DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

Background Brief

Water Allocation Plan for the Tindall Limestone Aquifer, Mataranka – Daly Waters

June 2017

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NORTHERN TERRITORY GOVERNMENT

Contents

1 Introduction

The Tindall Limestone Aquifer, Mataranka to Daly Waters (herein referred to as the Aquifer) is a high yielding source of groundwater that is utilised for agricultural and pastoral uses as well as public water supply, industry and stock and domestic use. The aquifer also makes a significant contribution to the dry season flows of the Roper River and groundwater discharge from the aquifer sustains the iconic springs of Elsey National Park, providing important cultural, recreational, tourism and environmental benefits.

There is no Declared Water Allocation Plan for the Tindall Limestone Aquifer, Mataranka to Daly Waters.

In the years between 2009 and 2012, water allocation planning activities resulted in the preparation of a draft plan for the Tindall Limestone Aquifer, Mataranka (purple area in Figure 1). This followed consultation with stakeholders and the community through public meetings, requests for public comment, and consultative engagement with the Mataranka Water Advisory Committee. Research projects investigating the hydrology, hydrogeology and the social, cultural and economic values of water in the Roper River catchment were in progress throughout this period.

More recently, in 2015, the Northern Territory Government published the findings of the Daly Basin Groundwater Assessment – North Mataranka to Daly Waters which was undertaken as part of the Larrimah Land and Water Suitability Assessment Project. Upon completion of this study, the plan area was extended further south to Daly Waters in order to take in all of the Tindall Limestone Aquifer within the Roper River catchment (purple and blue area in Figure 1).

Previous water allocation planning activities and the data, information and knowledge developed over time establish a strong foundation from which to continue the development of a Water Allocation Plan for the Tindall Limestone Aquifer, Mataranka to Daly Waters.

The Water Allocation Plan will define the rules for the sharing and allocation of water for the next 10 years.

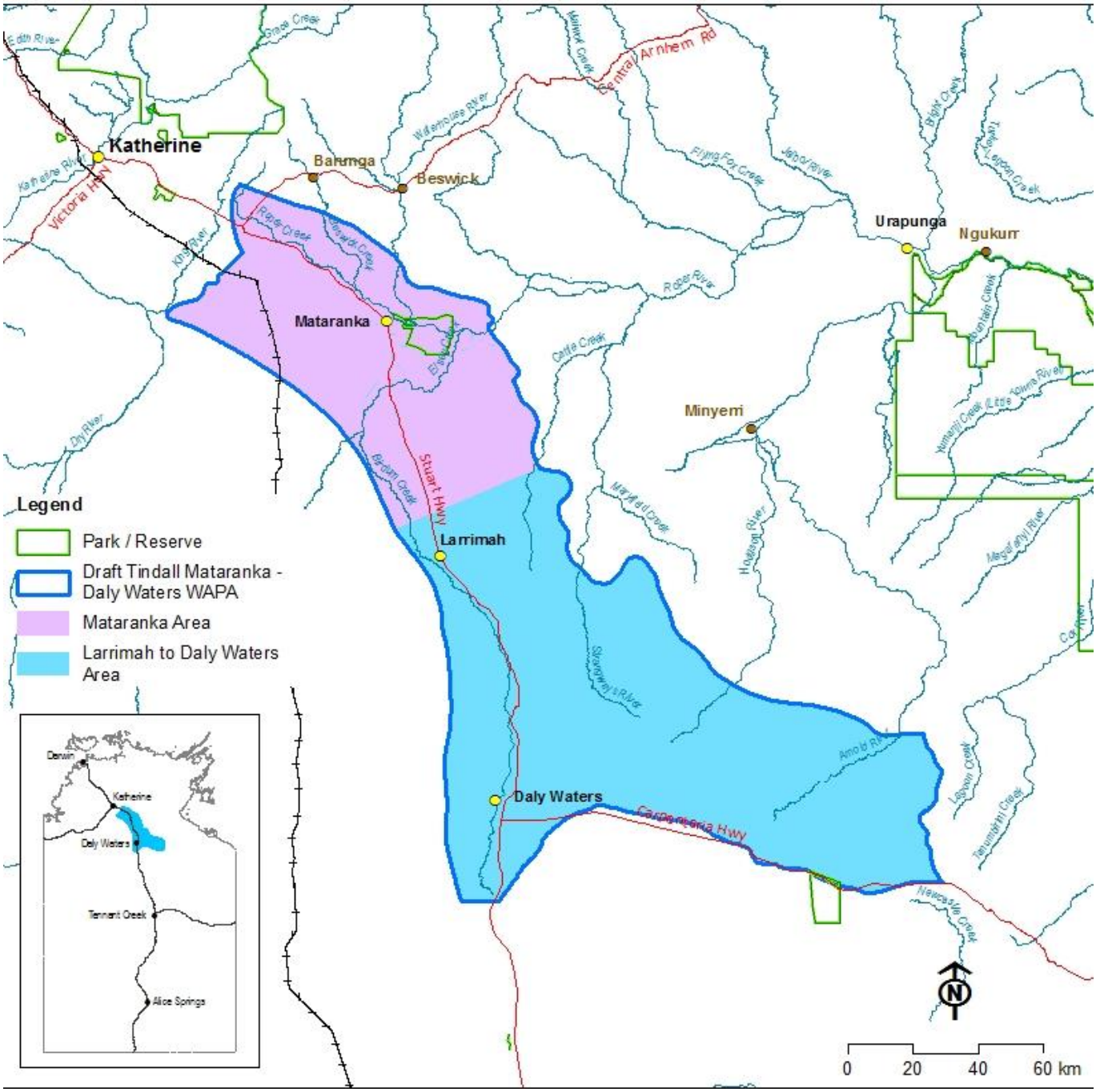


Figure 1 Water Allocation Plan Area – Tindall Limestone Aquifer, Mataranka to Daly Waters

1.1 Purpose of this report

The purpose of this report is to provide background information for the Mataranka – Daly Waters Water Advisory Committee. The report may also be of interest to the Community more broadly.

This report includes the following:

- Context about water allocation planning in Australia and the Northern Territory (Section 2);
- A brief history of water planning for the Tindall Limestone Aquifer, Mataranka to Daly Waters (Section 2);

- Details about the Roper River region and the Tindall Limestone Aquifer, Mataranka to Daly Waters, current allocations and usage (Section 3);
- Key water issues that will need to be considered during development of the plan and background on what was include in previous drafting of the plan (Section 4);
- How the community will be consulted and role of the Mataranka – Daly Waters Water Advisory Committee in developing the plan (Section 5);
- Timetable for the planning process (Section 6);

2 Context

2.1 Water Allocation Planning in Australia

Water Allocation planning is well established in many jurisdictions throughout Australia and internationally. The National Water Initiative (NWI) was established by the Council of Australian Governments in 2004 to create a national approach to water resource management. All States and Territories are signatories to the NWI which seeks to achieve the following:

- Transparent, statutory based water planning;
- Knowledge and capacity building;
- Community partnerships and adjustment;
- More confidence for investment through defined water licence security and risks that may arise from future changes to water availability;
- Provision of water for environmental flows and other public benefit outcomes;
- Provision of water to meet the needs of Indigenous people;
- Water trading for more profitable use of water;
- Enhanced water use efficiency in urban and rural areas;
- Water use metering to provide accurate information for planning and management;
- Recognition of the connectivity between surface and groundwater.

2.2 Water Allocation Planning in the Northern Territory

The Northern Territory is a signatory to the National Water Initiative and is committed to developing water allocation plans for water resources where current or potential water use could pose a possible risk to the ongoing availability and/or health of the resource.

The NT Water Act 1992 (the Act) is the legislation which provides for the investigation, allocation, use, control, protection, management and administration of water resources by the NT Government. This includes the protection of water supply to environmental, recreational, social and cultural uses. Water Allocation Plans can be declared within Water Control Districts under Section 22 B of the Act. The Act also allows the creation of Water Advisory Committees, to ensure stakeholder input into the development of water allocation plans.

Table 1 gives an overview of the Department of Environment and Natural Resources (DENR) Water Allocation Planning Process.

Table 1 DENR Water Allocation Planning Process

Phase	Objective	DENR Planning activities	Consultation
Problem definition	Define purpose and objectives for water management within the Water Allocation Plan Area	Articulate purpose & objectives consistent with the Water Act, the NT water policy framework and NWI Confirm beneficial uses for water in the Water Control District (WCD)	Identify stakeholders Establish WAC Stakeholders consulted (e.g. on beneficial uses)
Information	Obtain research / evidence based understanding of water availability (supply), water use (demand) and water dependent assets (environmental & cultural)	Assessment / modelling of water resource characteristics Assessment of current and forecast demand Identification of water dependant environmental and cultural assets	Information sought from stakeholders regarding forecast demand Consult with Indigenous people and other relevant stakeholders to identify cultural assets
Alternatives	Generate one or more plan alternatives (e.g. sustainable yield or water allocation scenarios)	Preparation of one or more planning scenarios	Stakeholders input into formulating planning scenarios
Assessment	Assess plans against key criteria (including policy purpose & objectives)	Model scenarios (e.g. varying levels of water extraction) to evaluate possible impact on water sources and water dependent assets Objectively assess options against key policy criteria	Stakeholders invited to provide feedback on options
Decision	Final water allocation plan, including sustainable yield and water allocations decided	DENR team consider assessment of options and provide preferred plan to the Controller of Water Controller of Water may accept the proposed plan or request changes (return to assessment stage) The Minister may approve the plan (after the Controller of Water has approved) or may request changes	Stakeholders informed
Review	Manage risk and uncertainty in planning; noting the inherent limitations of water supply / demand modelling to accurately predict future consequences	Monitor plan implementation and impacts / response of water extraction Undertake review, within 5 years, using the above process (commencing at information phase). Review will account for new knowledge or improved understanding of water resources including their response to extraction	Stakeholders engaged as per above steps

2.3 Water Allocation Planning for the Tindall Limestone Aquifer, Mataranka to Daly Waters

The Mataranka plan area has established industries including irrigated agriculture, cement manufacturing, pastoral operations and watering of green space for camp grounds and schools which use groundwater for their water supply. The area also possesses numerous groundwater dependent ecosystems (GDEs) including the Mataranka Thermal Pools, Bitter Springs and the Roper River. These places are valued by the Mataranka community and visitors to the region for their social, cultural, environmental and economic significance. For these reasons, the Tindall Limestone Aquifer, Mataranka – Daly Waters is a priority area for water allocation planning. A WAP is being developed to protect the environmental values, provide certainty for water users and define rules to allow the developments that depend on access to groundwater to grow in a sustainable manner.

The proposed Plan area covers all of the Tindall Limestone Aquifer within the Roper River catchment, extending from north of Mataranka to Daly Waters.

The boundaries of the Plan area are defined as follows:

- The western boundary aligns with the geological basin divide between the Wiso and Georgina Basins and the extrapolated “Birdum Fault”. The geological basin divide separates the recharge areas of the Tindall Limestone Aquifer into two areas, one in the east where groundwater flow is directed towards its eventual discharge in the Roper River, and one in the west where groundwater flow is generally directed towards the spring discharge areas of the Flora River in the Daly River catchment.
- The eastern boundary is the eastern extent of the Tindall Limestone Aquifer.
- The northern boundary corresponds to a groundwater flow-divide within the Tindall Limestone Aquifer in the vicinity of the King River. A groundwater flow-divide is like a ridge or set of high-points in the water table. Groundwater to the south of this flow-divide is directed towards the Roper River, while groundwater north of this flow-divide is directed towards the Katherine River.
- The southern boundary corresponds to the southern limit of the Cambrian Limestone Aquifer which is located within the Daly Roper Water Control District. Groundwater extraction from this southern boundary would not be detected as an impact on the Roper River flow regime in less than 100 years or more. Additionally, the conceptual model for groundwater flow in this part of the Plan area is that there is limited contribution of recharge and groundwater flow from the Georgina Basin further south. The former southern boundary of the Tindall Limestone Aquifer, Mataranka Plan area was located 50 km south of Mataranka and it was assumed that any groundwater extraction south of there would not impact the Mataranka springs for 50 years or more.

Figure 2 Map of the Daly Roper Water Control District, Daly and Roper Rivers catchments and the Plan area.

3 The Tindall Limestone Aquifer, current allocations and usage

3.1 Groundwater in the Tindall Limestone Aquifer, Mataranka – Daly Waters

When rain falls on land, some water evaporates, some flows to streams and rivers, and some seeps into the soil and is absorbed by plant roots. Excess water in the soil may percolate further down until it reaches a level known as the water table where all the pores or fractures in the sediment or rock are saturated with water. Water in the saturated zone below the water table is called groundwater. Where the sediment or rock type show similar characteristics within the saturated zone, this is called an aquifer. Figure 3 shows a conceptual groundwater diagram.

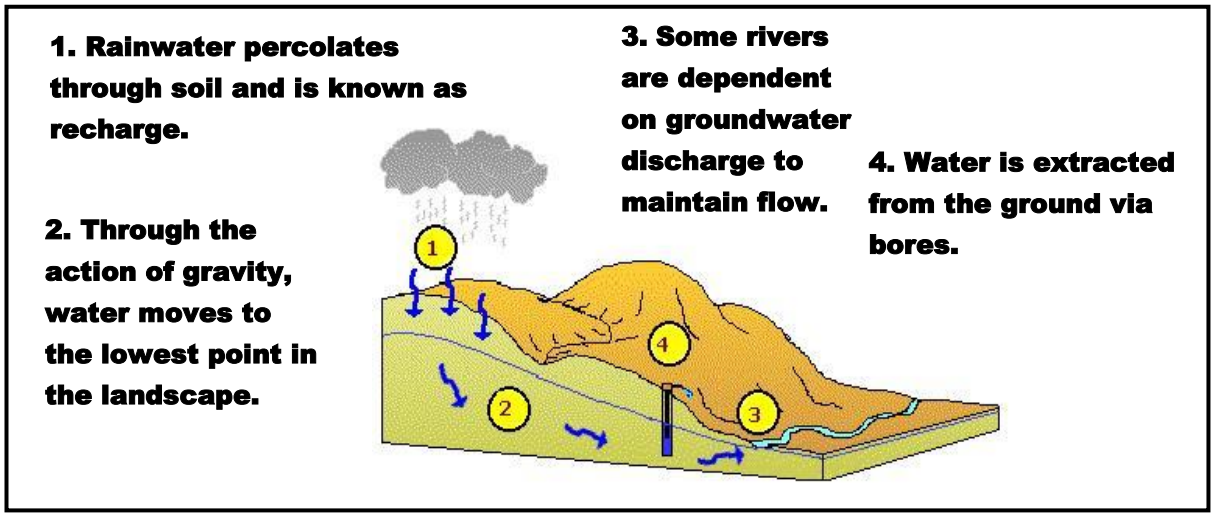


Figure 3 Conceptual Groundwater Diagram

The Tindall Limestone Aquifer is the lowermost geological formation of the Daly Basin. Sometimes, this aquifer is also referred to as the Cambrian Limestone Aquifer. Water is stored and transmitted within the fractures and cavities of the Tindall Limestone Aquifer, which range in size from submillimetre-scale up to the size of caves and caverns. Water can flow relatively easily through these features and bores can extract water at rates of 50 L/s or more.

The Tindall Limestone Formation is geographically very extensive, outcropping around the edges of the Daly Basin from Douglas Daly in the north, the Flora catchment in the west, and Katherine and Mataranka in the east. The Formation extends beyond Daly Waters in the south and south-west where it is known as its stratigraphic equivalents - the Gum Ridge Formation of the Georgina Basin and the Montejinni Limestone Formation of the Wiso Basin respectively (Figure 4).

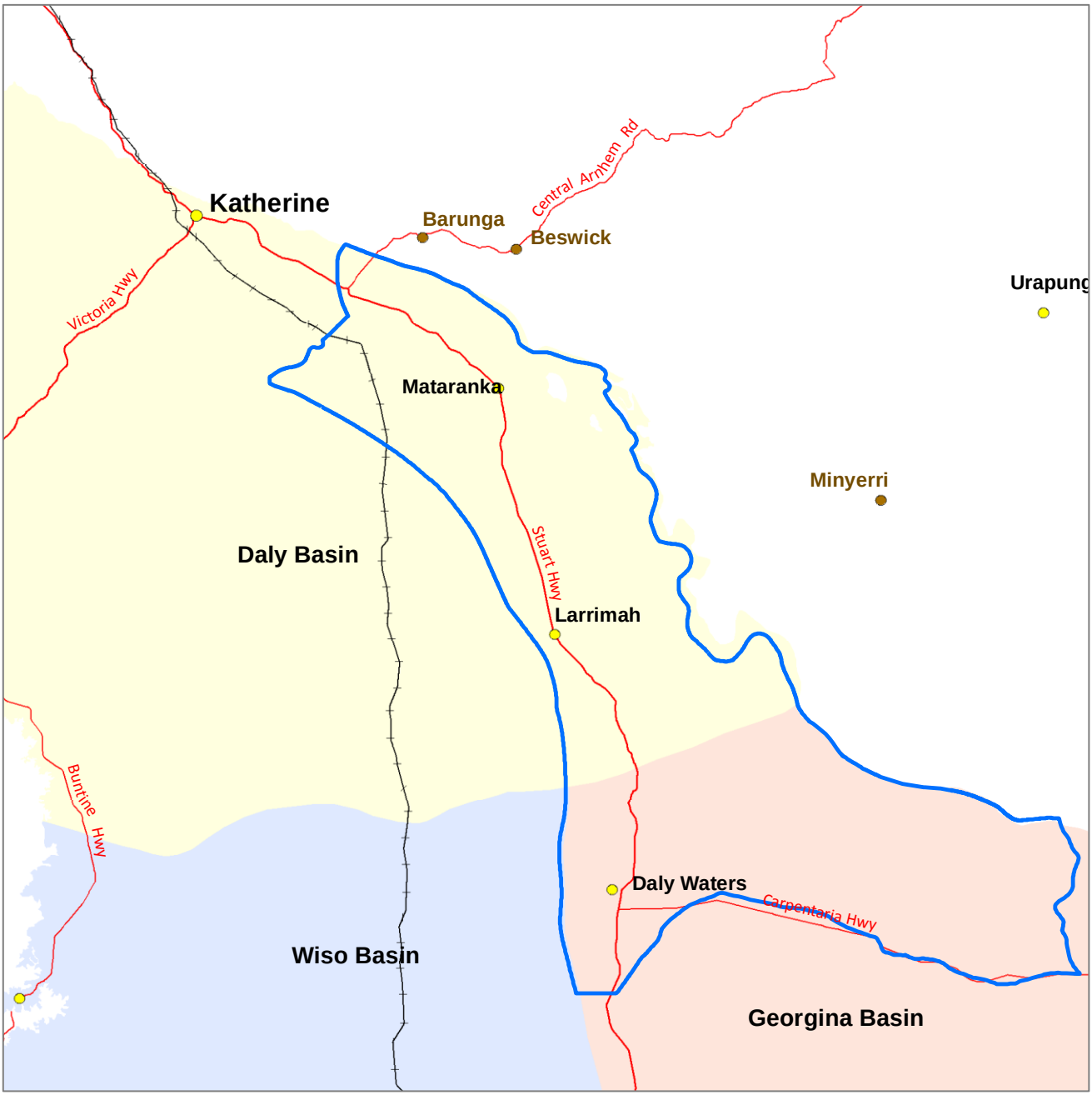


Figure 4 Geological Basins. The Cambrian aged limestone is called the Tindall Limestone Formation within the Daly Basin, the Gum Ridge Formation within the Georgina Basin and the Montejinni Limestone Formation within the Wiso Basin

Groundwater flow systems within the Tindall Limestone Aquifer generally follow river catchment boundaries. Between Katherine and Mataranka, there is a division in the flow regime within the aquifer where groundwater north of the divide flows to the Katherine River and groundwater south of the divide flows to the Roper River. The groundwater flow divide, located just south of the King River, represents the boundary between the plan areas for the Tindall Limestone Aquifer, Katherine and the Tindall Limestone Aquifer, Mataranka – Daly Waters. The groundwater resource in the Mataranka region is managed separately from the Tindall Limestone Aquifer, Katherine which discharges water to the Katherine River.

In some areas, the aquifer outcrops and rainfall can recharge the aquifer directly. However, in most of the Plan area, the limestone aquifer is overlain by cretaceous aged rocks made up of clays and sandstone. In these areas, rainfall percolates more slowly to the Tindall Limestone Aquifer. The rate of

recharge into the aquifer also diminishes in a southerly direction in relation to the higher average annual rainfalls experienced in the north when compared with the south.

The groundwater flow regime in the southern part of the proposed Plan area around Daly Waters is the result of combined flows from adjacent groundwater systems. This area is the recipient of discharges from the Georgina Basin aquifers in the Gum Ridge Formation and Anthony Lagoon Formations, and the Wiso Basin aquifers (Yinfoo, 2002). Groundwater quality is generally poorer in the south than in the northern part of the proposed Plan area.

Figure 5 shows the regional scale groundwater flow regime which results in discharge at the Roper River. The groundwater discharges as springs adjacent to the river and within its bed and as seepages (Figure 6).

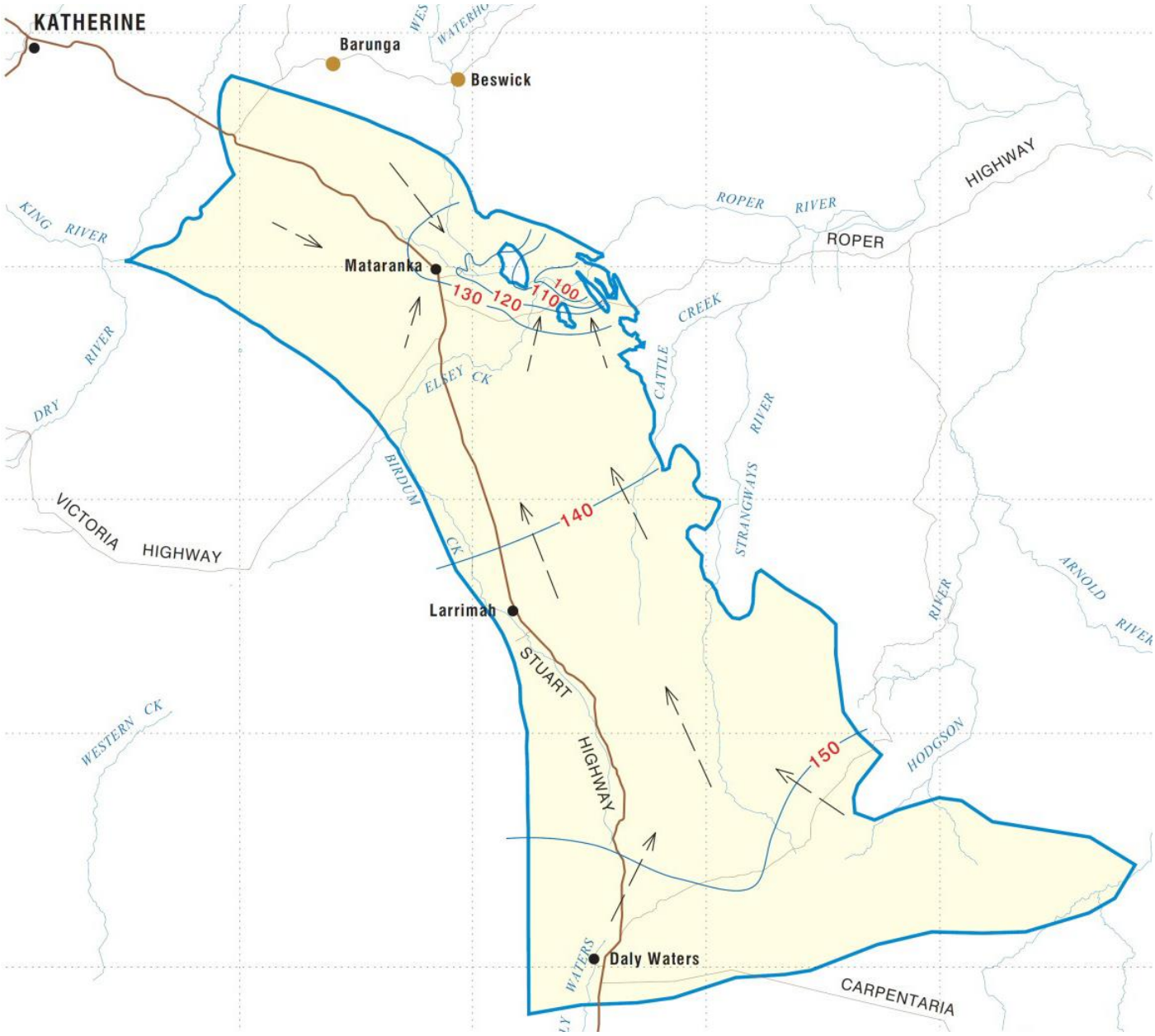


Figure 5 Groundwater flow directions in the Tindall Limestone Aquifer, Mataranka – Daly Waters (figure from Bruwer & Tickell, 2015). The groundwater flow directions are indicated by arrows. Numbered lines show the groundwater levels (in meters AHD) in the aquifer. The groundwater flows from areas where levels are higher, towards areas where levels are lower.

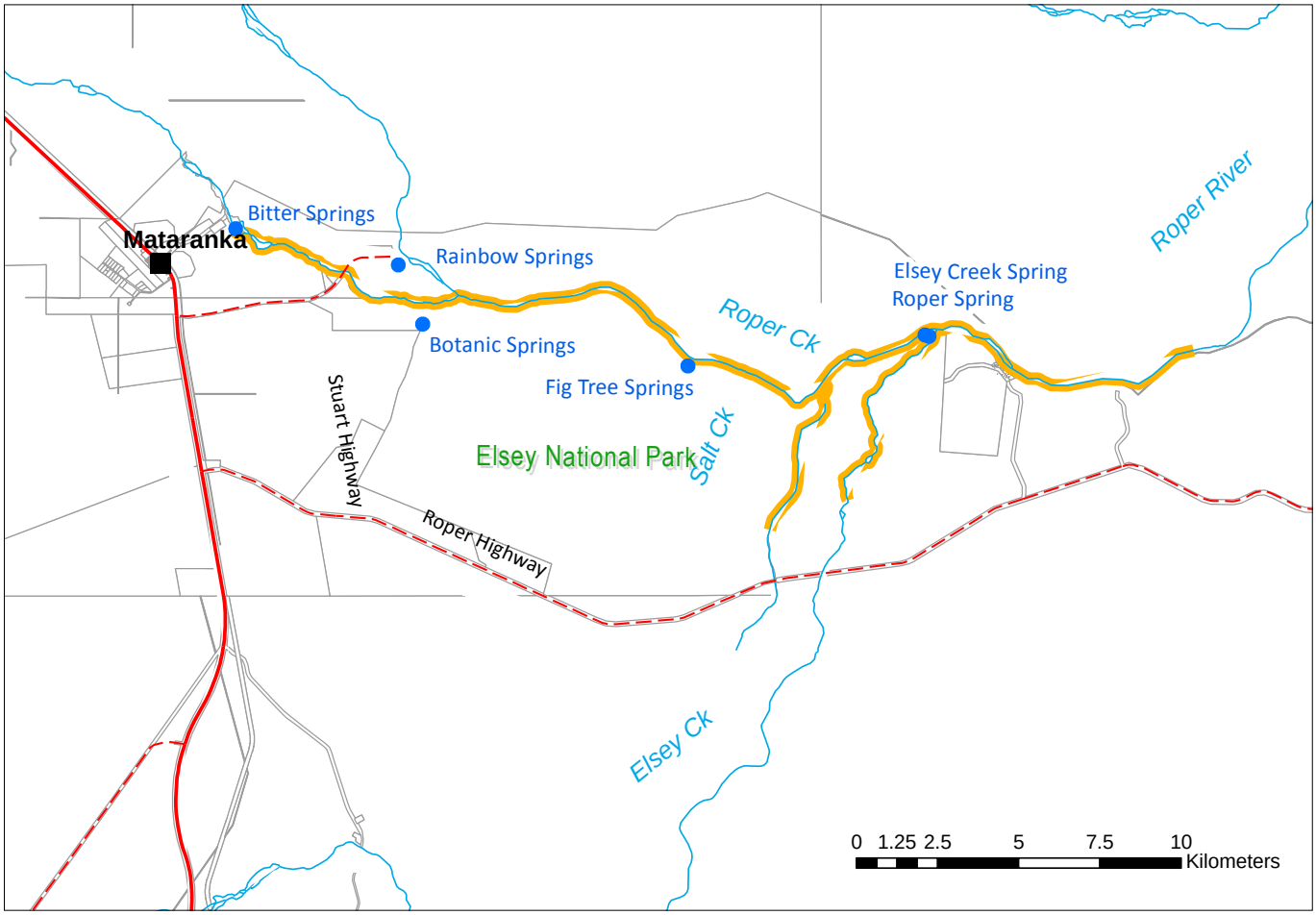
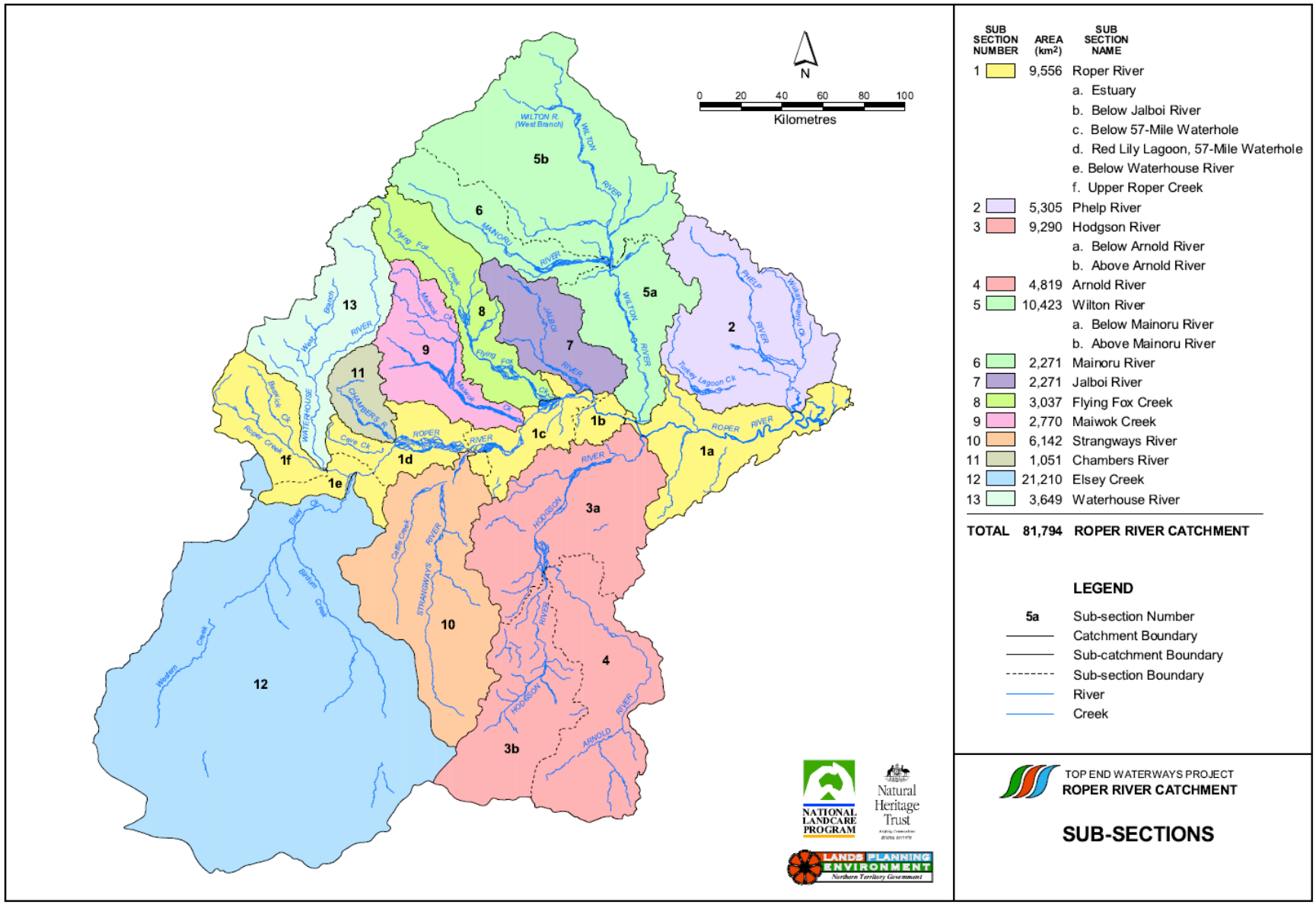


Figure 6 Groundwater discharge areas of the Tindall Limestone Aquifer, Mataranka – Daly Waters

3.2 Surface water of the water allocation plan area

The water allocation plan area covers the groundwater of the Tindall Limestone Aquifer. However the Plan area is located within the surface water catchment of the Roper River. The dry season flows of the Roper River are sustained by groundwater flowing from the Tindall Limestone Aquifer and the Dook Creek Formation Aquifer. The latter is not located within the water allocation plan area. The Dook Creek Formation contributes water to the Wilton River, Mainorou River and Flying Fox Creek which are all tributaries of the Roper River.

Groundwater extractions from the Tindall Limestone Aquifer and the Dook Creek Formation Aquifer have the potential to change the flows in the Roper River. For the purposes of assessing water availability for consumptive uses within the Plan area, surface water extractions from the upper reaches of the Roper River and tributaries are assessed together with groundwater extractions from the Tindall Limestone Aquifer.



SUB SECTION NUMBER	AREA (km²)	SUB SECTION NAME
1	9,556	Roper River
		a. Estuary
		b. Below Jalboi River
		c. Below 57-Mile Waterhole
		d. Red Lily Lagoon, 57-Mile Waterhole
		e. Below Waterhouse River
		f. Upper Roper Creek
2	5,305	Phelp River
3	9,290	Hodgson River
		a. Below Arnold River
		b. Above Arnold River
4	4,819	Arnold River
5	10,423	Wilton River
		a. Below Mainoru River
		b. Above Mainoru River
6	2,271	Mainoru River
7	2,271	Jalboi River
8	3,037	Flying Fox Creek
9	2,770	Maiwok Creek
10	6,142	Strangways River
11	1,051	Chambers River
12	21,210	Elsey Creek
13	3,649	Waterhouse River
TOTAL	81,794	ROPER RIVER CATCHMENT

LEGEND

- 5a — Sub-section Number
- Catchment Boundary
- Sub-catchment Boundary
- Sub-section Boundary
- River
- Creek

TOP END WATERWAYS PROJECT
ROPER RIVER CATCHMENT

SUB-SECTIONS

Figure 7 Roper River Catchment with marked sub-sections as defined by Faulks (2001) (Figure is from Faulks, 2001).

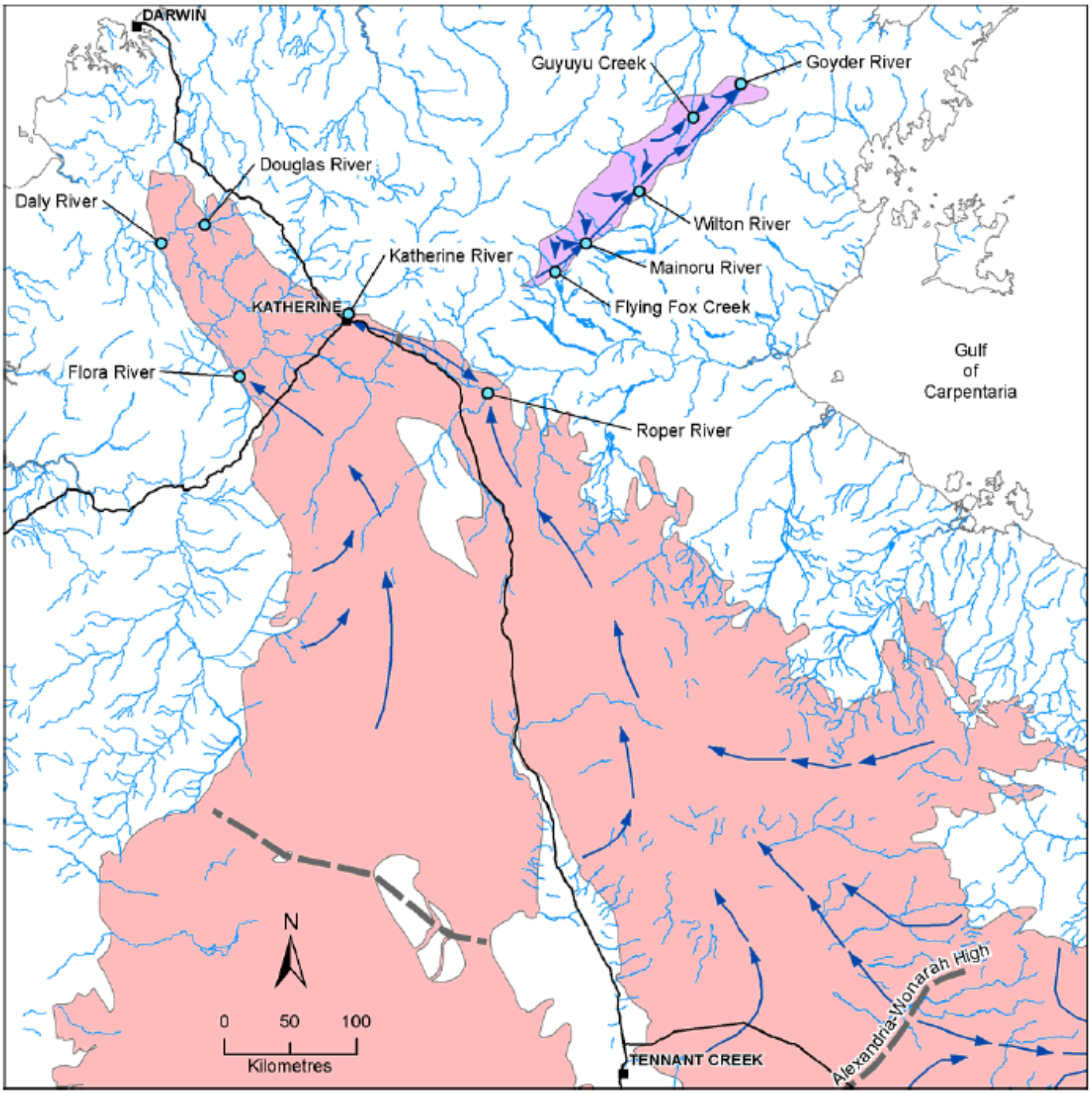


Figure 8 Regional groundwater flow in the Cambrian Limestone aquifer (Tindall Limestone Aquifer, Gum Ridge Formation and Montejinni Limestone) and the Dook Creek Formation (Figure from Knapton, 2009 Part A). Arrows indicate the direction of groundwater flow. Groundwater discharges from these aquifers contribute to flows in the Roper River.

3.3 Groundwater Dependent Ecosystems

The following groundwater dependent ecosystem types have been identified within the Plan area (Boland, 2009):

- Riparian Vegetation
- Wetlands

- Riverine Dry Season Base Flows
- Terrestrial Fauna and Vegetation

These rely on either:

- Groundwater discharging from the ground to surface water bodies as springs or seepage to river bed; or
- Sub-surface presence of groundwater, eg. groundwater levels at a depth that is accessible to plants.

The prominent areas identified as GDE's are:

- The springs and pools of Elsey National Park, including those associated with Rainbow and Bitter Springs, Salt Creek and Elsey Creek
- The entire Roper River including its associated springs, wetland and riparian areas
- Red Lily Lagoon and Red Lily Swamp (see Figure 7).

3.4 Water Resource Assessment

DENR uses an integrated surface water – groundwater model of the Roper River catchment to ensure that both surface water and groundwater extractions from the river and aquifer can be assessed together for their potential impacts to groundwater discharge and streamflow. These integrated computer models are constructed using FEFLOW software to represent aquifers and MIKE11 software to represent rivers (Knapton, 2009).

It is an advanced water balance assessment tool which enables assessment of how groundwater and surface water flows and levels might change in response to climate or changes in water management approaches. The modelling software and approach is a suitable choice for modelling the complex and highly connected groundwater-surface water system in the Roper River catchment. The groundwater and surface water models are linked together and represent the key hydrological processes in the catchment including:

- Catchment rainfall runoff
- Rainfall infiltrating into the soil and down into groundwater
- Flow in the creeks and rivers
- River losses into the aquifer
- Groundwater discharge into the river
- Water extractions from the river and from the aquifer

Both the Tindall Limestone Aquifer and the Dook Creek Formation Aquifer are included in the integrated models.

3.5 Beneficial Uses

The NT Water Act requires that Water Allocation Plans allocate water to beneficial uses. Beneficial uses summarise the different purposes for which water is used and valued. They are separated into two categories; non-consumptive uses and consumptive. Non-consumptive use is the water necessary for

maintaining environmental and cultural values. Consumptive use is the water that is extracted for consumptive purposes and will only be allocated after the non-consumptive uses have been met.

The Beneficial Uses of the Tindall Limestone Aquifer, Mataranka – Daly Waters are shown in Table 2.

Table 2 Tindall Limestone Aquifer, Mataranka – Daly Waters Beneficial Uses

Non-Consumptive Beneficial Uses	Consumptive Beneficial Uses
Environmental Cultural	Public Water Supply Rural Stock and Domestic Agricultural Industry Aquaculture

In accordance with the contingent allocations specified by the NT Water Allocation Planning Framework, and in the absence of scientific information to set site specific environmental flow requirements, the Environmental Water Requirements applied to water allocation decisions in the Roper River set maximum limits of change in flow as follows:

a) Not more than a 20% change in predicted natural flow at Bitter Springs (represented by groundwater levels at RN034230)

b) Not more than a 20% change in predicted natural flow at Rainbow Springs (represented by groundwater levels at RN035796)

c) Not more than a 20% change in predicted natural flow at Elsey National Park (G9030176)

d) Not more than a 20% change in predicted natural flow at Elsey Homestead (G9030013)

e) Not more than a 20% change in predicted natural flow at Red Rock (G9030250)

Should scientific information about water level or flow requirements at specific ecological or cultural assets become available, these could be considered in re-estimating the environmental water requirements.

Currently, 25,940ML/yr is allocated to Consumptive beneficial uses. Table 3 shows a breakdown of the volumes of water allocated to each consumptive beneficial use. The table also shows the security levels for entitlements. Where water has not been allocated to a certain security level or beneficial use, the value is left blank (-). Further work is required to estimate the volume of water used for stock and domestic uses within the water allocation plan area.

There are also four Surface Water Extraction Licences in the connected surface water resources of the Waterhouse River and the Roper River that have been issued for the beneficial use of Industry. Water is also extracted from the Roper River for Public Water Supply for the town of Ngukurr, stock and domestic water supplies and for servicing Parks and Wildlife campgrounds on the Roper River.

Table 3 Current Allocations to Consumptive Beneficial Use

Planning Area	Beneficial Use	Stock and Domestic (estimated)	General Security (ML)	Priority Security (ML)	Total Security (ML)
Mataranka Area Consumptive Pool estimate: 25,940ML/yr	Agriculture	-	11,282	13,534	-
	Industry	-	13	296	-
	Public Water Supply	-	-	-	275
	Stock and Domestic and other small volume groundwater uses	540	-	-	-
	Groundwater entitlement totals	540	11,295	13,830	275
		25,940			
Larrimah to Daly Waters Area Consumptive Pool estimate: 40,000ML/yr	Agriculture	-	-	225	-
	Industry	-	-	-	-
	Public Water Supply	-	-	-	-
	Stock and Domestic and other small volume groundwater uses	Not estimated	-	-	-
	Groundwater entitlement totals	-	-	225	-
		225			

3.6 Annual Extraction Limits (Annual Announced Allocations)

In the Top End, rainfall can be variable from wet season to wet season. This means that recharge to aquifers and discharge from aquifers to rivers can also vary from year to year. Because of this, the sustainable yield of the aquifer also varies. In order to manage the potential impacts of groundwater extractions on spring and river values, all groundwater extraction licences in the Tindall Limestone Aquifer in the Mataranka area are subject to annual announced allocations. The annual announced allocation is the volume of water that can be taken by each licence holder for the upcoming water accounting year (1st of May to the 30th of April). The announcement is made on 1st May of every year.

The announced allocation is based on an assessment of the sustainable yield of the aquifer for the upcoming water year. Rainfall from the wet season is used to predict the groundwater levels, spring flows and river flows for the dry season ahead. If the assessment of sustainable yield indicates that the allocation of water to the environment is unlikely to be met if all entitlements are extracted at their maximum limit, licence holders are subject to a cut in their allocations in order to ensure that the water requirements of the environment are met. Otherwise, the announced allocation is 100%. Licence extraction limits are reduced for General Security licenses first, followed by Priority licenses, until the environmental water requirements are satisfied.

3.7 Estimated Water Use

3.7.1 Stock and Domestic

Current use of the aquifer by rural stock and domestic and other small volume groundwater users is estimated to be 540 ML/yr in the Mataranka area. Stock and domestic use in the Larrimah to Daly Waters area is yet to be estimated. This will need to be estimated as part of the development of the Water Allocation Plan.

3.7.2 Licences

There are 20 Groundwater extraction Licences within the Tindall Limestone Aquifer, Mataranka – Daly Waters. Licence holders are required to report their 'pumpage' (water use) on a monthly basis. Total reported and estimated licensed water extraction for the 2016/17 water accounting year (1 May 2016 to 30 April 2017) was 6112ML, or 24% of licensed entitlements. It is evident that there is a significant volume of unused water entitlement in the Tindall Limestone Aquifer, Mataranka – Daly Waters. Encouraging best use of unused water will be a theme of discussion with the Water Advisory Committee.

3.8 Compliance Monitoring

Licence holders are required to comply with the Terms and Conditions listed on their licence. Among other things, these conditions specify that a licence holder must not exceed their annual extraction limit, that all extractions must be metered and that extractions must be reported to the Controller of Water Resources on a monthly basis. The metering and reporting of groundwater extractions is key to having the information required to sustainably manage this important community asset.

Water Resources stores reported usage data in a database to keep a record of usage for each licence. On-ground compliance inspections are also undertaken on a regular basis. The last extensive compliance inspection in the Mataranka area inspected 14 out of the 20 groundwater extraction licences. Based on this inspection plus earlier inspections of the 20 Groundwater Extraction Licences, 13 had all their bores metered, two did not have meters installed on the licensed bores and five licences could not be inspected.

Inspection of Water Extraction Licences aims to gather information to verify compliance with licence terms and conditions of licences as well as to provide a point of contact for licence holders to receive information about water resource management and their obligations and responsibilities as licence holders.

3.9 Water Resource Condition Monitoring

The Department of Environment and Natural Resources undertakes dedicated monitoring of the groundwater and the surface water system throughout the Roper River catchment and the Tindall Limestone Aquifer, Mataranka – Daly Waters. This includes general water quality parameters as well as groundwater levels and stream flows. These datasets are a long-term investment that is essential for monitoring the condition of our water resources and for ongoing water resource assessment work. The data is also provides a basis for assessing the effectiveness of water resource management rules. The data is made publically available through the NT Water Data Portal (https://nt.gov.au/environment/water/water-data-portal).

4 Key water issues that DENR suggests will need to be considered

Table 4 sets out some of the key elements of the water allocation plan that could be discussed during the planning process along with some background information.

Table 4 Some of the Key elements of the water allocation plan that will require discussion

Key Requirements of the Water Allocation Plan	Work that has been completed	Further work required	Water Allocation Plan Section
Describing the water resources of the Tindall Limestone Aquifer and the Roper River catchment	Several technical reports have been carried out, see reference list.	There is a strong foundation to develop the water allocation plan. The Committee will need to become familiar with the science and DENR will provide presentations and information so each Committee member can gain further knowledge about the water resources.	Part 4
Describing water dependent values and their water requirements:	Described below	Described below	Part 5
• Ecological	The Roper River is recognised as having significant environmental values including large groundwater dependent ecosystems that support extensive riparian vegetation communities, aquatic plants and fish. However, much of the hydro-ecological relationships of the Roper River are poorly described and there is limited work that details ecosystem based environmental water requirements of the Tindall Limestone Aquifer, Mataranka – Daly Waters. A risk assessment was undertaken in 2009 to identify risks to groundwater dependent ecosystems arising from groundwater extractions (Boland, 2009). This work categorised groundwater dependent ecosystems of the	In allocating at least 80% of flows to non-consumptive beneficial uses, it has been considered that there is a level of protection for the water dependent environmental values in the region Further work is required in the future to define the environmental water requirements of the Tindall Limestone Aquifer, Mataranka – Daly Waters, springs of Elsey National Park, and the Roper River. The risk assessment work previously undertaken should be revisited in light of any additional data and information that has become	Part 5

Key Requirements of the Water Allocation Plan	Work that has been completed	Further work required	Water Allocation Plan Section
	In allocating water to consumptive beneficial uses, DENR has applied the contingent values set out in the NT Water Allocation Planning Framework that allocate 20% of water flows to consumptive beneficial uses and 80% of water flows to non-consumptive beneficial uses.	available and may be relevant. A key role of the Water Advisory Committee is to provide advice and recommendations to DENR about what future work should be undertaken to improve water resource management in the area.	
• Economic and Social	The region is an established agricultural precinct, there is an established and successful pastoral industry within the Plan area, and the region and its Groundwater Dependent Ecosystems attracts large tourism numbers each year for fishing, camping and recreation. The Soil and Land Suitability Assessment for Irrigated Agriculture in the Larrimah Area, Sturt Plateau (McGrath et al, 2015) identified future opportunities for agricultural development in the plan area.	Compile up to date information about the economic and social values of the region as well as the potential for economic growth to drive changes in demands for water resources.	Part 5
• Cultural	The deep spiritual affiliation that the people of the Wubulawun, Yangman, Mangarrayi, and Beswick Aboriginal Land Trusts have with the many springs, soaks, billabongs, streams, creeks and rivers associated with aquifer is recognised. These sites include Bitter and Rainbow Springs, Roper River and Red Lily Lagoon. Barber, M. & Jackson, S. (2011; 2012) undertook studies to better understand indigenous cultural values:	In allocating at least 80% of flows to non-consumptive beneficial uses, it has been considered that there is a level of protection for the indigenous and non-indigenous cultural values in the region. Further work is required to identify indigenous water related cultural values of the Mataranka and Roper River area, along with quantification of water requirements for cultural purposes. The Plan should also describe and provide water flows for any non-indigenous cultural values of water places.	Part 5
Defining the Objectives/ desired outcomes of the	Previous drafting of the Water Allocation Plan,	The outcomes and objectives should be reviewed by the Water Advisory Committee in	Part 3

Key Requirements of the Water Allocation Plan	Work that has been completed	Further work required	Water Allocation Plan Section
Water Allocation Plan	Mataranka identifies the following outcomes for the Plan: • Preservation of the water quality, surface water flows and groundwater levels around Mataranka, including Roper River and Rainbow and Bitter springs, which provide environmental, Indigenous cultural and other instream public benefits. • Development of agriculture, sustainable commercial tourism, and other water consumptive industries that form a significant part of the Mataranka and surrounding area's economy. • Provision of a water supply, with sufficient and reliable volume, for essential services to Mataranka and Jilkminggan as well as water for stock and domestic purposes to rural properties. • Maintenance and support for traditional land use in the predominately aboriginal owned land surrounding the Mataranka Water Plan Area through the protection of culturally significant water dependant sites as well as providing access to water for commercial development.	light of the expanded Water Allocation Plan area and any values that the committee should feel need to be represented in Planning objectives.	
Assessing Sustainable Yield and allocation water between non-consumptive beneficial uses and the Consumptive Pool	There is a significant body of work, including an integrated surface water groundwater model available to estimate Sustainable Yield for the resource and the Consumptive Pool. The current estimate of the Consumptive Pool is 24,940ML/yr in the Tindall Limestone Aquifer in the Mataranka area and 40,000ML/yr in the Tindall Limestone Aquifer, in the Larrimah to Daly Waters area.	The Draft Plan should include assessment, rules and strategies for managing both surface water extractions and groundwater extractions	Part 6 and Part 7
Defining and furnishing the	A Strategic Indigenous Reserve is a volume of water	The Plan area has been extended south to Daly	Part 7

Key Requirements of the Water Allocation Plan	Work that has been completed	Further work required	Water Allocation Plan Section
Strategic Indigenous Reserve	reserved from the Consumptive Pool to enable economic development for local Aboriginal people. The 2009-2011 drafting of the TMWAP identified an SIR of 4,875ML/yr (25% of the Consumptive Pool set out in the Plan drafting)	Waters. The NT Government is currently developing a Strategic Indigenous Reserves Policy. Therefore the method and volume determining the Strategic Indigenous Reserve may need to be revised.	
Defining risks to water resources and water dependent values	Although each water allocation decision in the Roper River catchment has addressed risk management criteria, a coordinated risk assessment has not been undertaken for water allocation plan development	As part of the planning process, a risk assessment will be undertaken. This is a key part of the planning process and informs what water resource management strategies are put in place as well as the adaptive management framework of the plan including monitoring, evaluation and review	Part 7
Defining the rules/ strategies for managing unlicensed water entitlements (e.g. rural stock and domestic)	Water use that does not require a licence (rural stock and domestic and other small volume groundwater use) has been estimated for the plan area around Mataranka	Further work is required to estimate the current and future rural stock and domestic water uses across the new plan area. This could involve user surveys about stocking rates as well as domestic water use demands.	Part 7
Defining the rules/ strategies for managing licenced water entitlements:	See below	See below	Part 7
• Annual Announced Allocations	Licences have been issues with conditions that make them subject to annual announced allocations.	The Plan should describe the Annual Announced Allocation rationale and procedure and annual milestone.	Part 7
• Licence administrative amendments and	DENR has a licence renewal Policy and a licence re-issue policy that implement the requirements of the	Plan will be drafted in accordance with the DENR policies	Part 7

Key Requirements of the Water Allocation Plan	Work that has been completed	Further work required	Water Allocation Plan Section
renewals	Water Act		
• Rules for granting new or increased entitlements	Licences have been issued with the Security Levels that were specified in the 2009-2011 drafting of the Water Allocation Plan, Mataranka. All licencing is in accordance with the requirements of the Water Act.	A key role of the Water Advisory Committee will be to discuss and advise of any relevant matters that should be considered in the granting of new or increased entitlements for the Tindall Limestone Aquifer, Mataranka – Daly Waters. These matters would be listed in the water allocation plan.	Part 7
• Recouping and reallocating unused water (Use it or lose it)	Licences issued for the Tindall Limestone Aquifer, Mataranka have been issued with conditions that make them subject to the 'use it or lose it' policy	The Plan will describe the implementation of the unused water policy within the Tindall Limestone Aquifer, Mataranka – Daly Waters.	Part 7
• Water Trading	The 2009-2011 drafting of the Water Allocation Plan set out water trading rules.	Further work is required to define the water trading rules for the Tindall Limestone Aquifer, Mataranka – Daly Waters	Part 7
Defining the monitoring and evaluation framework and activities for the Plan to maximise water resource management outcomes over the long term	Planning work in 2009-2011 identified plan monitoring requirements.	The Plan will set out performance indicators, monitoring, evaluation and review requirements. These will need to be defined in light of the objectives and risks identified during the planning process and should report be linked with environmental, economic, social and cultural values.	Part 8

5 How the Community will be consulted and the role of the Tindall Mataranka – Daly Waters Water Advisory Committee

Whilst there has been significant engagement and development of a substantial body of knowledge about the values and interests of the community in the past, it is essential that the community and key stakeholders continue to have input to the development of the Plan.

Key stakeholders will be represented on the Tindall Mataranka – Daly Waters Water Advisory Committee. The role of the committee is to identify issues, critically evaluate information and to offer suggestions for water management strategies that support the potential beneficial uses and maximise opportunities for ecological sustainable development in the region.

Community Information Sessions will be held at centres in the Mataranka to Daly Waters region to inform the community about the planning process and facilitate an exchange of information about the Water Allocation Plan.

Public comment will also be invited upon release of the final draft plan.

5.1 Role of the Committee

Nominations for the Water Advisory Committee were sought in October 2016. Members of the water Advisory Committee have been appointed by the Minister for Environment and Natural Resources. The members selected by the Minister ensure that a diversity of representation is achieved and that all beneficial uses are represented. Committee members have a range of backgrounds and recognised experience including in water use and planning, regional development, pastoral enterprise, irrigated agriculture, horticulture, mining, tourism, community interests, environmental protection, water engineering and water management, Aboriginal enterprise and Aboriginal cultural values.

The Terms of Reference for the Tindall Mataranka – Daly Waters Water Advisory Committee are published on the DENR website along with a list of committee members. Minutes of each committee meeting will also be published on the website as they become available.

6 Timetable for Plan Development

It is anticipated that the final draft of the Water Allocation Plan for the Tindall Limestone Aquifer, Mataranka – Daly Waters will be prepared and available for public comment by the end of September 2018 and that it will be declared in November 2018.

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Glossary

Sustainable Yield	The volume of groundwater that can be extracted from an aquifer on a sustained basis without impairing water quality or causing environmental damage.
Consumptive Pool	The volume of water available for allocation to consumptive beneficial uses after considering the water requirements of the environment.
Water Entitlement	A volume of water that may be extracted from an aquifer through either a licenced entitlement or a stock and domestic entitlement.
Maximum Entitlements	The volume of water that has been allocated to consumptive beneficial uses.
Announced Allocation	A portion of a licence entitlement volume that can be taken in a year, announced annually in May. Applied in systems where the volume of water that can sustainability be taken from the aquifer varies from year to year.
Security Level	Represents the order in which Annual Announced Allocations are applied to licence holders, e.g. in years when a less than 100% announced allocation is required, General security licence allocations are reduced first, then Priority security licences as is required to meet objectives for minimum change in river and spring flow.
Reliability	A percentage number representing how many years the total volume of licence entitlements would have been available in full if all entitlements were extracted at their maximum entitlement under the same aquifer recharge and river flow conditions that have been observed over the last 30 years.