Client

Western Australia Department of Industry and Resources

## Location

Kimberley Region of Western Australia

## Year

November 2004 to June 2005

## Contact

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## The challenge

The M2 Project is part of a proposed expansion of the Ord River Irrigation Area (ORIA) and includes 30,500 hectares to be developed for irrigated agriculture, and over 44,500 hectares for conservation purposes.

The Western Australia Department of Industry and Resources (DoIR) is taking responsibility for ensuring that the development of new agricultural areas occurs with minimal impact on the groundwater environment.

Groundwater dependent animals (commonly referred to as stygofauna) are any fauna that live within groundwater systems, such as caves and aquifers. Stygofauna were found in the M2 Project area by the Western Australian Museum between 1994 and 1998. Irrigation in the ORIA potentially threatens stygofaunal populations through increases in water table levels, and subsequently increasing salinity.

Many species of stygofauna, especially obligate stygofauna, are endemic to particular regions or even particular caves. This makes them focal points for the conservation of groundwater ecosystems.

## The solution

Ecowise Environmental was commissioned by WA DoIR to collect baseline data, prior to development, so that any future impacts on the aquatic subterranean animals could be assessed.

Thirty pre-existing groundwater monitoring bores were sampled from all main hydrogeological units in the ORIA. Bore selection was largely based on geographical location and available hydrogeological information.

For each bore, dissolved oxygen (DO), pH, electrical conductivity, and water temperature were measured. Water samples were also collected for analysis of Total Nitrogen (TN), Total Phosphorus (TP), Dissolved Organic Carbon (DOC) and Total Dissolved Solids (TDS).

Samples were collected from 20 to 27 November 2004, prior to the wet season, using either a zooplankton net or a combination of a net and a specialised groundwater pump. Stygofauna taxonomy was based on both morphological and genetic characteristics.

## The outcome

A total of 23 per cent of the bores sampled contained stygofauna. Syncarids were the most common group collected and occurred in 63 per cent of bores. All species displayed highly localised distributions with four species occurring in only one bore.

This extensive survey will provide a substantial baseline on the composition and distribution of key stygofaunal species in the expanded Ord River Irrigation Area. Future studies during and post-construction will enable the impacts of development to be assessed on subterranean aquatic communities.