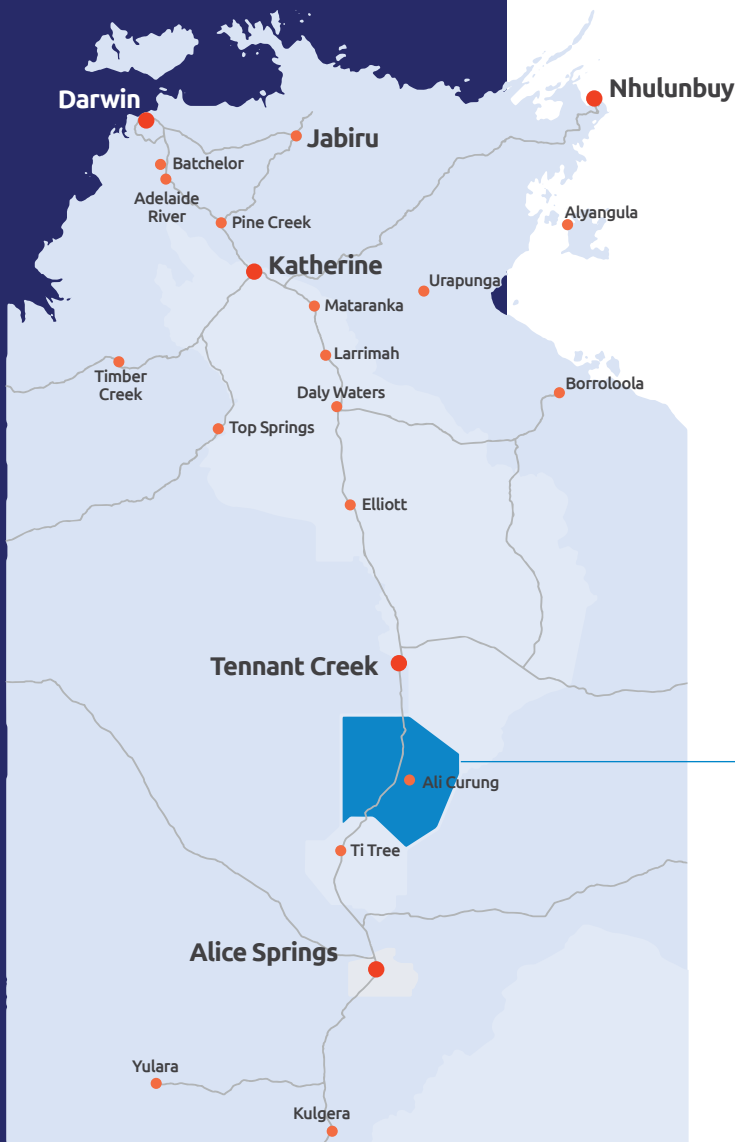


STATE OF THE WATER RESOURCE

Western Davenport

2023-24



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

WATER CONTROL DISTRICT

WESTERN DAVENPORT

PLAN AREA

24,500 KM²

MAJOR COMMUNITY

ALI CURUNG

ALYAWARR, KAYTETYE, WARUMUNGU, WARLPIRI, ANMATYERR AND WARLMANPA 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.

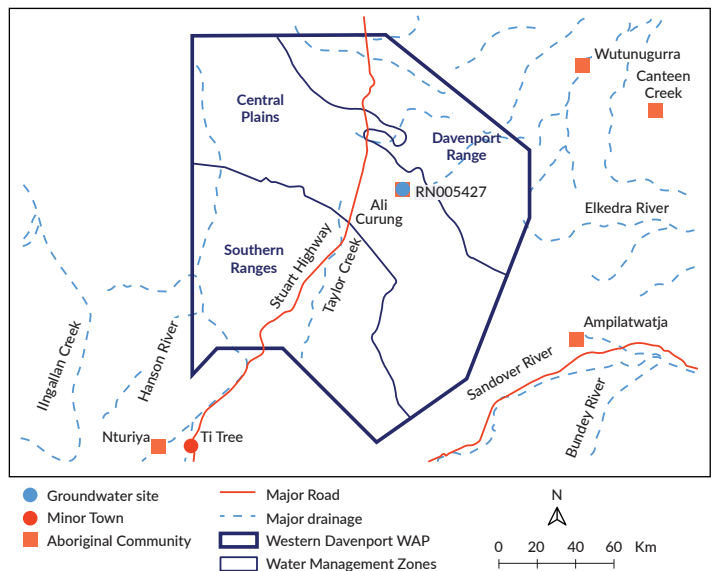
Front cover image: Ali Curung

The Western Davenport Water Allocation Plan 2024-2027 (the plan) was declared on 30 July 2024, following expiry of the previous plan in December 2022.

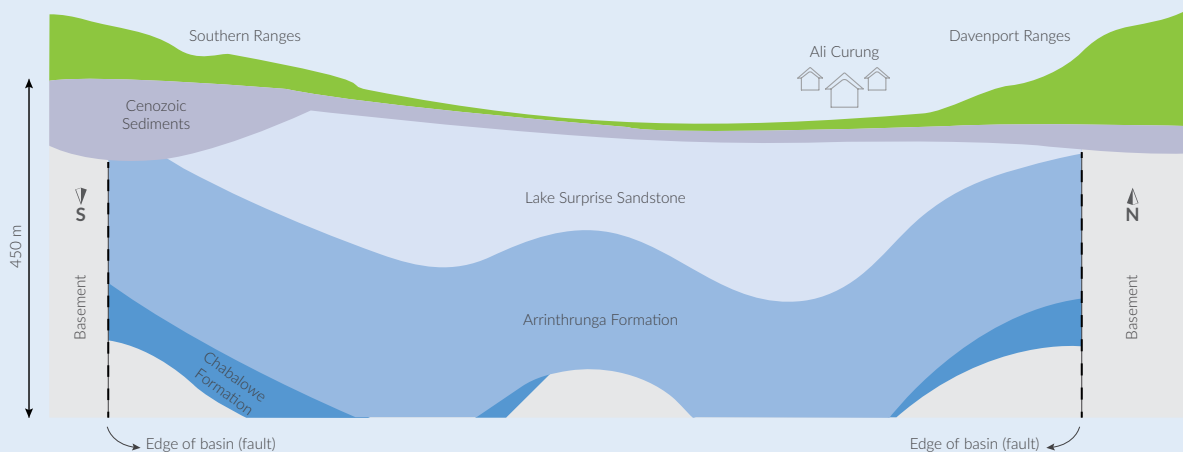
The plan has three water management zones each with different groundwater characteristics: the Davenport Ranges, Central Plains and Southern Ranges. The major regional and most productive aquifer system is the Central Plains which consists of a series of aquifers; namely the Cenozoic, Lake Surprise, Dulcie, Arrintringa and Chabalowe Formations.

The district was first identified for its potential as a commercial horticultural precinct through a soil and land suitability assessment for irrigated agriculture.

The plan tells us how water should be shared between competing uses and sets objectives for management.



Where groundwater lies close to the ground surface, it supports important Aboriginal cultural features and groundwater dependent ecosystems (GDEs). The likely distribution of GDEs has been mapped and management of the water resource will protect 70% of these sites from any impact of water extraction.



CENTRAL PLAINS MANAGEMENT ZONE



AVERAGE ANNUAL RECHARGE
96,000 ML/YR



ESTIMATED SUSTAINABLE YIELD (ESY)
67,700 ML/YR

The department has an extensive understanding of the Central Plains aquifer system, particularly in areas of high demand along the Stuart Highway. The department maintains 54 monitoring sites including 49 bores and 5 surface water sites in the plan area. All monitoring locations are visited each year, with the monitoring data used in a groundwater model¹.

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](#)².

¹ <https://territorystories.nt.gov.au/10070/858846>
² <https://ntg.aquaticinformatics.net>

WATER THAT STAYS IN THE ENVIRONMENT

146,951,000
ML



67,700* ML/YR
WATER IS ALLOCATED

1 RURAL STOCK AND DOMESTIC (Unlicensed and estimated)



983 ML/YR

2 PUBLIC WATER SUPPLY



565 ML/YR

3 ABORIGINAL WATER RESERVE



11,681
-19,666 ML/YR

4 ECONOMIC DEVELOPMENT (Licensed)



46,456 ML/YR

* includes a nominal environmental allocation within consumptive uses as a requirement of the Water Act 1992, section 22A(2), the majority of the water is retained in the environment for non-consumptive uses to maintain important ecological functions and for cultural purposes and values of water in the region.

HOW WATER IS SHARED

The plan protects ecological environmental requirements by keeping the majority of water in the environment. Approximately 95.6% remains in the system over a 100 year period, not accounting for recharge events that will also occur over this period.

The plan determined that up to 67,700 ML (0.05% stored volume) can be taken sustainably (estimated sustainable yield).

Drinking water will always be allocated first so towns and communities have enough water supply. Provisions are also made for rural stock and domestic users. Once this determination is made, water is allocated to support economic development in the region, including provisions for an Aboriginal water reserve.

HOW WATER IS STORED

There is a large amount of water stored within the Western Davenport basin, most of which is in the Central Plains water management zone.

The water in storage is replenished during recharge events from surface runoff flowing into the basin from the Davenport and Southern Ranges. Recharge occurs when surface water runoff forms floodouts, where standing water remains for days to weeks at a time. Below is a photograph of a floodout at Wycliffe Well after the 2022 wet season.



CLIMATE AND WATER

Aquifers in the plan area display characteristics typical of Arid Zone resources, with low annual rainfall averages and relatively high rates of evapotranspiration contributing to long periods of little to no groundwater recharge.

Significant rainfall events can result in recharge to aquifers at intervals of approximately 7–10 years, with surface flows from the surrounding Davenport and Southern Ranges dispersing to low-lying flood-out areas across the Central Plains region.

Find out more about how resources behave in the Top End compared to the Arid Zone [here](#)³.

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

RAINFALL

AVERAGE

316 mm/YR



2023-24 YEAR

568 mm/YR

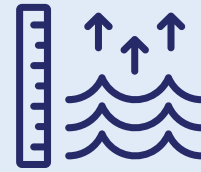
RECORDED
AT ALI CURUNG



GROUNDWATER LEVELS

2023-24
MEASURED

10.45 mBGL



2024-25
PREDICTED

9.90 mBGL

mm = Millimetres
mBGL = Metres Below Ground Level

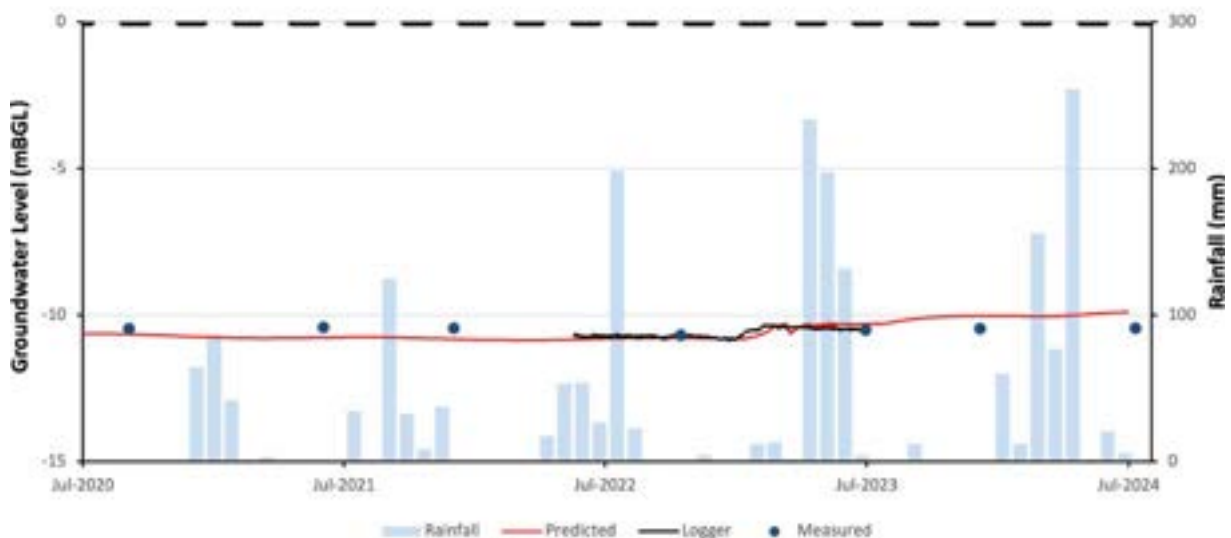
RAINFALL

Rainfall over the plan area is intermittent and highly variable, influenced largely by the dissipation of tropical monsoon depressions over the November to April period. The average rainfall for the district, based on more than 120 years of data, is 316 mm per year recorded at Ali Curung. The 2023-24 season recorded 568 mm of rainfall, well above the long-term average.

GROUNDWATER LEVELS

Groundwater level monitoring shows changes to groundwater storage in the aquifer in response to climate variables and water extraction. Groundwater levels are measured in depth (metres) below ground level (mBGL). Groundwater levels generally rise in response to significant rainfall events. The hydrograph below shows the depth to groundwater for the last 5 years in the Central Plains aquifer system, measured at RN005409 near Ali Curung. The standing water level here is around 10 mBGL. The 2023-2024 wet season saw a small groundwater level increase of 0.06 m at this location compared to the same time last year.

GROUNDWATER LEVELS



⁴ 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.

REGULATING WATER USE

The number of water extraction licences remained consistent, no additional water extraction licences were granted or declined in the plan area this financial year. To see water licences in the plan area visit the [water licensing portal](#)⁵.

Overall, substantially less water is being used by water licence holders than has been, which provides opportunities for water trade in the region. You can find out more about how to trade water [here](#)⁶.

A significant portion of water that has been issued under water extraction licences is subject to staged water extraction conditions. Staged conditions limit the amount of water that can be extracted to allow

monitoring and assessment of aquifer responses, before allowing more water to be extracted in subsequent years. To read more about staged licence conditions, please visit the policy located [here](#)⁷.

The graph of the staged water extraction licences forecasts the maximum amount of licensed water authorised to be taken each year considering the staged allocations, and the maximum authorised.

The department regulates water licence holders to ensure compliance with the conditions licence. You can find out more about compliance and enforcement [here](#)⁸.

WATER LICENCE

STATISTICS 2023–24



WATER EXTRACTION LICENCES	11
LICENCES APPROVED	0
LICENCES DECLINED	0
LICENCES SURRENDERED	0
VOLUME OF WATER LICENSED FOR ECONOMIC USE (ML/YR)	51,479
VOLUME OF WATER LICENSED FOR ECONOMIC USE (ML/YR), CONSIDERING STAGED ALLOCATIONS	8,809

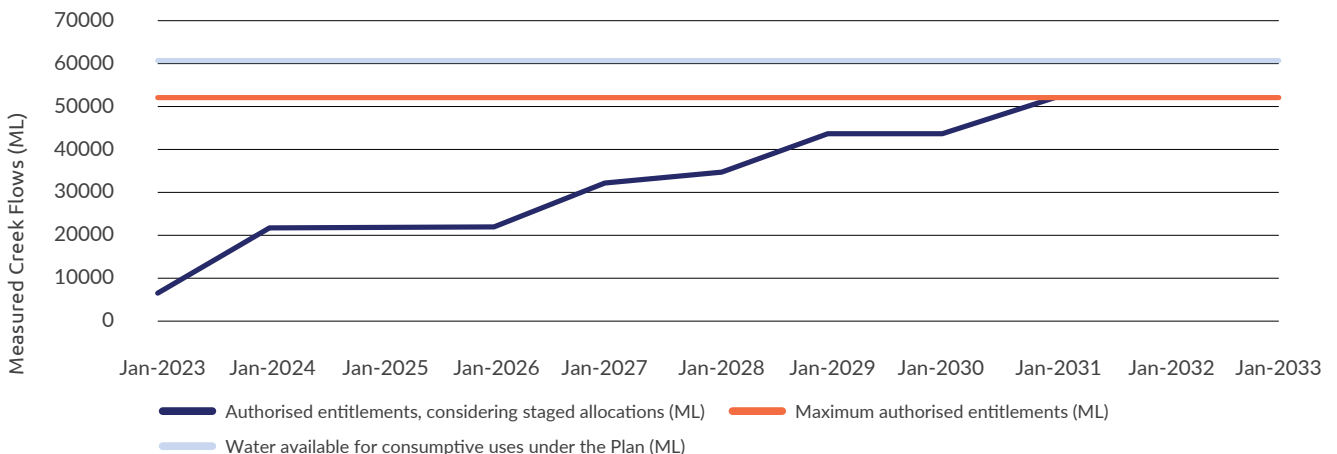
WATER COMPLIANCE

STATISTICS 2023–24



PER CENT OF LICENSED WATER USED	4
PER CENT OF LICENCES REPORTING WATER USE	64
PER CENT OF LICENCES METERED	73
LICENCE INSPECTIONS	0
WARNING LETTERS	1
INFRINGEMENTS ISSUED	0

STAGED WATER EXTRACTION LICENCES



⁵ <https://nt.gov.au/environment/water/licensing/licensing-portal>

⁶ <https://nt.gov.au/environment/water/licensing/water-extraction-licence/water-trading>

⁷ https://nt.gov.au/_data/assets/pdf_file/0006/1299939/staged-water-extraction-licence-guidelines.pdf

⁸ <https://depws.nt.gov.au/consultation-publications/water-licensing-policies>

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

The department has ongoing scientific studies to improve our understanding of how groundwater in the plan area interacts with the environment, including:

- 25 shallow monitoring bores have been drilled to provide continuous groundwater level monitoring for further investigations into recharge within areas of high GDE density.
- Site visits were undertaken in the Southern Ranges to verify GDE locations identified in satellite imagery.
- The groundwater monitoring programme was assessed and upgraded with data loggers installed at key locations.
- An investigation into micro fossils was undertaken on drill cores from deep investigation boreholes to refine the geological basin boundaries within the water control district.

KEY PRIORITIES FOR THE FUTURE

- Deep drilling investigation in the plan area (greater than 300 m below the surface). These bores will increase confidence in aquifer storage estimates and improve understanding of groundwater movement from recharge sites. Aboriginal Areas Protection Authority certificates ensure that the scientific work we undertake does not impact sacred sites.
- Recalibrating the groundwater model using the latest monitoring data and information from field investigations, to improve the accuracy and certainty of predictions.
- Sampling boreholes to identify the presence of stygofauna e-DNA.
- Collaboration with Traditional Owners and appropriate Aboriginal representatives to establish and maintain an Aboriginal reference group or water advisory committee to share knowledge of resources and ways in which Aboriginal people can be involved in water management.
- Testing baseline soil and water salinity and identifying key sites for ongoing monitoring to appropriately manage salinity risks by 2025.
- Completing the hydro-stratigraphy investigation to improve knowledge of aquifer inter-conductivity and hydro-geological processes by 2025.





STATE OF THE WATER RESOURCE 2023-24
Western Davenport



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