

Draft Mataranka Implementation Actions 2024-2034

For public consultation



Further information:

Please contact the Water Resources Division at:

Department of Environment, Parks and Water Security

Level 3, Goyder Centre

25 Chung Wah Terrace

Palmerston NT 0830

Email: waterresources@nt.gov.au

Phone: 08 8999 4455

Web: www.nt.gov.au/environment/water

Report no: 2/2024

ISBN: 978-1-74350-426-0

Citation: Northern Territory Government (2023) *Draft Mataranka Implementation Actions 2024-2034*.
Department of Environment, Parks and Water Security: Northern Territory, Australia.

Front page photo: Bitter Springs

Acknowledgement of Country

The Department of Environment, Parks and Water Security respectfully and proudly acknowledges the Northern Territory's Aboriginal people and their rich culture, and pays respect to the Elders past and present.

We acknowledge Wubalawun, Yangman, Mangarrayi and Jawoyn peoples as the Traditional Owners and custodians of the lands and waters of the Mataranka water allocation plan area, and Aboriginal peoples connected to the waterways of the lower Roper River.

We recognise the intrinsic connection of Traditional Owners to Country and value their ongoing contribution to managing the lands and waters. We support the need for genuine and lasting partnerships with Traditional Owners to better understand cultural connections, and we will work to establish lasting partnerships to manage water together, now and into the future.



You are licensed to use this publication on the terms and conditions set out in:
Creative Commons Attribution 4.0 International Public License (CC BY 4.0) at:
<https://creativecommons.org/licenses/by/4.0/legalcode>

If you do not agree to the terms and conditions you must not use this publication.

You are free to copy, communicate and adapt the licensed material, provided that you abide by the licence terms (including Attribution) and attribute the licensed material using the statement:

Supplied by the Department of Environment, Parks and Water Security.

© Northern Territory Government.

Contents

1	Overview	4
2	Risk and adaptive management	5
2.1	Risk assessment	5
2.2	Risk management	5
2.3	Adaptive management.....	6
3	Water monitoring program.....	7
3.1	Monitoring by the department	7
3.2	Monitoring by licence holders	7
4	Implementation actions.....	8
4.1	Actions related to water requirements of key environmental values.....	9
4.2	Actions related to key Aboriginal and other cultural values associated with water	10
4.3	Actions related to water for rural stock and domestic purposes.....	11
4.4	Actions related to water for public water supplies.....	12
4.5	Actions related to water for local Aboriginal economic development	13
4.6	Actions related to water for sustainable development in the region.....	13
5	Reporting	15
	Schedule A. Dictionary	16
	Schedule B. Abbreviations and acronyms	17
	Schedule C. Daly Roper Beetaloo water control district and Mataranka plan area.....	18
	Schedule D. Mataranka water management zones	19
	Schedule E. Mataranka water monitoring network	20
	Schedule F. Risk assessment methodology	24
	Schedule G. Risk and adaptive management	26
	Schedule H. Adaptive management framework.....	36

List of tables

Table 1	Actions and measures that contribute to: balancing the retention and preservation of key environmental values dependent on water with the overall benefits provided by the water resources	9
Table 2	Actions and measures that contribute to: water licence decisions consider Aboriginal and other cultural values dependant on water.....	10
Table 3	Actions and measures that contribute to: predicting and protecting water for rural stock and domestic purposes.....	11
Table 4	Actions and measures that contribute to: outcomes for public water supplies	12
Table 5	Actions and measures that contribute to: setting aside water to support local Aboriginal economic development	13
Table 6	Actions and measures that contribute to: providing access to water to support sustainable development for the benefit of the region.....	13
Table 7	Mataranka groundwater monitoring network.....	21
Table 8	Mataranka surface water monitoring network.....	22

1 Overview

About the water allocation process

Water allocation is the process of determining how much water must stay in the environment to protect ecological functions and environmental requirements and how much is available for drinking and regional economic priorities. Water allocation in the Northern Territory is undertaken at a regional level within defined areas known as water control districts, which are declared by the Minister for Environment, Climate Change and Water Security (Minister) by Gazette notice.

About the Mataranka plan area

The Mataranka plan is within the Daly Roper Beetaloo water control district (the district), an area of 330,000 km² (Schedule C). The district includes a number of basins and aquifers. Separate water allocation plans have been declared or are in development for different parts of the district.

The Mataranka plan applies to an area of approximately 9,282 km² extending about 190 km from north to south, and up to 70 km east to west shown in Schedule C (the plan area). The plan area includes the towns of Mataranka and Larrimah and the community of Jilkminggan. Pastoral leases cover about 40 per cent of the plan area, with approximately 36 per cent of the plan area recognised as Aboriginal land.

About this document

This document is one of three core documents prepared as part of the water allocation process for the plan area. This document references other documents and guidelines that may relate to the plan area, but which do not form part of the core documents. The three core documents are:

Mataranka Water Allocation Plan 2024–2034 (the plan). The plan is declared by the Minister under section 22B(1) of the *Water Act 1992* (Act)¹. The plan describes the estimated sustainable yield for the water resources of the plan area in three water management zones (Schedule D of the plan). The estimated sustainable yield is the volume of water that can be taken sustainably from the water resources to which this plan applies. The plan allocates that water amongst declared beneficial uses and provides for trading of water. The plan takes effect from the date in the gazette by the Minister and will remain in force for a period of ten years.

Mataranka Background Report 2024–2034 (the report) provides details on the information and processes that informed the plan, including available data and research on the surface water and groundwater resources of the plan area. It also describes the key environmental values of the plan area and their dependency on water resources, and the social and developmental context of the region, including existing water use and projections of future water demand. The report collates the information and knowledge regarding the plan area at the time of its preparation.

Mataranka Implementation Actions 2024–2034 (this document, the implementation actions) details how the requirements in section 34 of the Act with respect to the water resources of the plan area is fulfilled. It defines a continuous program for the assessment of water resources in the plan area, including the investigation, collection and analysis of data concerning the occurrence, volume, flow, characteristics, quality and use of water resources. That program is described within the document as a series of implementation actions which includes a body of research, monitoring and analytical work.

The Controller of Water Resources must take into account any water allocation plan applying to the area in question when making a decision referred to in section 90(1) of the Act. The Mataranka 2024-2034 Background Report, Implementation Actions and other factors may be taken into account, where relevant to the decision.

¹ <https://legislation.nt.gov.au/Legislation/WATER-ACT-1992>

2 Risk and adaptive management

Overview

The combination of risk management with adaptive management ensures that water resources are managed in a sustainable and resilient manner over the long term, and that risks are effectively managed to maintain the health and productivity of natural ecosystems and human communities. Both approaches recognise that there is inherent uncertainty and complexity in natural systems, and that ongoing monitoring and adjustment is needed to effectively manage risks and maintain water resource resilience.

Risk management typically involves identifying and assessing potential risks to the water resource, such as water availability, or changes in hydrological patterns due to climate change. Actions are then developed and implemented to reduce the likelihood or impacts of these risks. Adaptive management is a complementary approach that recognises that there is often uncertainty and complexity around the effectiveness of actions taken, and that continuous learning and adjustment is needed. Adaptive management involves the ongoing monitoring and assessment of the effectiveness of actions, and the development of new actions as needed based on new information and changing conditions.

The objectives of water sharing in the plan are used to guide the development, implementation, monitoring and adjustment of actions to ensure these remain effective over time and meet community expectations.

2.1 Risk assessment

The risk assessment process ensures that water resources are allocated in a sustainable and resilient manner. It helps to identify potential risks to the water resource, which enables the development of actions to mitigate them, ensuring that water resources are available for future generations. The risk assessment process involves the identification of hazards, risk analysis and the identification of appropriate actions to mitigate and control the risks.

The primary risks to groundwater resources are associated with changes in groundwater recharge and water availability; reduced discharges to surface water sites, rivers and springs; reduced water quality, and the impacts of greater climate variability. Groundwater levels are influenced by the amount of rainfall and recharge, the amount of water that is used and from where the water is extracted. Water quality is influenced by the inherent characteristics of the resource, how the land is used and from where water is extracted. Water users also bear the risk of any reductions to water availability resulting from seasonal or long-term changes in climate.

The risks identified through the water planning process and development of the water allocation plan reflect the current knowledge and understanding of the water resource, which will improve over time and enable more focused management actions to be developed.

The risk assessment methodology is shown in Schedule F, which provides a description of the qualitative measures of likelihood, consequence and risk rating categories that were used to determine the risk.

2.2 Risk management

The detailed assessment and management of the key risks to the water resource are shown in Schedule G. This outlines the actions that are currently being implemented to reduce the residual risk, as well as further actions that will be implemented to reach the target risk.

This process involves defining the key events and hazards that impact the water resource:

- a) groundwater levels decline more than acceptable levels
- b) water quality declines to unacceptable levels
- c) surface water flows and discharges decline more than acceptable levels
- d) water is not used.

The objectives of water sharing in section 3.2 of the plan are used to guide the assessment of risks in terms of the causes and impacts. The risk assessment methodology is applied to each objective to define the current residual risk with the existing controls in place to manage the resource. To lower the risk level, additional actions are applied which further reduce the likelihood or consequence of the hazard occurring once the actions are completed.

2.3 Adaptive management

Combining risk management with adaptive management enables a proactive approach to managing risks, while also being flexible and responsive to changing conditions.

Adaptive management provides an iterative process that monitors resource response to water use and actions, and uses this information to improve future actions to meet the objectives of water sharing in the plan.

Schedule H shows the steps and relationships in the adaptive management framework for the management of the resource. This means that the actions will be implemented and monitored over time to assure their effectiveness. The outcome of monitoring may result in refining the actions, implementing new ones, or discontinuing those that are not effective.

The water monitoring program is critical to adaptive management and an overview of this program is provided in section 3 of this document.

3 Water monitoring program

Overview

Consistent with section 34 of the Act, a continuous program for the assessment of water resources of the Territory is required, including the investigation, collection, collation and analysis of data concerning the occurrence, volume, flow, characteristics, quality, flood potential and use of water resources.

This section describes the water resource monitoring program undertaken by the department to inform management of the water resources in the district. The monitoring is informed by the risk assessment process and underpins adaptive management to maintain the health and productivity of natural ecosystems and human communities. This monitoring is complemented by monitoring undertaken by licence holders.

3.1 Monitoring by the department

The department delivers a continuous monitoring program to manage the water resources in the plan area. This monitoring network includes both discrete and time-series data from a series of groundwater monitoring bores, as well as surface water gauging sites that measure water flows in the wet and dry season.

The monitoring program is reviewed annually and includes:

- water level monitoring at 31 groundwater sites
- water flow monitoring at 22 surface water sites (within and downstream of the plan area).

Data collected under the monitoring program is available on the department's Water Data Portal².

The Mataranka water monitoring network is shown in Schedule E.

The purpose of the monitoring program is to:

- ensure spatial coverage consistent with the significant water extraction areas
- monitor groundwater level trends and surface water flows, which will be used for model calibration
- ensure good temporal coverage through biannual site visits and the use of loggers
- understanding of groundwater and surface water connectivity, including springs
- verify that water resources are responding as predicted
- inform adaptive management actions including announced allocations in North and South Mataranka management zones.

Priorities for the future expansion of the monitoring network include:

- installing and monitoring of additional surface water sites
- establishing an ongoing water quality sampling program.

3.2 Monitoring by licence holders

The department monitoring program is supported and complemented by the water monitoring conducted and reported by licence holders to the department as a condition of their water licences.

² <https://water.nt.gov.au/Data>

4 Implementation actions

Overview

This section outlines the actions being implemented as part of the adaptive management cycle, with continuous monitoring, evaluation and adjustment to ensure they remain effective over time.

These implementation actions address the key risks to the water resource and are described in terms of their contribution to the objectives of water sharing in the plan. As water is used in the district, more specific triggers may be defined to measure and evaluate the actions.

The implementation actions, measured through key performance indicators (KPIs), are shown in Tables 1-6 with a dictionary in Schedule A and abbreviations defined in Schedule B.

4.1 Actions related to water requirements of key environmental values

Table 1 Actions and measures that contribute to: balancing the retention and preservation of key environmental values dependent on water with the overall benefits provided by the water resources

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
3.2.1a There is an improved understanding of groundwater and surface water resource characteristics and environmental values	4.1.1 Improve knowledge of wet season eco-hydrological requirements through high resolution topographic data for floodplain areas (funded by NWGA)	Project completed, report published	DEPWS WRD	2024-2025
	4.1.2 Establish and maintain surface water flow and water quality monitoring program in the plan area	Water quality monitored	DEPWS WRD	2024-2033
	4.1.3 Improve understanding of the Jinduckin formation within the plan area	Additional bores registered and monitored	DEPWS WRD	2033
	4.1.4 Determine the specific groundwater requirements of key terrestrial, aquatic and subterranean species associated with the TLA and the Roper River	Report published on selected indicator species	DEPWS WRD, FFD	2029
	4.1.5 Improve resource conceptualisation of the area as data is collected through drilling and monitoring	Additional bores registered and monitored	DEPWS WRD	Ongoing
	4.1.6 Monitor and verify the throughflow contribution from the Georgina Basin to the Roper River	Additional bores registered and monitored	DEPWS WRD	Ongoing

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
3.2.1b The condition of groundwater dependent ecosystems is known and monitored as far as practicable and accounted for in water planning and licensing	4.1.7 Release GDE health and monitoring guideline for use by both the department and licence holders to enable GDE condition to be assessed in arid regions	GDE guideline released	DEPWS WRD, FFD	2024-2025
	4.1.8 Complete field verification of high value areas of the probability map to define the likely extent of GDEs	Key GDE map published	DEPWS WRD, FFD	2025-2027
3.2.1c Key environmental values are appropriately accounted for in water planning and licensing	4.1.9 High biodiversity values in the plan area are protected under section 36 of <i>Environment Protection Act 2019</i>	Declare a protected environmental area	DEPWS	2024
	4.1.10 Produce communication products that explain how environmental values are managed	Materials produced and appropriately communicated	DEPWS WRD	2025-2026 Ongoing

4.2 Actions related to key Aboriginal and other cultural values associated with water

Table 2 Actions and measures that contribute to: water licence decisions consider Aboriginal and other cultural values dependant on water

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
3.2.2a There is an improved understanding of Aboriginal cultural values and other cultural values associated with the water resource	4.2.1 Collaboration with Traditional Owners and appropriate Aboriginal representatives to establish and maintain an Aboriginal reference group or an appropriate mechanism to share knowledge of resources and ways in which Aboriginal people can be involved in water management	Group established and maintained	AAPA, NLC, Aboriginal representatives DEPWS WRD	2024-2025 Ongoing
	4.2.2 Collaboration with Traditional Owners and appropriate Aboriginal representatives to agree suitable regional mapping of cultural values and how information is disseminated (if appropriate)	Cultural values information is used in decision making	AAPA, NLC, DEPWS WRD	2025-2027

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
	4.2.3 Collaboration with Traditional Owners and appropriate Aboriginal representatives to quantify water requirements of key cultural sites and establish ongoing monitoring	Water requirements of key sites defined	NLC, DEPWS WRD, AAPA	2027-2029 Ongoing
3.2.2b Key Aboriginal cultural sites that rely on water are monitored and potential impacts on such sites are appropriately accounted for in water planning and licensing	4.2.4 Collaboration with Traditional Owners and appropriate Aboriginal representatives to document key Aboriginal cultural sites where significant water extraction is occurring (property scale)	Regulatory compliance	DEPWS WRD, NLC, AAPA, Licence holders	Ongoing
	4.2.5 Collaboration with Traditional Owners and appropriate Aboriginal representatives to monitor and assess the condition of key Aboriginal cultural sites and deliver monitoring programs	Monitoring delivered locally	DEPWS WRD, Aboriginal representatives, Licence holders	Ongoing
3.2.2c Other cultural values that rely on water are monitored and potential impacts on such values are appropriately accounted for in water planning and licensing	4.2.6 Collaboration with other stakeholders in the identification, protection and monitoring of other cultural sites and values	Sites identified and protected	DEPWS WRD	2031-2032
	4.2.7 Collaboration with Traditional Owners and appropriate Aboriginal representatives to produce appropriate communication products explaining how Aboriginal cultural sites are identified and monitored in water management	Materials produced and appropriately communicated	DEPWS WRD	Ongoing

4.3 Actions related to water for rural stock and domestic purposes

Table 3 Actions and measures that contribute to: predicting and protecting water for rural stock and domestic purposes

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
3.2.3a The amount of water needed to support stock and domestic use is met	4.3.1 Reviewing and improving the methodology used for estimating domestic water needs and use	Improved methodology applied	DEPWS WRD	2025-2026

3.2.3b	The quality of water sourced for stock and domestic purposes is maintained	4.3.2 Implement water quality monitoring program across the district, including licence conditions requiring monitoring and reporting	Regulatory compliance	DEPWS WRD, Licence holders	Ongoing
3.2.3c	Community members and relevant stakeholders understand water management	4.3.3 Using appropriate communication materials and methods to increase both community members and stakeholders' understanding of water supply and water management arrangements, service delivery and the application of regulations and policies	Materials developed and appropriately communicated	DEPWS WRD, OWS, DTFHC, PWC	2024 Ongoing

4.4 Actions related to water for public water supplies

Table 4 Actions and measures that contribute to: outcomes for public water supplies

Outcomes of water sharing		Actions	KPI	Responsibility	Timeframe
3.2.4a	The amount of water needed to support public water supply continues to be met	4.4.1 Reviewing long-term planning for population and community growth for public water supplies	Allocation sufficient for public water supply needs	PWC	2032-2033
3.2.4b	The quality of water sourced for public water supplies is maintained	4.4.2 Regular water quality monitoring of water extracted for public water supplies and reporting to WRD	Source water quality data to WRD	PWC, DEPWS WRD	Annually
3.2.4c	Community members and relevant stakeholders understand water planning and licensing outcomes	4.4.3 Using appropriate communication materials and methods to increase both community members and stakeholders' understanding of water supply and water management arrangements, service delivery and the application of regulations and policies	Materials developed and appropriately communicated	DEPWS WRD, OWS, DTFHC, PWC	2024 Ongoing

4.5 Actions related to water for local Aboriginal economic development

Table 5 Actions and measures that contribute to: setting aside water to support local Aboriginal economic development

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
3.2.5a Local Aboriginal people have access to water through the Aboriginal water reserve to support economic development	4.5.1 Recovering unused water to increase water allocations to the AWR in North and South Mataranka water management zones	Regulatory compliance	DEPWS WRD	Ongoing
3.2.5b Arrangements to access the Aboriginal water reserve are documented and communicated	4.5.2 Using appropriate communication materials and methods to support the use of water from the AWR in partnership with appropriate Aboriginal representatives	Materials developed and appropriately communicated	NLC, DEPWS WRD, OWS	2024
3.2.5c Aboriginal people are receiving benefits from Aboriginal water reserve	4.5.3 Assisting eligible Aboriginal people to access the AWR for their own enterprise, or in partnership with others	AWR Licence applications lodged	NLC, DCMC, DITT	Ongoing
	4.5.4 Licensing water usage from the AWR. Defining local benefits, qualitative and quantitative	AWR water licences are used	NLC, DCMC	Ongoing

4.6 Actions related to water for sustainable development in the region

Table 6 Actions and measures that contribute to: providing access to water to support sustainable development for the benefit of the region

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
3.2.6a Water is available to support sustainable economic development in the region	4.6.1 Completing model recalibration using actual data from current and future water users and reviewing future climate change projections (funded by NWGA)	Model recalibration completed	DEPWS WRD	2025-2026
	4.6.2 Staging and regulating significant licensed extraction against development plans to ensure water extraction is occurring as planned	Regulatory compliance	DEPWS WRD, Licence holders	Ongoing

Outcomes of water sharing	Actions	KPI	Responsibility	Timeframe
	4.6.3 Recovering unused water for further development returning it to the AWR or for other beneficial uses	Regulatory compliance	DEPWS WRD	Ongoing
3.2.6b Industry is confident to invest in the region	4.6.4 Regional investments and employment are underpinned by reliable water resource planning and management	\$ investment and local jobs	NTG	2028-2029
3.2.6c Water is used for productive purposes and in a water-efficient manner	4.6.5 Appropriate water management practices and remedial measures adopted to avoid impact on the resource	Water use	DITT, DEPWS WRD, licence holders	Ongoing

5 Reporting

Overview

This section outlines how the management of water resources in the plan area will be reported. Regular public reporting by the department will ensure a level of community understanding of the management of the resource.

The department maintains a public record of all water extraction licences on its Water Licensing Portal³.

The department maintains a public record of water monitoring results on its Water Data Portal.

The department will produce a report annually for the district which summarises:

- an overview of the water resources
- key monitoring results
- regulatory performance
- progress on implementation actions.

³ <https://depws.nt.gov.au/water/permits-and-licences/water-licensing-portal>

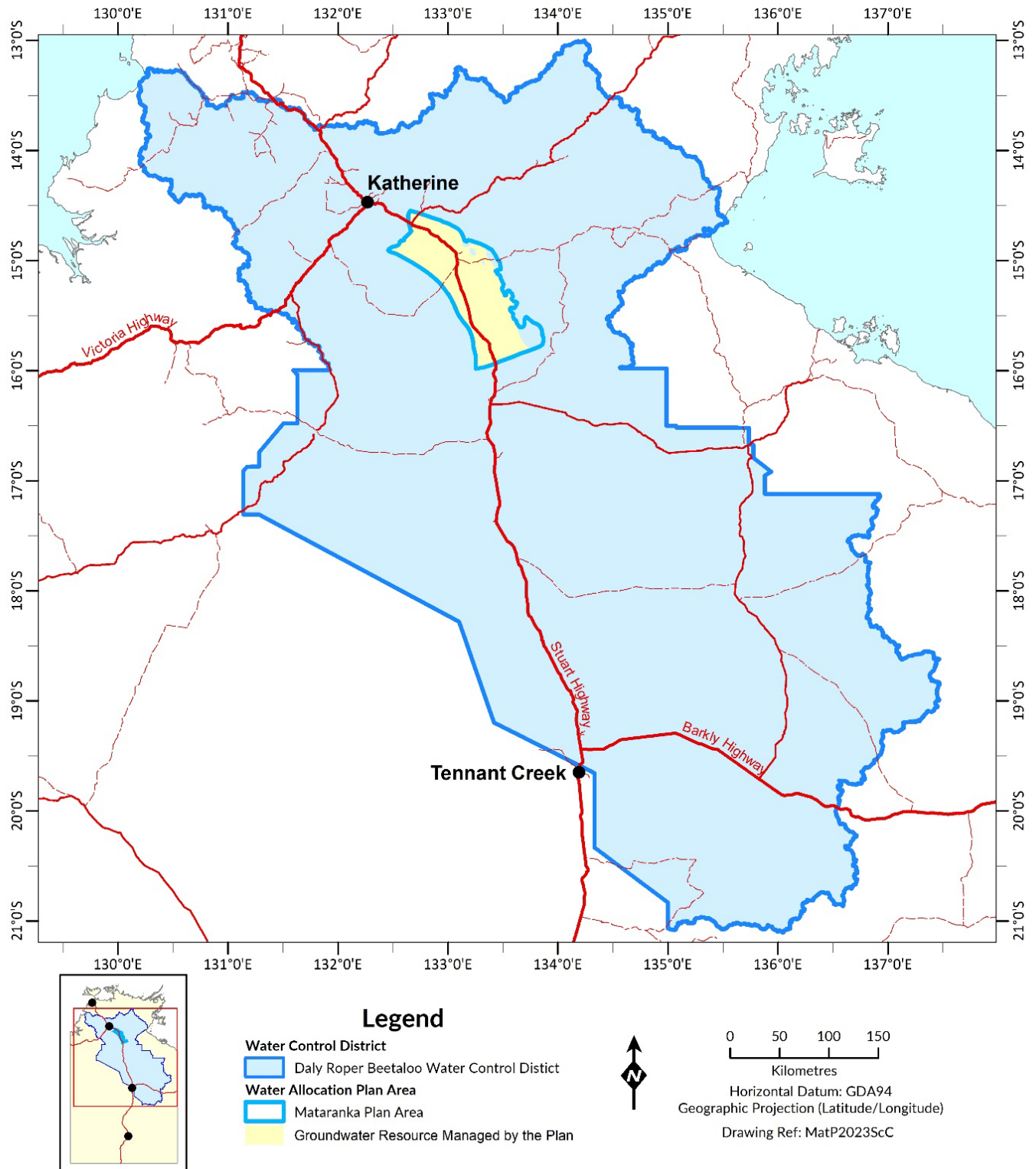
Schedule A. Dictionary

Term	Definition or reference
Aboriginal water reserve	see <i>Water Act 1992</i> , section 4(1)
Act	the <i>Water Act 1992</i>
beneficial uses	the beneficial uses for the Daly Roper Beetaloo water control district declared by Gazette no. G41, 19 October 2022
Controller	the Controller of Water Resources appointed under the <i>Water Act 1992</i> , section 18
consumptive pool	the amount of water that can be made available for beneficial uses in a given water system and where a water plan has rules, in accordance with those rules
department	the department with the responsibility for administering the <i>Water Act 1992</i> , according to the Northern Territory of Australia Administrative Arrangements Order
eligible Aboriginal people	see <i>Water Act 1992</i> , section 4(1)
estimated sustainable yield	the amount of water that can be allocated from the water resource to support declared beneficial uses that is sustainable, section 3.1 and 3.4 of the plan refers
groundwater	see <i>Water Act 1992</i> , section 4(1)
groundwater dependent ecosystem	an ecosystems that requires access to groundwater to meet all or some of their water requirements
licence holder	the person granted a licence to take water under section 45 or section 60 of the <i>Water Act 1992</i>
plan	Mataranka Water Allocation Plan 2024–2034
plan area	the area to which the water allocation plan applies as shown in Schedule C
Protected Environmental Area	see <i>Environment Protection Act 2019</i> , section 4
Tindall limestone aquifer	a regional limestone aquifer that extends from north of Katherine to south east of Tennant Creek. Locally referred to as the Katherine and Mataranka Tindall limestone aquifers in the Daly Basin, Gum Ridge formation in the Georgina Basin and Montjinni limestone in the Wiso Basin
water control district	the Daly Roper Beetaloo water control district, declared by Gazette no. G41, 19 October 2022 under section 22 of the <i>Water Act 1992</i> . A copy of the declaration is included in Schedule E of the plan
water licence / water extraction licence	see <i>Water Act 1992</i> , section 4(1)
water management zone	those areas of land within the plan area separated for management purposes as depicted in Schedule D of this document

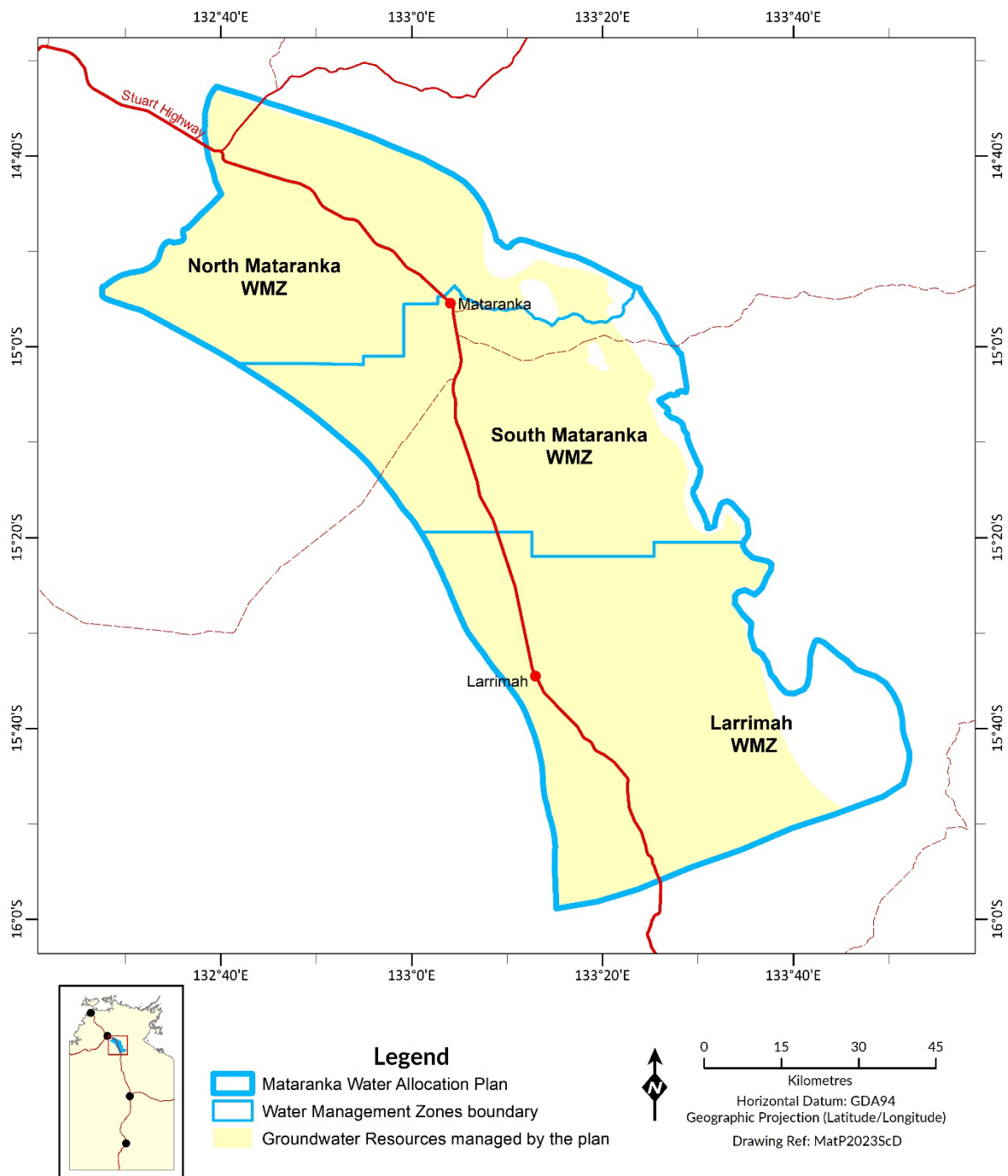
Schedule B. Abbreviations and acronyms

Acronym	Full form
AAPA	Aboriginal Areas Protection Authority
Act	<i>Water Act 1992</i>
AWR	Aboriginal water reserve
CLC	Central Land Council
district	Daly Roper Beetaloo water control district
DCMC	Department of Chief Minister and Cabinet
DEPWS	Department of Environment, Parks and Water Security
DITT	Department of Infrastructure, Tourism and Trade
DTFHC	Department of Territory Families, Housing and Communities
ESY	estimated sustainable yield
FFD	Flora and Fauna Division, DEPWS
GDE	groundwater dependent ecosystem
km	kilometre
KPI	key performance indicators
Minister	Minister for Environment, Climate Change and Water Security
ML	megalitres
NTG	Northern Territory Government
NWGA	National Water Grid Authority
OWS	Office of Water Security, DEPWS
plan	Mataranka Water Allocation Plan 2024–2034
PWC	Power and Water Corporation
TLA	Tindall Limestone Aquifer
WRD	Water Resources Division, DEPWS

Schedule C. Daly Roper Beetaloo water control district and Mataranka plan area



Schedule D. Mataranka water management zones



Schedule E. Mataranka water monitoring network

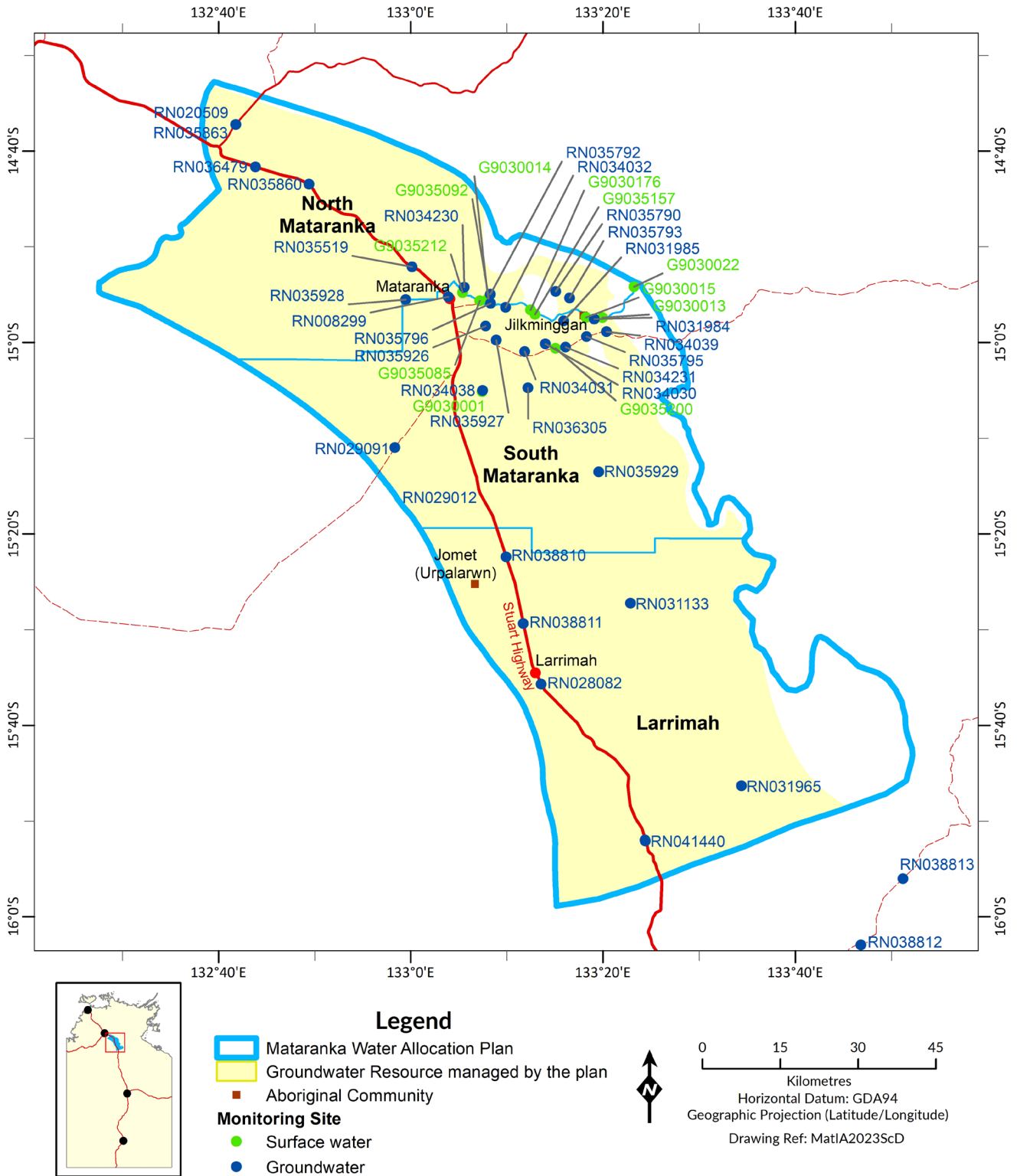


Table 7 Mataranka groundwater monitoring network

Water management zone	Aquifer monitored	Site	Latitude	Longitude	Started monitoring groundwater level (year)	Purpose	Groundwater level logger	Water quality
North Mataranka	Cretaceous	RN020509	-14.62	132.70	1985	Model	-	-
	TLA	RN034230	-14.90	133.09	2004	Spring monitoring	Yes	-
	TLA	RN035519	-14.87	133.00	2008	Model	-	-
	TLA	RN035790	-14.91	133.25	2008	Regional	-	Yes
	TLA	RN035792	-14.92	133.14	2008	Spring monitoring	Yes	-
	TLA	RN035793	-14.92	133.28	2008	Model	Yes	-
	TLA	RN035796	-14.93	133.14	2008	Spring monitoring	Yes	Yes
	TLA	RN035860	-14.72	132.82	2008	Model	Yes	-
	Cretaceous	RN035863	-14.62	132.70	2007	Model	-	-
	TLA	RN035928	-14.93	132.99	2009	Model	-	-
	TLA	RN036479	-14.69	132.73	2014	Regional	-	-
	TLA	RN008299	-14.92	133.06	2007	Model	Yes	Yes
South Mataranka	TLA	RN029012	-15.27	133.13	1993	Model	Yes	-
	TLA	RN029091	-15.18	132.97	1993	Model	-	-
	TLA	RN031984	-14.96	133.32	2007	Regional	Yes	-
	TLA	RN031985	-14.96	133.27	2007	Model	-	-
	TLA	RN034030	-15.00	133.23	2004	Model	-	-
	TLA	RN034031	-15.02	133.20	2004	Model	Yes	-
	TLA	RN034032	-14.94	133.16	2004	Model	Yes	-
	TLA	RN034038	-15.08	133.12	2004	Model	Yes	-
	TLA	RN034039	-14.98	133.34	2004	Model	-	-
	TLA	RN034231	-15.01	133.27	2004	Model	-	-
	TLA	RN035795	-14.99	133.30	2008	Model	-	-
	TLA	RN035926	-14.97	133.13	2009	Model	Yes	-

Water management zone	Aquifer monitored	Site	Latitude	Longitude	Started monitoring groundwater level (year)	Purpose	Groundwater level logger	Water quality
Larrimah Other	TLA	RN035927	-15.00	133.15	2009	Model	Yes	Yes
	TLA	RN035929	-15.23	133.33	2009	Model	Yes	-
	TLA	RN036305	-15.08	133.20	2012	Regional	-	-
	TLA	RN028082	-15.60	133.23	1992	Model	-	-
	TLA	RN038810	-15.37	133.17	2014	Model	-	-
	TLA	RN038811	-15.49	133.20	2014	Model	-	-
	TLA	RN041440	-15.87	133.41	2020	Model	-	-
	TLA	RN031965	-15.77	133.57	TBD	Regional	-	-
	TLA	RN031133	-15.45	133.38	TBD	Regional	-	-
	TLA	RN038812*	-16.05	133.78	2014	Regional	Yes	-
	TLA	RN038813*	-15.93	133.85	2015	Regional	Yes	-

* Sites also included in Georgina Wiso groundwater monitoring network

Table 8 Mataranka surface water monitoring network

Water management zone	Water body	Site	Latitude	Longitude	Started monitoring	Purpose	Type	Water quality
Downstream	Mainoru River	G9030074	-14.04	134.09	2016	Regional	Flow	-
	Wilton River	G9030003	-13.71	134.40	2016	Regional	Flow	-
	Roper River	G9030250	-14.70	134.42	1966	Model	Flow, level	-
	Flying Fox Creek	G9030108	-14.17	133.73	2016	Regional	Flow	-
	Flying Fox Creek	G9030050	-14.61	134.16	2018	Model	Flow	-
	Roper River	G9030040	-14.85	133.99	2021	Model	Flow, level	-
	Roper River	G9030123	-14.82	133.70	1960	Model	Flow, level	-
	Roper River	G9035144	-14.74	134.05	2016	Model	Flow, level	-

Water management zone	Water body	Site	Latitude	Longitude	Started monitoring	Purpose	Type	Water quality
North Mataranka	Wilton River	G9035283	-14.68	134.57	2018	Regional	Flow, level	-
	Rainbow Springs	G9035092	-14.92	133.14	2006	Spring monitoring	Flow	Yes
	Bitter Springs	G9035212	-14.91	133.09	2006	Spring monitoring	Flow	Yes
	Waterhouse River	G9030514	-14.32	133.36	2016	Regional	Flow, level	-
	Waterhouse River	G9035191	-14.87	133.11	2018	Model	Flow	-
	Waterhouse River	G9035407	-14.93	133.15	2003	Model	Flow	-
North & South Mataranka	Roper River	G9030013	-14.96	133.33	1953	Model	Flow, level	-
	Roper River	G9030020	-14.92	133.37	2021	Regional	Flow	-
	Roper River	G9030024	-14.87	133.41	2017	Model	Flow	-
	Roper River	G9030176	-14.94	133.20	1961	Model	Flow, level	-
	Little Roper	G9035085	-14.93	133.12	1996	Model	Flow, level	-
South Mataranka	Fig Tree Springs	G9035157	-14.95	133.22	2007	Spring monitoring	Flow	Yes
	Elsey Creek	G9030001	-15.09	133.12	2016	Model	Flow, level	-
	Elsey Creek	G9035193	-15.01	133.25	2007	Model	Flow	-

Schedule F. Risk assessment methodology

An assessment of the level of risk posed by the described risk can be a useful way to prioritise the way in which the water will be managed. The relative level of a certain risk can be determined by considering the likelihood of a threat occurring and the consequence associated with that threat on a scale of 1 to 5, and using a matrix below to determine the risk level:

Risk level

Risk level		Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	Rare	very low	very low	low	moderate	moderate
	Unlikely	very low	low	low	moderate	high
	Possible	low	low	moderate	high	high
	Likely	low	moderate	moderate	high	very high
	Almost certain	moderate	moderate	high	very high	very high

Likelihood

Category	Qualitative descriptor	Frequency	Probability of occurring in life of plan
1	Rare	Event occurs 1 in every 100 years	< 1%
2	Unlikely	Event occurs 1 in every 20–50 years	1 – 20%
3	Possible	Event occurs 1 in every 5–10 years	21 – 80%
4	Likely	Event occurs annually	81 – 95%
5	Almost certain	Event occurs many times per year	> 95%

Consequence

Category	Qualitative descriptor	Ecological/water quality impacts	Socio-economic impacts
1	Insignificant	No noticeable impact to ecosystem	Short period of low level water restrictions causing minor inconvenience to households, no material impact on irrigation allocations, minimal financial impact on industry and little to no loss of amenity.
2	Minor	Some impact on marginal ecosystems, for example, edges of riparian zones or small mixed dependency ecosystems	Extended period of low level water restrictions causing some inconvenience to households, reduction in irrigation allocations with minimal material impact, potential financial impact for some industries and minor loss of amenity. First signs of impact on public morale.
3	Moderate	Water availability is so low, such that only the highest value environmental sites receive or retain water, putting vulnerable species at risk	Medium level of water restrictions directly impacting on households, reduction in irrigation allocations resulting in some loss of productivity, some industries severely impacted or forced to close tourism, prioritisation of watering for amenities, increased impact on morale.

Category	Qualitative descriptor	Ecological/water quality impacts	Socio-economic impacts
4	Major	Water availability is at critically low levels and groundwater systems become depleted beyond recharge rate. Extensive damage to ecosystems occurs with potential irreparable damage in some areas	High level water restrictions directly limiting household water use, limited irrigation allocations resulting in low levels of productivity, some industries forced to close which may impact on national economy, severe loss of amenity and morale, some people leave.
5	Catastrophic	Irreparable damage to ecosystem; severe adverse impacts to environment	Water supply to major town becomes insufficient to ever again sustain community or nationally significant activity; no irrigation allocations, collapse of industry, total loss of amenity, dislocation of people, and significant impact to the national economy.

Risk response

The risk level will indicate the type of response that may be required to mitigate or avoid the risk.

Risk Level	Action	Timing
Very low – low	Continue routine approach to management – no specific actions required	Ongoing
Moderate – high	Manage by specific monitoring or response procedures	Within water plan period
Very high	Develop management or investigation plan, cease activities for which high risks may arise	Immediate

Schedule G. Risk and adaptive management

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
Groundwater levels decline more than acceptable levels	Lack of rainfall and recharge due to drought and impacts of climate variability	3.2.1 regional loss of GDE health more than acceptable levels	<p>ESY set in plan capping development in recharge areas and encouraging development in Larrimah where less constraints and impacts</p> <p>3.1 monitoring program (this document)</p> <p>GDE mapping complete in key protection area</p> <p>Groundwater model developed and used</p>	<p>Possible</p> <p>Highly variable climate history has shown lower groundwater levels and river flow</p> <p>Model is available that uses:</p> <ul style="list-style-type: none"> cautionary drawdown parameters in predictions calibrated with real data with good results in areas for development considers cumulative effect of extraction against mapped GDEs 	<p>Major</p> <p>Development has already occurred, which has been through wetter period of history</p> <p>GDE are mapped regionally and considered in significant extraction through licence conditions that requires property verification</p> <p>Department monitoring continues across the region to enable early action if triggered</p>	High	<p>4.1.1 improve data</p> <p>4.1.2 extend water monitoring</p> <p>4.1.4 Top End GDE guideline</p> <p>4.1.5 improving resource conceptualisation</p> <p>4.1.6 throughflow understanding</p> <p>4.1.7 GDE health and monitoring guideline</p> <p>4.1.8 key GDE map published</p> <p>4.1.9 declare a protected environmental area</p>	Possible	Moderate	Moderate
		3.2.2 regional loss of key cultural sites due to reduced access to water	<p>3.1 monitoring program (this document)</p> <p>Plan for area:</p> <ul style="list-style-type: none"> 3.3 recognition cultural values 	<p>Possible</p> <p>Cultural sites have not been defined yet to be accounted for in water management</p>	<p>Moderate</p> <p>Significant extraction will have licence conditions for property mapping prior to extraction</p>	Moderate	<p>4.2.1 Aboriginal people involved in water management</p> <p>4.2.2 culture considered in decisions</p>	Possible	Minor	Low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
			Funding to establish ARG confirmed				4.2.3 baseline condition cultural sites 4.2.4 define cultural site water requirements 4.2.7 other cultural aspects defined			
		3.2.4 insufficient security of public water supplies	Prioritisation of public water supplies in allocation and licensing	Unlikely Public water supplies are highest priority in water used Demand is relatively low	Minor Department monitoring continues to enable early action if triggered	Low	4.4.1 long term planning of demand	Rare	Minor	Very low
		3.2.5 and 3.2.6 reducing amount of water available through licences and reducing development	ESY set in plan capping development in recharge areas and encouraging development in Larrimah where less constraints and impacts 3.1 monitoring program (this document) Regulatory compliance and enforcement of licence conditions	Possible High climate variability in the area (independent of development) Model is available that uses cautionary drawdown parameters in predictions, calibrated with real data with good results in areas for development	Moderate Reduced impact by capping development in recharge areas and encouraging development in Larrimah Water is being used although still significant opportunity for trade Department monitoring continues to enable early action if triggered to minimise long term impacts	Moderate	4.6.1 further model development 4.6.2 staging licence conditions for significant extraction 4.6.3 recovering water not used 4.6.6 improving efficiency	Possible	Minor	Low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
	Excessive impact of water extraction	3.2.1 local loss of GDE health more than acceptable levels	<p>ESY set in plan capping development in recharge areas and encouraging development in Larrimah where less constraints and impacts</p> <p>3.1 monitoring program (this document)</p> <p>GDE mapping complete in key development area</p> <p>Groundwater model developed and used</p>	<p>Possible</p> <p>Currently extraction is low-medium</p> <p>Extraction is regularly reported and monitored to ensure impacts remain acceptable</p>	<p>Moderate</p> <p>Reduced impact by capping development in recharge areas and encouraging development in Larrimah</p> <p>Effects of extraction varies spatially and proximity to GDEs</p> <p>Significant extraction is staged so not all the water is released at once</p> <p>Cannot exceed thresholds and can be adjusted or stopped if triggered</p>	Moderate	<p>4.1.7 GDE health and monitoring guideline</p> <p>4.1.8 key GDE map published</p> <p>4.1.9 environmental protection area</p>	Unlikely	Moderate	Low
		3.2.2 local loss of key cultural sites due to reduced access to water	<p>3.1 monitoring program (this document)</p> <p>Plan for area:</p> <ul style="list-style-type: none"> 3.3 recognition cultural values <p>Funding to improve Aboriginal involvement</p>	<p>Possible</p> <p>Cultural sites have not been defined yet to be accounted for in water management</p>	<p>Moderate</p> <p>Significant extraction will have licence conditions for property mapping prior to extraction</p>	Moderate	<p>4.2.1 Aboriginal people involved in water management</p> <p>4.2.2 culture considered in decisions</p> <p>4.2.3 baseline condition cultural sites</p>	Unlikely	Moderate	Low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
							4.2.4 define cultural site water requirements 4.2.7 other cultural aspects defined			
		3.2.3 reduced availability or access to water for rural stock and domestic purposes	Plan for area Refined methodology for stock use	Unlikely High climate variability in the area (independent of development) Medium demand and more limited water availability	Minor Department monitoring continues to enable early action if triggered	Low	4.3.1 improve methodology for domestic use	Rare	Minor	Very low
		3.2.4 insufficient security of public water supplies	Prioritisation of public water supplies in allocation and licensing	Unlikely Public water supplies are highest priority in water used Demand is relatively low	Minor Department monitoring continues to enable early action if triggered	Low	4.4.1 long term planning of demand	Rare	Minor	Very low
		3.2.5 and 3.2.6 reducing amount of water available through licences and reducing development	ESY set in plan capping development in recharge areas and encouraging development in Larrimah where less constraints and impacts	Unlikely Model is available that uses: <ul style="list-style-type: none"> cautionary drawdown parameters in predictions calibrated with real data with good results in 	Minor Regional aquifer with extensive volumes of good quality water available Department monitoring continues to enable early action if triggered	Low	4.6.1 further model development 4.6.2 staging licence conditions for significant extraction 4.6.3 recovering water not used	Rare	Minor	Very low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
			3.1 monitoring program (this document) Groundwater model developed and used Factors the Controller considers when making a water licensing decision Regulatory compliance and enforcement of licence conditions	areas for development • considers cumulative effect of extraction						
Water quality declines to unacceptable levels	Water use increases groundwater salinity levels	3.2.1 local loss of GDE health more than acceptable levels	ESY set in plan capping development in recharge areas and encouraging development in Larrimah where less constraints and impacts 3.1 monitoring program (this document) GDE mapping complete in key development area Groundwater model developed and used	Possible Salinity naturally varies Water movement is slow except near discharge areas	Moderate GDE are mapped regionally Department monitoring continues to enable early action if triggered	Moderate	4.1.7 GDE health and monitoring guideline 4.1.8 key GDE map published 4.1.9 declare a protected environmental area	Unlikely	Moderate	Low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
		3.2.2 local loss of key cultural sites due to reduced water quality	3.1 monitoring program (this document) Plan for area: • 3.3 recognition cultural values Funding to improve Aboriginal involvement	Possible Cultural sites have not been defined yet to be accounted for in water management	Moderate Significant extraction will have licence conditions for property mapping prior to extraction	Moderate	4.2.1 Aboriginal people involved in water management 4.2.2 culture considered in decisions 4.2.3 baseline condition cultural sites 4.2.4 define cultural site water requirements 4.2.7 other cultural aspects defined	Unlikely	Moderate	Low
		3.2.3 reduced water quality available for rural stock and domestic	3.1 water quality monitoring program (this document)	Unlikely Very low demand compared to water availability	Moderate Generally high quality water suitable for drinking Department monitoring continues to enable early action if triggered	Low	4.3.2 water quality monitoring and licence conditions	Unlikely	Minor	Very low
		3.2.4 insufficient quality for public water supplies	Water quality monitoring program (PWC)	Possible High climate and water quality variability in the area	Moderate Generally high quality water treated for drinking that is regularly monitored	Moderate	4.4.2 water quality monitoring program 4.4.3 communication on service delivery arrangements	Possible	Minor	Low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
		3.2.5 and 3.2.6 land use and practises increases the rate	<p>ESY set in plan capping development in recharge areas and encouraging development in Larrimah where less constraints and impacts</p> <p>3.1 monitoring program (this document)</p> <p>Plan for district Announced allocation flow thresholds</p> <p>Groundwater model developed and used</p> <p>Factors the Controller considers when making a water licensing decision</p> <p>Regulatory compliance and enforcement of licence conditions</p>	<p>Possible</p> <p>Salinity naturally varies</p> <p>Range of activities throughout the plan area</p>	<p>Minor</p> <p>Department monitoring continues to enable early action if triggered</p>	Low	<p>4.6.1 further model development</p> <p>4.6.2 staging licence conditions for significant extraction</p> <p>4.6.3 recovering water not used</p> <p>4.6.6 effective crop management</p>	Unlikely	Minor	Very low
Surface water levels or discharges to surface water decline more than	Lack of rainfall and recharge due to drought and impacts of climate variability	3.2.1 reduced groundwater discharge to Roper River	<p>3.1 monitoring program (this document)</p> <p>Understanding of the water resource and the inter-connection</p>	<p>Possible</p> <p>The water resource has been monitored since the 1960s and shows high</p>	<p>Major</p> <p>Development has already occurred, which has been through wetter period of history</p>	High	<p>4.1.1 improve data</p> <p>4.1.2 extend water monitoring</p> <p>4.1.4 Top End GDE guideline</p>	Possible	Moderate	Moderate

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
acceptable levels			between groundwater and surface water	natural variability in water flows	Model is available that is calibrated with real data with good results to predict end of dry season flows to inform licence conditions Department monitoring continues across the region to enable early action if triggered		4.1.5 improving resource conceptualisation 4.1.6 throughflow understanding			
		3.2.2 reduce flows in Roper impacts key cultural sites and activities due to reduced access to water	3.1 monitoring program (this document) Plan for area: <ul style="list-style-type: none"> 3.3 recognition cultural values Funding to improve Aboriginal involvement	Possible Cultural sites have not been defined yet to be accounted for in water management	Moderate Significant extraction will have licence conditions for property mapping prior to extraction		4.2.1 Aboriginal people involved in water management 4.2.2 culture considered in decisions 4.2.3 baseline condition cultural sites 4.2.4 define cultural site water requirements 4.2.7 other cultural aspects defined	Unlikely	Moderate	Low
	Excessive impact of water extraction	3.2.1 reducing groundwater discharge to Roper River	ESY set in plan capping development in recharge areas and encouraging development in Larrimah where	Possible The water resource has been monitored since the 1960s and shows high	Moderate Effects of extraction varies are insignificant compared to climate variability		4.1.1 improve data 4.1.2 extend water monitoring 4.1.4 GDE guideline	Unlikely	Moderate	Low

Draft Mataranka Implementation Actions 2024-2034 Implementation Actions

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
			less constraints and impacts 3.1 monitoring program (this document) Understanding of the water resource and the inter-connection between groundwater and surface water	natural variability in water flows Extraction is regularly reported and monitored to ensure impacts remain acceptable	Effects of extraction vary spatially and will restrict development in areas in close proximity to the river Model is available that considers cumulative effect of extraction Department monitoring continues across the region to enable early action if triggered		4.1.5 improving resource conceptualisation 4.1.6 throughflow understanding			
Water isn't used	Sustainable development isn't achieved	3.2.5 water isn't used to provide benefits to eligible Aboriginal people through AWR	Aboriginal water reserve supports Aboriginal economic development	Possible Extraction is currently low/medium with modest impact on economic development	Moderate Economic status of the region remains the same	Moderate	4.5.1 recover unused water 4.5.2 assist eligible Aboriginal people to benefit from access to water 4.5.3 AWR licence applications	Unlikely	Moderate	low
		3.2.6 water isn't used to provide benefits to the region	4.6.3 applying unused water policy Regulatory compliance and enforcement of licence conditions	Possible Extraction is currently very low with modest impact on economic development	Moderate Economic status of the region remains the same	Moderate	4.1.10 communication on maintaining environmental values 4.2.9 communication on maintaining cultural values	Unlikely	Moderate	low

Event scenario - risk			Existing controls	Current residual risk			Further controls	Target risk		
Hazard identification	Why can it happen	Impact on objectives	Management in place	Likelihood	Consequence	Risk level	Actions	Likelihood	Consequence	Risk level
							4.3.3 communication water management 4.6.4 reliable water resource planning 4.6.5 appropriate water management practices			

Schedule H. Adaptive management framework

