Project 3 - Influence of karst permeability on groundwater in the Port Campbell Limestone, western Victoria

Location: The project will be based at La Trobe University, Melbourne, Vic

Required area of expertise/background: An Honours or MSc degree in Hydrology, Hydrochemistry, Hydrogeology

Project: The Miocene Port Campbell Limestone underlies a large part of the western Victorian plains, but outcrops are limited because it is largely covered by basalts, clays and sands. The limestone has high intergranular permeability but there is also evidence for substantial karstic permeability: extensive doline fields and high transmissivity in ~3% of bores. Groundwater management of the limestone has ignored the influence of karst permeability on groundwater flow, despite the growing realization that this may be responsible for the aquifer's demonstrated resilience to drought and landuse change.

Detailed study of a small catchment has shown sufficient leakage of groundwater through a doline to cause the watertable surface to be a closed depression. The aim of this project is to extend these initial findings and determine the extent of karstic permeability in the limestone, in order to establish the influence this has on recharge and groundwater flow, in order to better manage the groundwater resource. The project will use a combination of bore and surface water data (including geochemistry), remote sensing (particularly LIDAR and Landsat) and geophysical techniques (particularly microgravity).

The project will be cosupervised by Greg Hoxley (Jacobs) and will be developed in conjunction with Southern Rural Water.

2017 RTP full time RTP Stipend Rates* ($26,682). Approximate annual top-up amount: $5,000

Principal Supervisor:

Dr John Webb – La Trobe University

Co Supervisors:

Mr Greg Hoxley - Jacobs