Abstract
Floodplains worldwide are subjected to heavy degradation due to river regulation. As a solution, environmental water has been allocated for ecosystem restoration in floodplains. Assessment of ecosystem restoration has mostly been carried out using higher trophic level organisms, like fish and macrophyte populations. This ignores the lower trophic level organisms, which can cause drastic impacts on the environment. Current research addresses this gap by evaluating the changes occurring in phytoplankton populations with flow restoration through environmental watering.

Introduction
The Hattah Lakes floodplain system began receiving environmental water allocations from the Murray River in 2005. Excess growth of phytoplankton in these lakes upon water provision has been evident for many years, yet comprehensive investigations are lacking. The aim of this research is to investigate the spatio-temporal variability in phytoplankton species composition, physico-chemical parameters, and phytoplankton population dynamics throughout the watering and drying period and also their capacity to germinate from the sediment upon environmental water provision.

Methodology
• Building up the conceptual framework for the study
• Assessing the spatio-temporal changes in physico-chemical environment
• Investigating the spatio-temporal changes in population dynamics
• Evaluating phytoplankton capacity to germinate from the sediment with the provision of water
• Estimating phytoplankton germination response to increasing water depth

Discussion
The current managed flow regime of the Hattah Lakes system follows a sequential flooding pattern, where water flows from lake to lake. This could be either/both beneficial as well as detrimental to the ecology of those lakes closer to the end of the sequence. This can be explored through detailed studies on organisms that respond to slight changes of environment, such as phytoplankton. Basic knowledge in such areas can be used to inform improved management and maintenance plans for environmental watering of the Hattah Lakes system.