



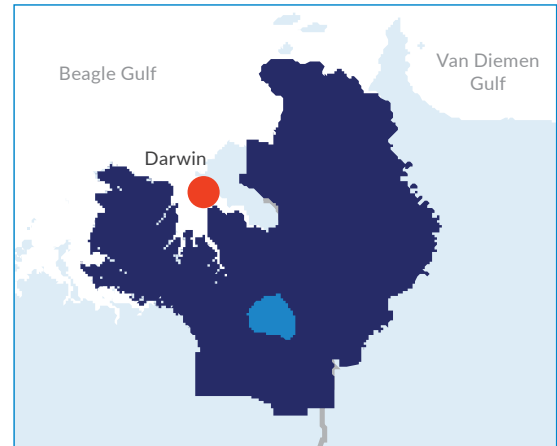
STATE OF THE WATER RESOURCE

Berry Springs

2023-24



This annual 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.



● Plan area ● Water control district

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.

WATER CONTROL DISTRICT DARWIN RURAL

PLAN AREA
105 KM²

MAJOR TOWN
**BERRY
SPRINGS**

**KUNGARAKAN
AND LARRAKIA
COUNTRY**

Front cover image: Berry Springs

The Berry Springs Water Allocation Plan 2016-2026 (the plan) manages the Berry Springs Dolostone Aquifer in the Darwin Rural Adelaide River Water Control District.

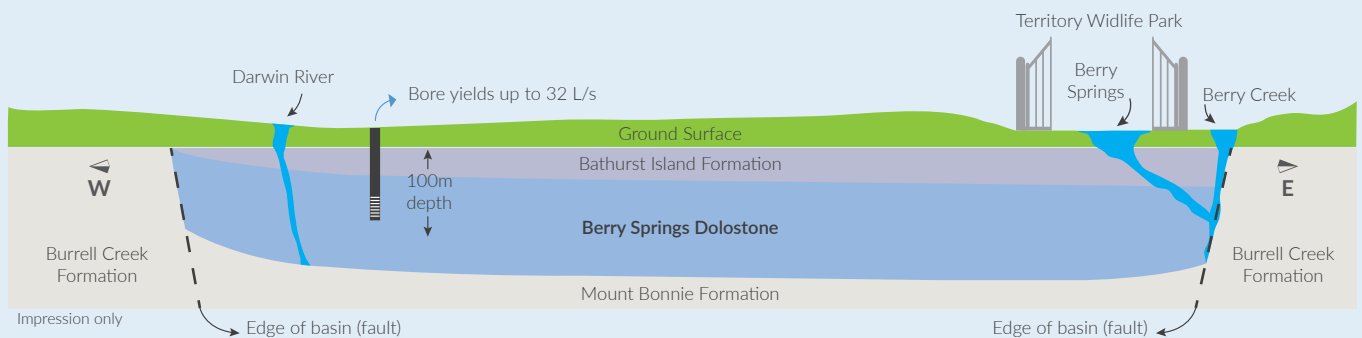
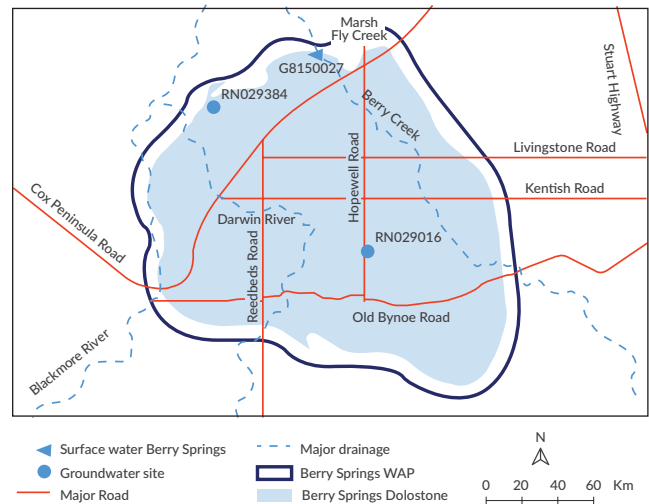
The plan manages groundwater in the Berry Springs Dolostone Aquifer. The aquifer is strongly connected to surface water flow. Groundwater in the aquifer provides reliable, good quality¹ water and bore yields are high, meaning this is an important resource for the community and environment.

The small oval shaped aquifer lies between 10 m below ground in some places, and up to 90 m in others. It discharges at several springs and maintains stream flow in Darwin River and Berry Creek over the dry season. Water from the aquifer sustains unique ecosystems such as monsoon vine thicket, places of cultural importance to the Kungarakana and Larrakia people, and flows at Berry Springs nature springs and park.

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.

A mid term in review of the plan has been completed with the water advisory committee².



BERRY SPRINGS DOLOSTONE



AVERAGE ANNUAL RECHARGE
44,600 ML/YR



ESTIMATED SUSTAINABLE YIELD (ESY)
8,920 ML/YR

The department has a good understanding of the water resource. The department maintains 20 monitoring sites, including 14 bores and 6 surface water sites in the plan area. All monitoring locations are visited each year, with monitoring data used in a groundwater model³.

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 portal⁴.

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

² <https://nt.gov.au/environment/water/management-security/water-control-districts/darwin-rural/berry-springs-water-allocation-plan>

³ <https://territorystories.nt.gov.au/10070/428025>

⁴ <https://ntg.aquaticinformatics.net>

WATER THAT STAYS IN THE ENVIRONMENT
35,680 ML/YR

8,920 ML/YR
WATER IS ALLOCATED

1 RURAL STOCK AND DOMESTIC
(Unlicensed and estimated)



1,005 ML/YR

2 PUBLIC WATER SUPPLY



0

3 ABORIGINAL WATER RESERVE
(Notional)



890 ML/YR

4 ECONOMIC DEVELOPMENT
(Licensed)



7,305 ML/YR



HOW WATER IS SHARED

The plan protects ecological environmental requirements by keeping the majority of water to the environment.

The plan determined that up to 8,920 ML per year can be taken sustainably (estimated sustainable yield).

There is no water allocated to public water supply in the plan because there is no reticulated water supply within the plan area.

Domestic water use is captured in the rural stock and domestic allocation which is estimated and is unlicensed.

As the region was already developed at the time of the plan being declared, water in the Aboriginal water reserve is notional and not available at this time. Work is being done to address this for a future plan. The remaining water is allocated to support economic development.

CLIMATE AND WATER

The Berry Springs Dolostone Aquifer behaves as a Top End resource, with distinct wet and dry seasons. During the wet season rainfall recharges the aquifer. As the aquifer fills it discharges excess water via springs to surface water maintaining flows in the creeks throughout the dry season. Find out more about how resources behave in the Top End compared to the Arid Zone [here](https://territorystories.nt.gov.au/10070/843257/0/0)⁵.

⁵ <https://territorystories.nt.gov.au/10070/843257/0/0>

RAINFALL AND CREEK FLOWS

The 2023–24 wet season has produced above average rainfall and river flows, resulting in increased recharge into the aquifer. The 2023-24 season recorded 1,837 mm of rain at the Berry Creek monitoring site at Marsh Fly Weir. This is above the average rainfall of 1,532 mm per year recorded at the same site.

Creek flows are closely related to rainfall in the plan area⁶. End of dry season flow is the most representative measurement of seasonal changes in the creek.

Each year at the end of the wet season the department uses the groundwater model to predict the flows in the creek for the forthcoming dry season.

The 'creek flows' graph shows the predicted and measured flows for the last five years. In most years the departments model prediction is similar to actual flows showing a good understanding of the resource.



RAINFALL

AVERAGE

1,532 mm/YR

2023-24 YEAR

1,837 mm
RECORDED



CREEK FLOWS

MEASURED AT MARSH FLY WEIR

2023-24

MEASURED

15.12

ML/DAY

2024-25

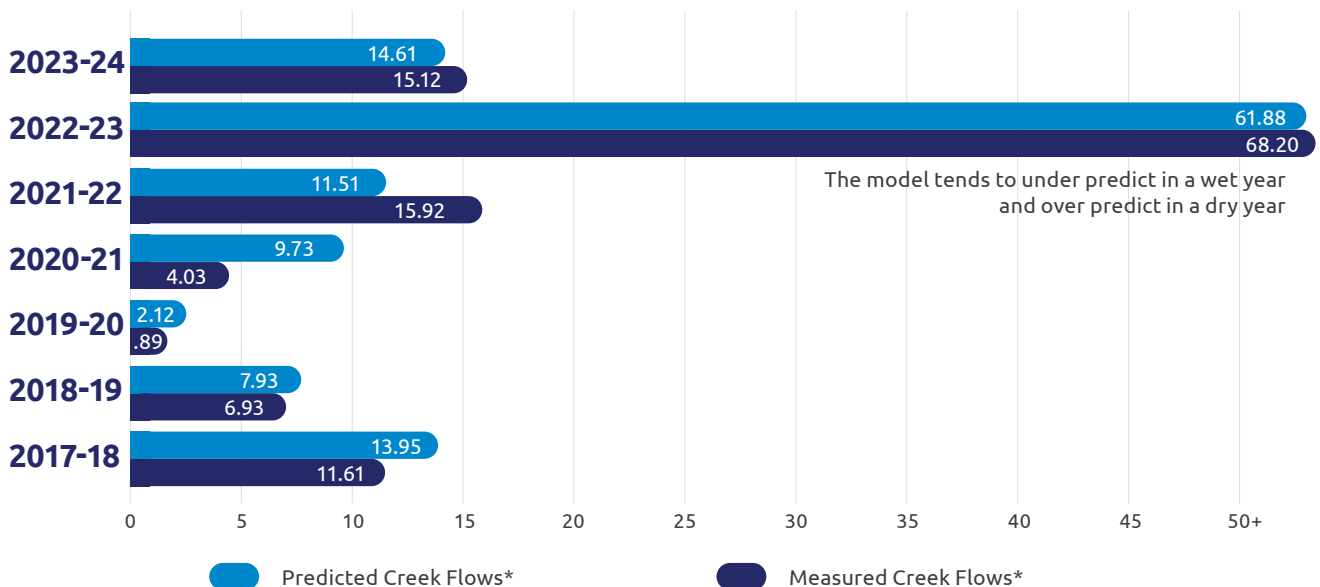
PREDICTED

14.61

ML/DAY

mm = Millimetres
ML = Megalitres

CREEK FLOWS



The model tends to under predict in a wet year and over predict in a dry year

* End of Dry Season ML/day

⁶ 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/>; coordinates: -12.75S, 131.0E; 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

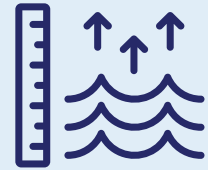
Groundwater level monitoring shows changes to the aquifer (water storage) in response to climate conditions and water extraction. Groundwater level is measured in depth, metres below ground level (mBGL). Water levels generally rise in the wet season and fall during the dry season. The 2022-23 wet season resulted in an average rise in groundwater level within the aquifer.

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 near Hopewell road (RN029016). The 2023-24 wet season resulted in a rise in groundwater levels of 10.2m, compared with 9.3m in 2022-23.

You can view groundwater levels for this plan area at any time throughout the year on an interactive platform dedicated to the Darwin Rural region called the Darwin Rural Area Groundwater Watch [here](#)⁷. Monitoring data is updated at the end of each month.

GROUNDWATER LEVELS

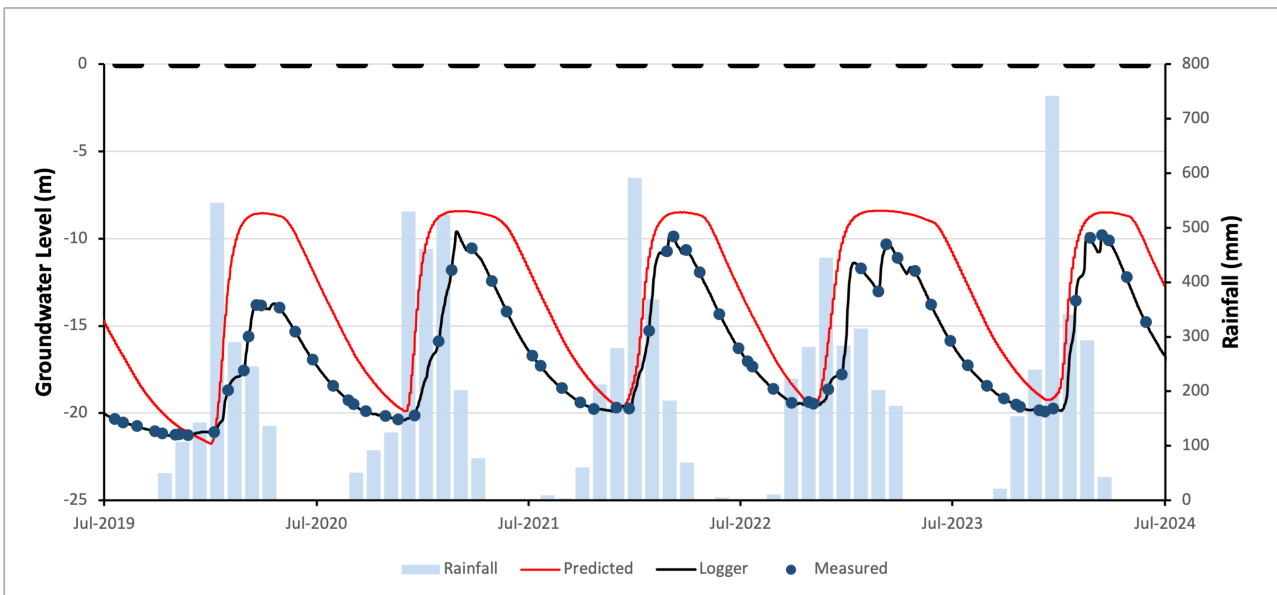
2023
MEASURED
19.7 mBGL



2024-25
PREDICTED
19.4 mBGL

mBGL = Metres Below Ground Level

GROUNDWATER LEVELS



7 <https://experience.arcgis.com/experience/65a8bc23c36048369f6492337e20b4b1>

8 <https://nt.gov.au/environment/water/licensing/water-extraction-licence/apply-for-a-water-extraction-licence/darwin-rural>

9 <https://nt.gov.au/environment/water/licensing/licensing-portal>

10, 11 <https://depws.nt.gov.au/consultation-publications/water-licensing-policies>

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.

Two new licences were granted, of which one was granted through streamlined arrangements that were previously exempt, more on the process [here](#)⁸.

To see water licences in the plan area visit the [water licence portal](#)⁹.

Overall, substantially less water is being used by water licence holders than has been granted, which provides

opportunities for water trading in the region. You can find out more about how to trade water [here](#)¹⁰.

The department regulates water licence holders to ensure compliance with the conditions of their licence. Regular audits and checks of licence records are undertaken to identify breaches of licences. Eleven inspections of properties carrying out activities that may require a water licence were undertaken in addition to licence inspections. You can find out more about compliance and enforcement [here](#)¹¹.

WATER LICENCE

STATISTICS 2023-24



WATER EXTRACTION LICENCES	57
LICENCES APPROVED	2
LICENCES DECLINED	0
LICENCES SURRENDERED	0
VOLUME OF WATER LICENSED FOR ECONOMIC USE (ML/YR)	8,735

WATER COMPLIANCE

STATISTICS 2023-24



PER CENT OF LICENSED WATER USED	29
PER CENT OF LICENCES REPORTING WATER USE	98
PER CENT OF LICENCES METERED	96
LICENCE INSPECTIONS	11
WARNING LETTERS	4
INFRINGEMENTS ISSUED	0

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. Key management actions taken this year are outlined below.

RECENTLY COMPLETED ACTIVITIES

- Midterm review report completed which considered advice from the department, the Berry Springs water advisory committee and public submissions. Review report available [here](#)¹².
- The Berry Springs 'Groundwater Watch' sign on Cox Peninsula Road was reskinned and is updated monthly, to inform the community about the current groundwater level.
- Both gauging stations on Cox Peninsula Road were upgraded to the 4G network to ensure continuity of telemetered data.

KEY PRIORITIES FOR THE FUTURE

- Investigate additional water management mechanisms to provide groundwater protection zones in the area during 2025.
- Complete groundwater dependent ecosystems probability map by 2025.
- The water advisory committee identified to install Aboriginal ecology signage at Berry Springs and Territory Wildlife Park by 2025.
- Darwin Rural Water Regulation Strategy 2023-26 at [here](#)¹³.

¹² <https://nt.gov.au/environment/water/management-security/water-control-districts/darwin-rural/berry-springs-water-allocation-plan>

¹³ <https://depws.nt.gov.au/programs-and-strategies/darwin-rural-water-regulation>



STATE OF THE WATER RESOURCE 2023-24
Berry Springs

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