

# Quantifying trajectories for savanna habitat at Ranger uranium mine to inform revegetation closure criteria

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Ranger uranium mine, located within the World Heritage listed Kakadu National Park is currently scheduled to cease milling in 2021 and complete rehabilitation by 2026. The Environmental Requirements of the Commonwealth of Australia for the Operation of Ranger Uranium Mine (Ranger ERs), set out the Commonwealth's environmental protection conditions with which the company must comply. The Ranger ERs specify primary and secondary environmental objectives to be achieved during the life of the mine and following closure. Closure criteria are required to be developed to determine whether the objectives specified in the ERs are met and the development of these criteria are the current focus of rehabilitation and closure planning. The Environmental Requirements refer specifically to revegetation under the primary environmental objectives for rehabilitation:

“revegetation of the disturbed sites of the Ranger Project Area using local native plant species similar in density and abundance to those existing in adjacent areas of Kakadu National Park, to form an ecosystem the long term viability of which would not require a maintenance regime significantly different from that appropriate to adjacent areas of the park”

It is important that closure criteria and our understanding of analogue sites for the Ranger minesite, are developed in the context of temporal change in the landscape and disturbance of the site. There are both spatial and temporal components in the ER objective related to revegetation that need to be addressed and a landscape ecology approach is an appropriate framework to do this by. The aerial photography record provides a suitable dataset to analyse vegetation change and trajectories for the Ranger minesite and surrounds over a number of temporal phases spanning 1950-2016. This paper will present: (1) our approach to developing trajectories for savanna habitat in the region; and (2) a description of change using landscape metrics.