

Approach to water management


ERA

ERA has established water quality criteria, and extensive groundwater monitoring, which are components of the broader operational water management system.

Water generated during the life of the Project will be managed according to this established system. For example, groundwater from the underground mine will be incorporated into the pond water inventory and management system, which has sufficient capacity to accommodate the additional water.

Risks to environmental values associated with groundwater and surface water have been assessed. Mitigation measures to address these risks are based on independent studies, ERA's experience and existing environmental controls and systems.

The features of the existing Ranger mine that minimise water-related risks include:

- A demonstrated capability for the existing water management system at Ranger mine to manage water from various sources and of varying quality. This ensures a high level of protection for the downstream ecosystem and the environmental values of Kakadu National Park.
- The capacity for the water management system to accommodate mine water from the underground mine in both average and above average rainfall.
- The other existing process controls, management plans, standards, and standard operating procedures with proven effectiveness.

Potential risks/impacts to groundwater and surface water arising from the Project include:

- Additional drawdown of the Magela or Brockman borefields.
- Impacts to the shallow groundwater surrounding the underground mine.
- Contamination of aquifers from underground mining.
- Management of mine water from the underground mine.
- Solute loads from the underground mine that will report to Magela Creek after mine closure via movement through the surrounding rock, or more direct pathways such as through the backfilled decline or vent raises.

New design elements such as cased boreholes for paste delivery during backfilling; enhancements to the current underground water management system; and the impermeable nature of the backfill paste which restricts the transport of solutes to Magela Creek, provide additional confidence that impacts to surface and groundwater remain low.

Additional drawdown of the Magela or Brockman borefields represents less than approximately 8% and 4% of current monthly demand, respectively. An assessment of both borefields indicates that current operational practices and extraction rates are hydrogeologically sustainable.

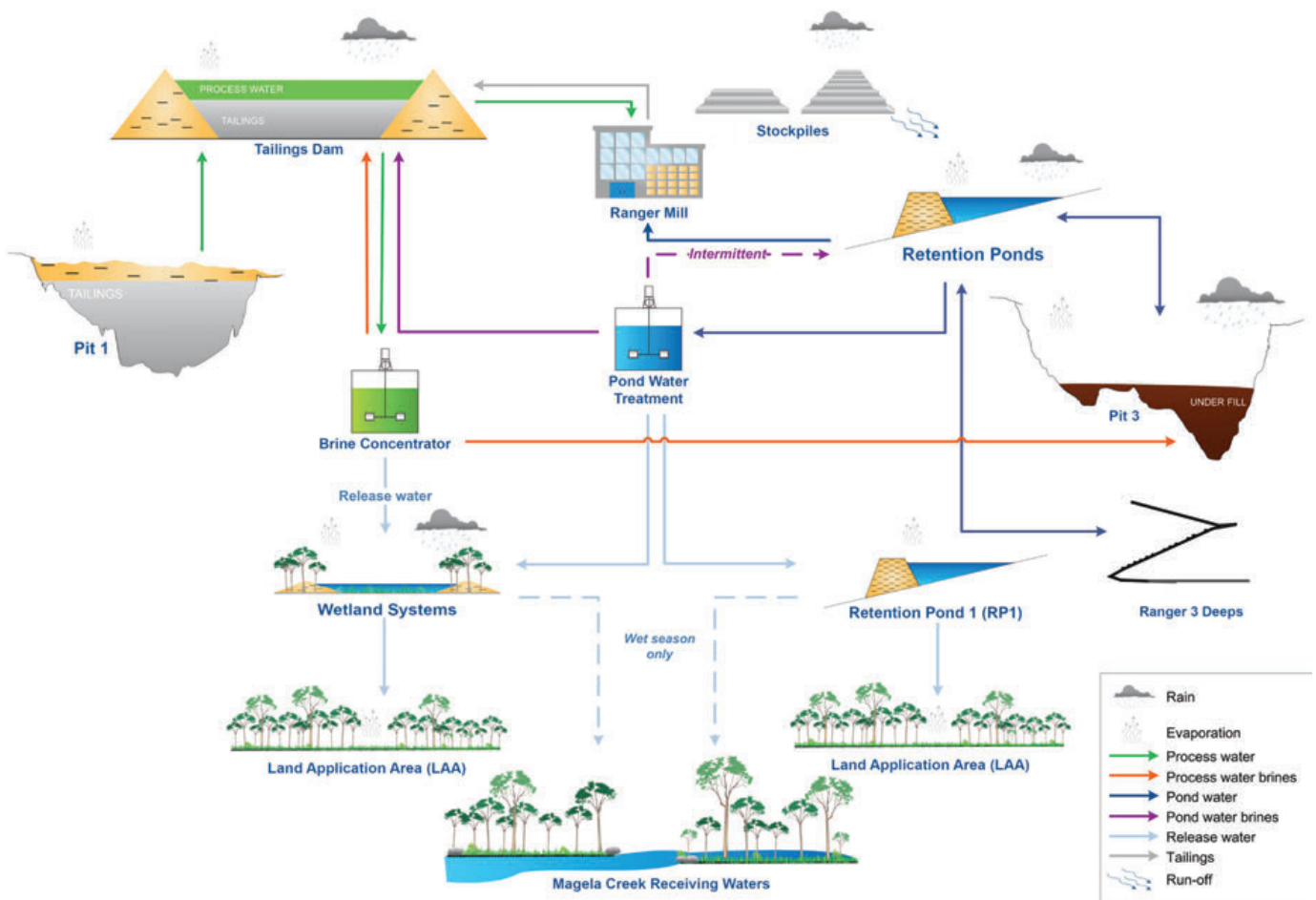
ERA has been effectively managing water at Ranger mine through a range of meteorological conditions for over 30 years, including extreme rainfall events (cyclones) and across a range of water qualities. ERA's water management model predicts that water generated by the Project can be fully integrated into the current water management system, without any material change in inventories, thus ensuring that the environment will remain protected.

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Fast Facts

- Mitigation measures to address risks to the environmental values associated with groundwater and surface water are based on independent studies, ERA's experience and existing environmental controls and systems.
- The Project will not alter the quality of water discharged to the downstream environment.
- Extraction rates (including Project requirements) from both the Brockman and Magela borefields are hydrogeologically sustainable.
- The paste to be used for backfilling underground areas is impermeable in nature, restricting the transport of solutes to the surrounding groundwater and Magela Creek



Elements of the water management system at Ranger mine

Further reading:

Refer to Chapter 8 of the *ERA Ranger 3 Deeps Draft Environmental Impact Statement*.