The Victoria River Water Resource Assessment

CSIRO has completed, for the Australian Government, an investigation of the opportunities and risks of water resource development in the Victoria River catchment in the Northern Territory.

The Victoria River Water Resource Assessment seeks to enable informed decisions relating to resource management and sustainable regional development in the Victoria catchment. In this Assessment, new baseline data were collected on the soils, water, broader environment and people who live in the Victoria catchment, which will assist regional-scale and on-Country planning.

The Assessment provides an independent source of fundamental information on the feasibility, economic viability and sustainability of potential water developments in the catchment.

The Victoria catchment

The climate of the Victoria catchment is hot and semi-arid. Rainfall is extremely variable between wet and dry seasons, and from year to year, which has major implications for evaluating and managing risks to development, infrastructure, and industry.

The Victoria catchment, although not pristine, has many unique characteristics and valuable ecological assets. It contains freshwater, terrestrial and marine habitats of great cultural, conservation and commercial importance.

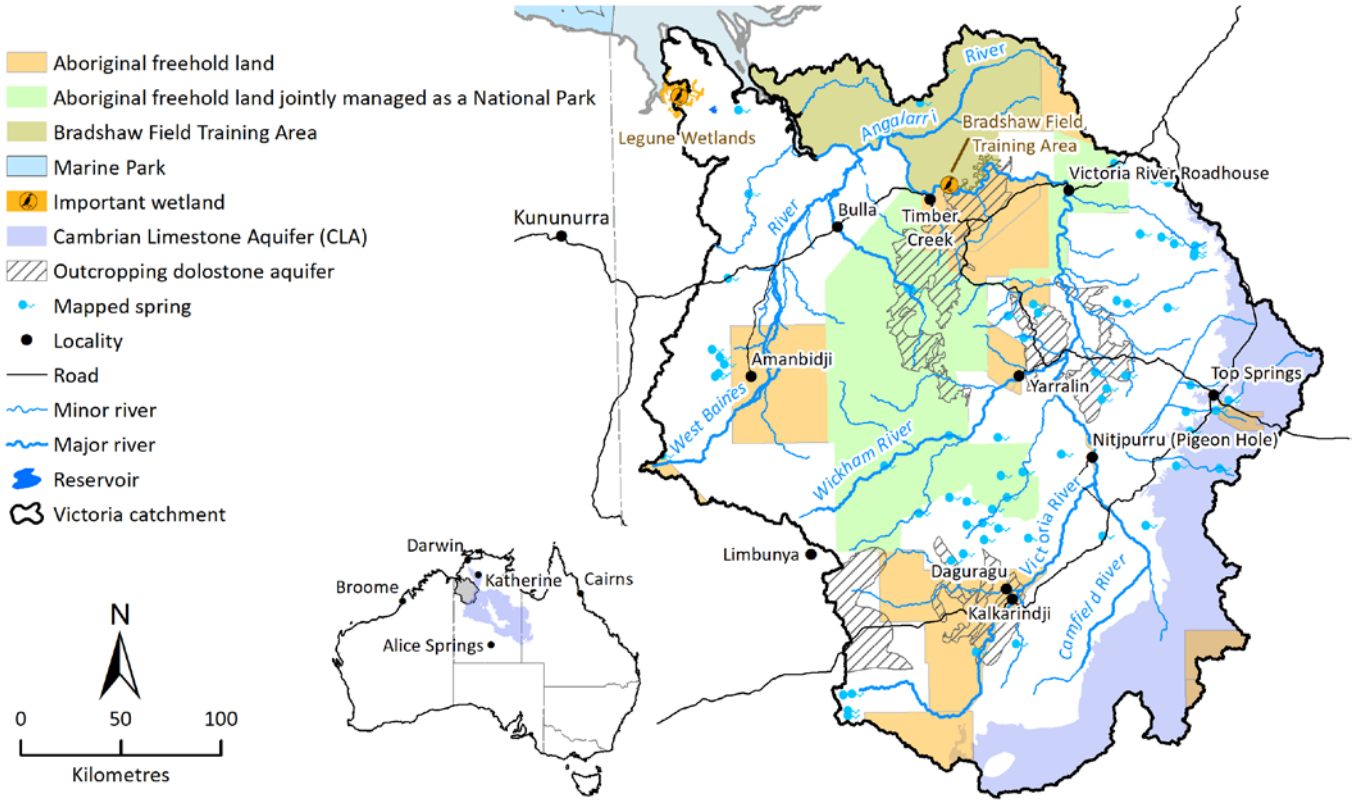
A significant proportion of the Victoria catchment is Aboriginal freehold land (31%, including Judbarra National Park). Indigenous Peoples have continuously occupied and managed the Victoria River for tens of thousands of years. They retain significant and growing rights and interests in land and water resources. This includes crucial roles in resource planning and as co-investors in future development.

The Victoria River is one of northern Australia's largest free-flowing rivers at approximately 560 km in length. It has the second-largest median annual streamflow of any river in the Northern Territory and flows into the Joseph Bonaparte Gulf in the Timor Sea – an important part of northern Australia's marine environment.

Overview of the Victoria catchment

- The Victoria River catchment has an area of approximately 82,400 km^2.
- The dominant land use by area is cattle grazing on native rangelands, which occurs across 62% of the catchment.
- Less than 100 ha in the catchment is irrigated agriculture.
- There are no active mines in the study area. Mining and petroleum licences cover 61% of the catchment. Known mineral occurrences include barite, copper, lead, and prehnite.
- The population of the catchment is approximately 1,600 people, of whom 75% are Indigenous.
- The catchment has no large towns and one of the lowest population densities in Australia. Communities in the catchment are ranked as being among the most disadvantaged nationally.
- The catchment has many unique characteristics and valuable ecological assets, and 16% of the study area is national park.
- Of the global climate models examined, 28% projected a drier future climate over the Victoria catchment and 47% projected 'little change'.
- Existing annual surface water extractions from the study area are approximately 152 GL/year: 150 GL are licensed from Forsyth Creek and 2 GL from the catchment of the Victoria River.

The Victoria catchment



What the Assessment found

The Victoria River catchment sits inside the Australian savanna biome – the world's largest intact tropical savanna. The study area contains rolling plains, free-flowing rivers, mesas, escarpments and plateaux with savanna, spinifex, grasslands and woodlands.

The Victoria River and its major tributaries are largely ephemeral. Most of the water in the main river channel during the late dry season is the result of residual flow from the previous wet season rather than groundwater. Large flood events can affect Indigenous communities, as well as transport links such as the Victoria Highway.

Though not pristine, the Victoria River has many unique characteristics and valuable ecological assets. The catchment includes wetlands of national importance and significant habitats for biodiversity conservation. It supports threatened species, including the nabarlek rock wallaby, Rosewood keeled snail, curlew sandpiper, sawfish and the northern river and speartooth sharks.

With irrigation, the Victoria catchment has a climate that is suitable for a range of annual and perennial horticulture, crops and forages. However, the opportunities and risks of development vary starkly in different parts of the catchment.

Water harvesting along the upper West Baines River could potentially extract up to 100 GL in 75% of years, depending on rainfall. This is sufficient water to irrigate up to 7000 ha of broadacre cropping on clay soils. Extracting this much water would reduce the Victoria River's mean annual discharge into the Joseph Bonaparte Gulf by less than 2%.

Groundwater from the Cambrian Limestone Aquifer along the eastern margin of the catchment and the dolostone aquifer west of Kalkarindji could potentially be used to irrigate up to 2000 ha of annual horticulture on sandy and loamy soils. Elsewhere in the catchment, opportunities for small-scale irrigated agriculture based on water harvesting are scattered along the Victoria and Wickham rivers.

If irrigated agriculture in the catchment reached a hypothetical 10,000 ha, it could generate up to $280 million in total economic activity and support up to 185 full-time-equivalent jobs. The actual nature and scale of any surface water or groundwater development depends heavily on community and government values. How any potential development proceeds in practice will have implications for environmental outcomes, including water quality. An outcome of no change in land use or water resource development is also valid.

THE VICTORIA RIVER WATER RESOURCE ASSESSMENT WAS PREPARED BY CSIRO FOR THE NATIONAL WATER GRID

Australian Government

National Water Grid®

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