



## Riley Nicholson

**BEnvironmental Science & Environmental Engineering  
(Honours)**

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### Summary

As the often only permanent source of water in arid landscapes, springs are at the heart of many ecologically and culturally significant places. However, despite the significance of springs, they are declining globally due to the combined pressure of climate change, groundwater extraction and pollution.

My research focuses on the springs which sustain the Roper and Flora Rivers of the Northern Territory and their source aquifer, the Cambrian Limestone Aquifer. This aquifer is facing the imminent and intense pressure of the expansion of irrigated agriculture and oil and gas activities, potentially threatening these ecologically and culturally significant springs. To better understand these risks and support sustainable management of the water resource, my project seeks to improve understanding of the Cambrian Limestone Aquifer.

Environmental isotope sampling of springs, bores, and streams will be used to better understand connectivity, flow paths, and age of groundwater sources. Analysis of environmental DNA, water quality, and chemistry will also be used to improve conceptual understanding of the system. Sampling will be conducted alongside and informed by Traditional Owners; proper cultural protocols will also be followed. Ultimately, the synthesis of existing and collected data will improve the understanding of hydrogeological processes with a focus on the implications of groundwater extraction for springs.

### Research Expertise

- Groundwater Chemistry
- Groundwater Isotopes