STATE OF THE WATER RESOURCE

Katherine

2023-24

Department of
Lands, Planning and Environment

NORTHERN TERRITORY GOVERNMENT

This report provides information about the current status of the water resource, how water is shared and used, and the activities undertaken to manage water during 2023-24.

WATER CONTROL DISTRICT

DALY ROPER BEETALOO

PLAN AREA

5,860 KM²

MAJOR TOWN

KATHERINE

JAWOYN, DAGOMAN AND WARDAMAN COUNTRY

ACKNOWLEDGEMENT

The Department of Lands, Planning and Environment proudly acknowledges the Northern Territory's Aboriginal communities and their rich culture, and pays respect to the Elders past and present.

We acknowledge Aboriginal peoples as the Traditional Owners and custodians of the lands and waters on which we all rely.

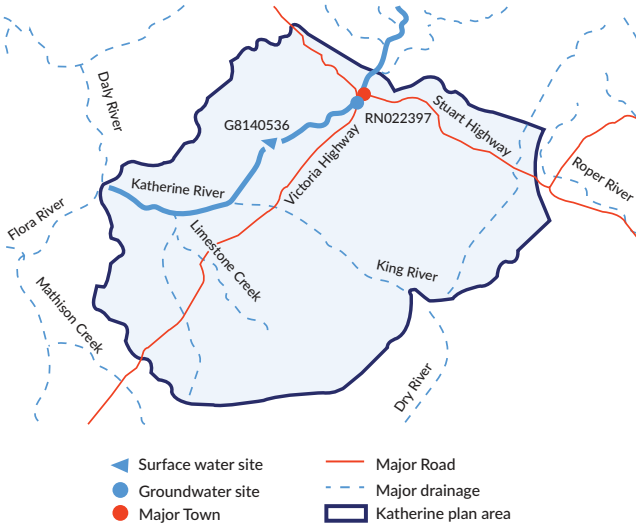
Front cover image: Katherine River

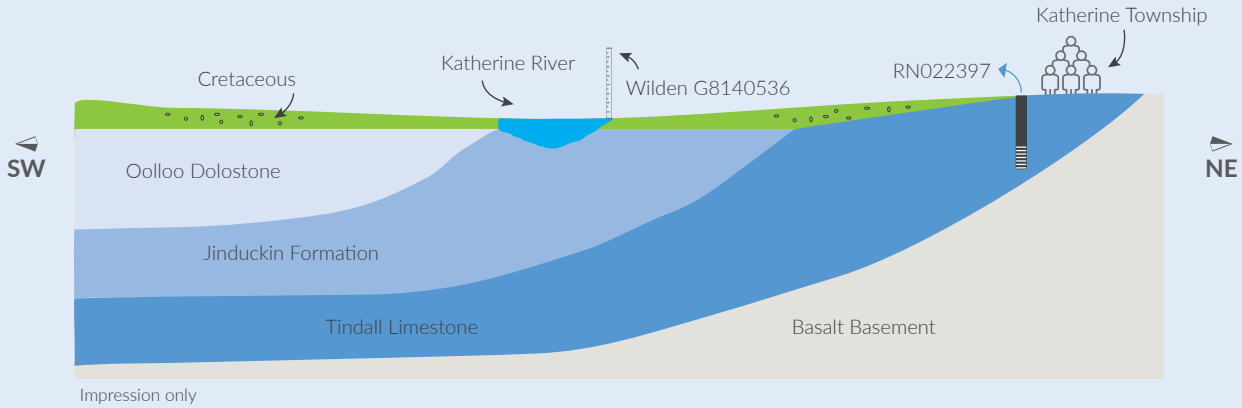
The Katherine Water Allocation Plan 2024–2026 (the plan) manages the Katherine Tindall Limestone Aquifer in the Daly Roper Beetaloo Water Control District.

The plan manages groundwater in the Tindall Limestone Aquifer within the Katherine River catchment boundary. The aquifer is strongly connected to surface water flow. Groundwater in the aquifer provides reliable good quality water[1], and bore yields are high[2], meaning this is an important resource for the community and the environment.

The aquifer lies less than 10 m below ground in some places, and up to 700 m below ground in others. The aquifer mostly sits beneath other aquifers in the region, including the Oolloo Dolostone and the Jinduckin Formation. The aquifer discharges into the river bed of the Katherine River and at springs, such as the Katherine Hot Springs.

The plan tells us how water should be shared between competing uses, and sets objectives for management. Water in the area is in high demand so it is important that water is managed effectively.





TINDALL LIMESTONE AQUIFER

AVERAGE ANNUAL RECHARGE
71,000 ML/YR

ESTIMATED SUSTAINABLE YIELD (ESY)
38,391 ML/YR

The department has an extensive understanding of the aquifer and surface water connectivity. The department maintains 51 monitoring sites in the plan area, including 41 bores and 10 surface water sites. All monitoring locations are visited each year, with the monitoring data used in an integrated groundwater and surface water model[3].

The model allows us to predict what might happen to the water resource under different climate and water extraction scenarios. To view monitoring data across the Northern Territory visit the water data portal[4].

1 Good quality indicates groundwater salinity less than 1000 mg/L

2 High yields are generally considered high when greater than 30 L/s

3 https://territorystories.nt.gov.au/10070/827500

4 https://ntg.aquaticinformatics.net

WATER THAT STAYS IN THE ENVIRONMENT

89,579 ML/YR

WATER FOR USE

38,391 ML/YR

1. **RURAL STOCK AND DOMESTIC**
(Unlicensed and estimated)

1,964 ML/YR

2. **PUBLIC WATER SUPPLY**
(Licensed)

4,076 ML/YR

3. **ABORIGINAL WATER RESERVE**

3,235 ML/YR

4. **ECONOMIC DEVELOPMENT**
(Licensed)

32,588 ML/YR

HOW WATER IS SHARED

The plan protects ecological environmental requirements by keeping the majority of the water in the environment. During wet years, 70 per cent of the river flow is reserved for the environment, which increases to 87 per cent of river flows being reserved for the environment during very dry years.

Visit our website to read about how announced water allocations[5] are made.

The plan determined that up to 38,391 ML per year can be taken sustainably (estimated sustainable yield). Drinking water will always be allocated first to ensure towns and communities have enough water supply. Provisions are also made for rural stock and domestic users which is unlicensed. These extraction volumes are estimated.

The management of unused licensed water entitlements has made the 3,235 ML per year available for the Aboriginal Water Reserve for Aboriginal economic development. Water is also available for other future economic development, however, no new water is granted for licensing until the plan is reviewed.

CLIMATE AND WATER

The aquifer in the plan behaves as a Top End resource, with distinct wet and dry seasons. Rivers in the Top End are characterised by high river flows during the wet season, with groundwater recharge typically occurring every year.

Find out more about how resources behave in the Top End compared to the Arid Zone[6].

The 2023–24 wet season has produced above average rainfall and river flows, resulting in increased recharge into the aquifer.

5 https://nt.gov.au/environment/water/management-security/water-allocation/announced-water-allocations

6 https://territorystories.nt.gov.au/10070/843257

RAINFALL AND RIVER FLOWS

Rainfall over the plan area predominantly falls in the wet season between November and April, and is largely influenced by monsoonal activity. The average rainfall of the district, based on more than 120 years of data[7], is 965 mm per year.

The 2023–24 season recorded 1,112 mm of rain at the Katherine Railway Bridge (G8140001) monitoring site.

River flows are closely related to rainfall in the plan area. Flows have been measured at the Wilden monitoring site (G8140536) on Katherine River since 2008. End of dry season flow is the most representative measurement of seasonal change in the river system. End of dry season flow at Wilden for the 2023-24 dry season was 191 ML per day.

The 'river flows' graph shows the predicted and measured flows for the last five years. In most years the department's model prediction is less than or similar to measured flows, showing a good understanding of the resource. The lower model prediction is likely to be due to licence holders using less than their full licenced entitlement.

RAINFALL

AVERAGE

965 mm/YR

2023–24 YEAR

1,112 mm/YR

RECORDED

RIVER FLOWS

MEASURED AT WILDEN MONITORING SITE

2023–24 PREDICTED

164

ML/DAY

2023–24 MEASURED

191

ML/DAY

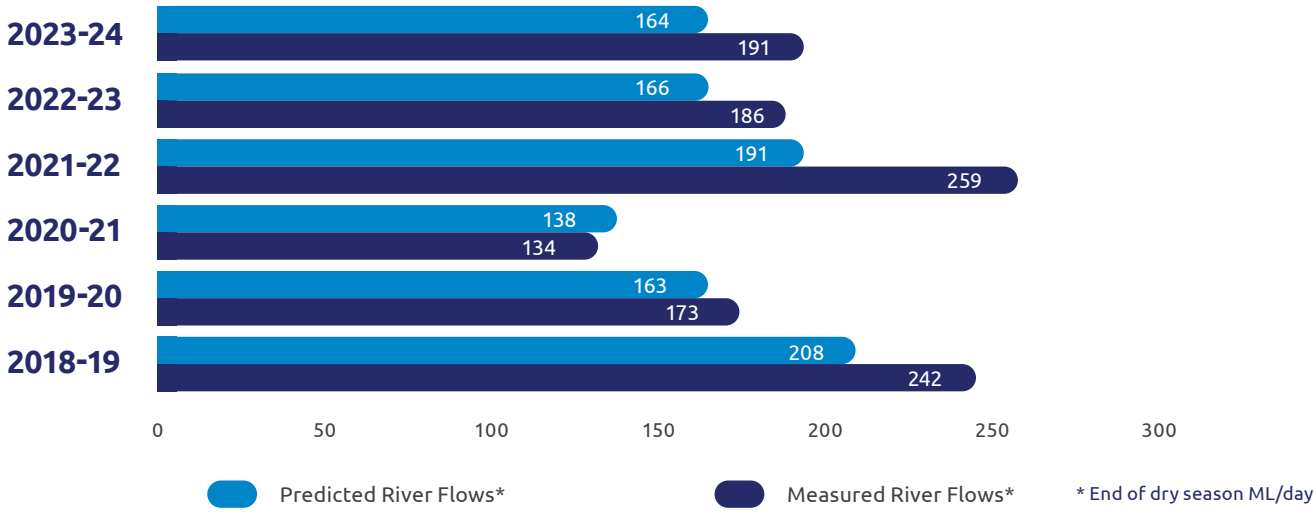
2024–25 PREDICTED

171

ML/DAY

mm = Millimetres
ML = Megalitres

KATHERINE RIVER FLOWS



7 Daily rainfall data since 1900 has been extracted from the SILO synthetic dataset, which is based on regional observations made by the Bureau of Meteorology (BoM) (https://www.longpaddock.qld.gov.au/silo/point-data/; Jeffrey et al., 2001). SILO data is often used in lieu of field measurements as it combines synthetic (estimated) data with observed (measured) data to create a continuous dataset for a location.

GROUNDWATER LEVELS

Groundwater level monitoring shows changes to the aquifer (water storage) in response to climate conditions and water extraction. Groundwater level is measured in depth, metres below ground (mBGL). Groundwater levels in the plan area are highly influenced by climate and generally rise in the wet season and fall during the dry season. The 2023–24 wet season resulted in an average rise in groundwater levels.

The groundwater levels graph shows groundwater levels responding to rainfall, at a site south of the Katherine River (RN022397). The 2023-24 wet season resulted in a rise in groundwater levels of 5.0m, compared with 4.9m in 2022-23.

GROUNDWATER QUALITY

Per- and poly-fluoroalkyl substances (PFAS) contamination was first detected on and around the RAAF Base Tindal, in November 2018. A PFAS treatment plant has been installed to remove PFAS from the drinking water supply.

More information on the groundwater quality monitoring can be found on the Department of Defence website[8].

GROUNDWATER LEVELS

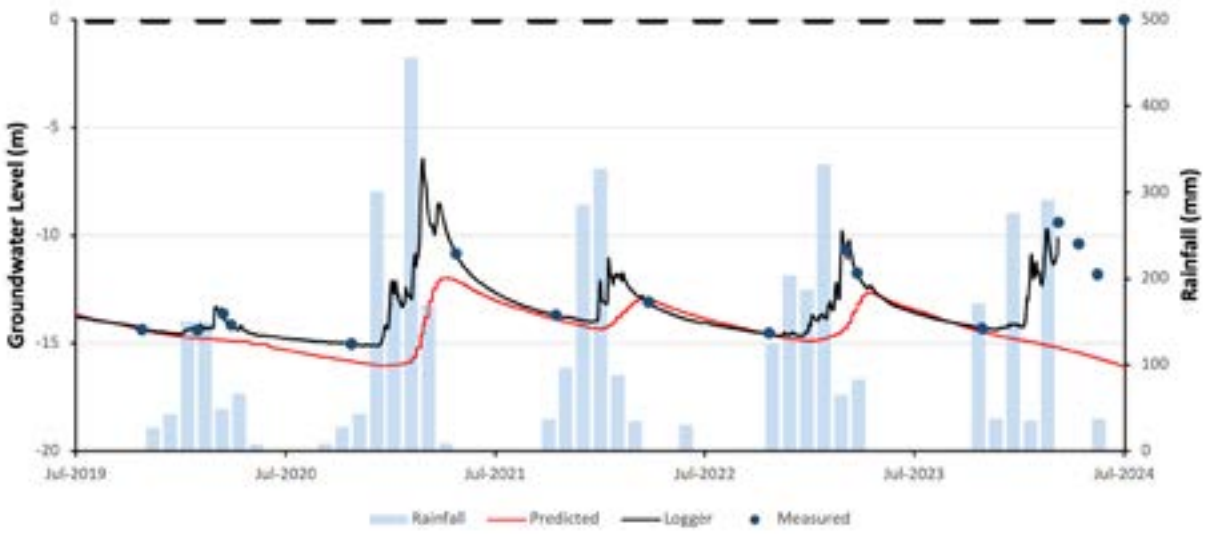
2023–24 PREDICTED
14.5 mBGL

2023–24 MEASURED
14.3 mBGL

2024–25 PREDICTED
16.4 mBGL

mBGL = Metres Below Ground Level

GROUNDWATER LEVELS



8 https://www.defence.gov.au/about/locations-property/pfas/pfas-management-sites/raaf-base-tindal

REGULATING WATER USE

All water available for economic development in the plan area has been licensed and as a result no new licences were granted this financial year. To see water licences in the plan area visit the water licence portal[9].

One licence was granted to allow for trade.

Overall, substantially less water is being used by water licence holders than has been granted which provides opportunities for water trading in the region.

Visit the website to find out more about how to trade water[10].

The department regulates water licence holders to ensure compliance with the conditions of the licence. Regular audits and checks of licence records are undertaken to identify breaches of licences.

Visit the website to find out more about compliance and enforcement[11].

WATER LICENCE

STATISTICS 2023–24

WATER EXTRACTION LICENCES	75
LICENCES APPROVED	1
LICENCES DECLINED	0
LICENCES SURRENDERED	0
VOLUME OF WATER LICENSED FOR ECONOMIC USE (ML/YR)	29,499

WATER COMPLIANCE

STATISTICS 2023–24

PER CENT OF LICENSED WATER USED	31
PER CENT OF LICENCES REPORTING WATER USE	99
PER CENT OF LICENCES METERED	97
LICENCE INSPECTIONS	20
WARNING LETTERS	0
INFRINGEMENTS ISSUED	1

WATER MANAGEMENT

Water management needs to adapt and improve over time. To do this, the plan identifies strategies and actions about the sharing of water.

During the life of the plan there has been surface water and groundwater monitoring regime to support the ongoing assessment and understanding of how the water resource has responded to extraction.

KEY PRIORITIES FOR THE FUTURE

- Security levels applied to licences in the plan area are progressively being phased out.
- Review of the current plan, with thorough stakeholder consultation, to inform the new Katherine Plan 2026-2036.
- Undertake groundwater dependent ecosystem mapping more explicitly to inform environmental water requirements.

9 https://nt.gov.au/environment/water/licensing/licensing-portal
10 https://nt.gov.au/environment/water/licensing/water-extraction-licence/water-trading
11 https://depws.nt.gov.au/consultation-publications/water-licensing-policies

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For more information visit
depws.nt.gov.au/katherinewaterplan