



Tindall Mataranka to Daly Waters Water Advisory Committee *Meeting Record 7 (b)*

*6 December 2018 – 11.00 am
Teleconference*

Members Present

Rebecca Mohr-Bell
Chris Parry
Rohan Leach
David Ciaravolo

Independent Chair
Proxy for Sarah Kerin, Department of Tourism and Culture
Proxy for NT Cattlemen's Association
Amateur Fishermen's Association of the Northern Territory

Members Absent

Sharon Hillen
Vin Lange
Tim Helder
Clair O'Brien
Ben Lewis
Justin Dyer
Kane Younghusband
Helena Lardy
Jocelyn James
Kerry Roberts

Roper Gulf Regional Council
Centrefarm / TopEnd Farm
Proxy for Quintis, Water Extraction Licence Holder
Regenerative Agriculture
Proxy for Allister Andrews, Jawoyn Association
Proxy for NT Cattlemen's Association
Horticulturist, Water Extraction Licence holder
Jilkmunggan Community Aboriginal Association
Jilkmunggan Community Aboriginal Association
Jilkmunggan Community Aboriginal Association

Advisors Present

Tim Bond
Michelle Rodrigo

Director Water Planning and Engagement, DENR
Water Planner, DENR

Observers

Pru Ducey

DENR - Minutes

1. OPENING (Chair)

Meeting opened at 11.05am.

1.1. Apologies

Sharon Hillen	Roper Gulf Regional Council
Vin Lange	Centrefarm / TopEnd Farm
Rick Fletcher	Northern Land Council

2. MINUTES OF MEETING 7 (Chair)

Draft Minutes of Meeting 7 held 25 October 2018 were emailed to members and proxies on 29 November 2018.

As there was no quorum. Minutes of Meeting 7 could not be confirmed.

- ❖ **ACTION:** WAC to consider the Minutes of Meeting 7 held in Mataranka 25 October 2018 out of session.

3. BUSINESS ARISING FROM THE MINUTES (Chair)

Action #	Responsibility of	Action	Status
7-1	Michelle Rodrigo	Email members a copy of the presentations from Meeting 3 with the draft Minutes of Meeting 4	COMPLETED Sent with Meeting 7 Minutes 29/11/18
7-2	Michelle Rodrigo	Liaise with Committee to arrange meeting to update Jilkmungan members	Ongoing Visits 21/8/18 and 25/10/18
7-3	Michelle Rodrigo	Seek permission to share notes from the discussions with Jilkmungan and circulate to the Committee <ul style="list-style-type: none"> • Members from Jilkmungan were happy for notes to be shared but have not yet approved notes from the meeting. Will be combined with notes from today's meeting (and attached to Minutes). 	Ongoing Notes from visit 24/10/18 are included in Meeting 7 Minutes
7-4	Michelle Rodrigo	Look at what evidence there is of discharge zones in the Roper <ul style="list-style-type: none"> • More work is needed to determine where discharge zones are, and to develop scenarios for buffer zones 	Ongoing
7-5	Michelle Rodrigo	Planner to get meeting papers out well before the meeting to allow members time to absorb and consider information	Noted
7-6	Michelle Rodrigo	Try to program in a session on climate change scenario and how this might be incorporated into scenario modelling Do not have anyone to present. Water Assessment are doing some work pointing to there not being any significant climate change that can be inputted to the models. The intensity of storms is difficult to put into the model.	Ongoing
7-7	WAC members	Members to advise DENR of any other implications they think may arise as a result of the changes to the Plan area.	COMPLETED No further comments received

Action #	Responsibility of	Action	Status
7-8	Michelle Rodrigo	The Department is to update the spatial mapping and figures on Aboriginal land eligible for SWR in the new WAP area and Michelle will present this to the WAC at the next meeting.	COMPLETED Figures tabled at Meeting 7b. Mapping to be tabled at Meeting 8
7-9	Michelle Rodrigo	When data is available, add a layer to the map, showing eligible Aboriginal land in relation to the SWR	COMPLETED As above
7-10	Michelle Rodrigo	For future meetings, restrict layers on maps to those that are relevant to the discussion e.g. distinguish eligible Aboriginal land from other 'freehold' land for the purposes of discussing SAWR allocations.	Noted
7-11	WAC	When the Committee reviews the final version of the Plan, they will revisit the Vision and Outcomes (once other decisions have been made).	Noted
7-12	Michelle Rodrigo	Planner will develop the Outcomes/Objectives table further and come back to the Committee with a more advanced version.	Ongoing
7-13	Michelle Rodrigo	Planners to discuss with Aquatic Health Unit the possibility of providing a summary of all available data to the Committee. Michelle will report to the Committee at the next meeting.	Ongoing
7-14	Sharon Hillen	Investigate whether any testing has been done in relation to septic tanks in the Mataranka area and possible leaching of nutrients into the groundwater system	Ongoing
7-15	Pru Ducey	Pru to check whether the Committee received a presentation on water quality (possibly from David Crook) at 2017 meetings.	COMPLETED No presentation on water quality, but a comprehensive presentation on Water Monitoring was provided at Meeting 2
7-16	Michelle Rodrigo	Circulate presentation slides and notes taken during the session to WAC members by 31 October 2018	COMPLETED
7-17	WAC members	WAC members to provide any additional comments on Flood Harvesting by 16 November 2018.	COMPLETED No further comments received

- ❖ **ACTION:** Action items from Meeting 7 to be emailed to members as a reminder to follow up items against their names.
- ❖ **ACTION:** Michelle Rodrigo and Pru Ducey to work with individual members to get full names, addresses and any other details required to re-establish the Committee under a formal 'instrument' of appointment.

Payment of sitting fees/meeting expenses – changes to the NT Government Boards Handbook no longer allows payments of sitting fees and attendance expenses for WAC meetings to be paid to members by invoice. All members need to be assigned an employee AGS number.

- ❖ **ACTION:** Michelle and Pru will be in touch with individual members to discuss changes to the way members are to be paid sitting fees/attendance expenses now that the government will not accept invoices from Board (WAC) members.

4. UPDATE ON PROGRESS SINCE MEETING 7 AND FUTURE CONSIDERATION OF ESY AND WATER SHARING ARRANGEMENTS (Planner)

Members were provided with a briefing paper (Appendix 1) prior to the meeting.

Water management zones

Department is currently updating spatial data to reflect the new Plan boundary and the three agreed water management zones.

Water balance figures for new Plan area and management zones.

- Water resource assessment and water balance is being updated for new Plan area and zones.
- Water balance includes figures for annual recharge of the aquifer, discharge into rivers, through flow from one basin to another, streamflows etc. As this work was not completed in time for the scheduled face-to-face meeting, a teleconference was held instead (this meeting 7b).
- These updated figures are essential for the WAC to make informed recommendations on the ESY and water-sharing arrangements between consumptive and non-consumptive (environmental/cultural flows) beneficial uses.
- Water Assessment team is working with the Integrated Surface-Groundwater Roper Hydrologic Model to produce new figures.
- We hope to have new figures in December, well before the next face to face meeting
- The Roper Model was peer reviewed in 2015 and has been shown to align with best practice methodology for integrated surface-groundwater hydrological modelling. This means we can have good confidence in the figures generated by the model.

Progress on Strategic Aboriginal Water Reserve (SWR)

- Now that the new management zones have been mapped, SWR policy can be applied to each zone to calculate the percentage of eligible land in each zone.
- Maps will be available at the next meeting.
- Percentages of eligible SWR land in each zone are provided at section 6 of the briefing paper (Appendix 1).
- 'Available' consumptive pool is the portion of the consumptive pool available for economic consumptive use, not including allocations to public water supply or rural stock and domestic uses, which are prioritised above other uses.
- *Does the SWR apply for all Water Allocation Plans?* Yes, there needs to be a plan for SWR to be activated, then the eligibility criteria are applied to determine allocation to the reserve.
- *Can the SWR be sold on a yearly basis?* SWR is for the purpose of social and economic development by eligible Aboriginal landholders. It can be traded, temporarily under a licence that can be used for up to 10 years, and does not have to be used on that land.
- Is there a way to access water from the SWR that is not being used if the holders are not willing to trade? SWR is not subject to any unused water rules. However, if the allocation was temporarily traded to a licenced user, that licence would be subject to unused water conditions, and the unused water would go back to SWR.

- ❖ **ACTION:** Michelle Rodrigo to circulate a weblink to the [Strategic Aboriginal Water Reserve Policy Framework](#)

Section 5.0 Guidelines for setting the Estimated Sustainable Yield (ESY)

Members were encouraged to think further about this, as the next immediate task for the WAC will be to provide clear recommendations on ESY for the aquifer and on arrangements for sharing water between the consumptive and non-consumptive beneficial uses. This section contains some of the items the WAC needs to consider.

The first point is about how the *NT Water Allocation Planning Framework* is applied to calculations of ESY for each management zone.

The second point talks about figures and approaches the WAC will use to make recommendations about the ESY. The Department (and the Bureau of Meteorology) recommends that 'median' values rather than 'average/mean' values are used for recharge and the 80/20 rule is applied to that figure. Median values provides a figure for recharge that is more typical over the selected time period.

The historical climate period fed into the Roper model is 1900 to 2018. Recharge figures for each year in the range can be extracted from the model. Median annual recharge can then be calculated for a particular assessment period e.g. 1960 to present or 1900 to present. It is proposed to use the period 1960 to present, as this includes a full range of climate variation from extreme dry to very wet conditions, and spans the period for which we have good records of observed Roper streamflow. See paper at Appendix 1 for more detail.

The WAC will be provided with both median and mean average recharge figures for both periods, 1900-2018 and 1960-2018.

There are potentially three meetings remaining to finalise the Plan. Briefing papers will be sent to members between meetings with a maximum of three focus questions to consider when reading. This will be the most efficient way to get through what we need to by mid-2019.

- ❖ **ACTION:** The briefing paper provided for this meeting 7b is to be re-sent to all members, with some key points for consideration at the next face to face meeting. Members can call Michelle Rodrigo with any queries between meetings.

5. PLAN FOR 2019 WAC MEETINGS (Chair)

The WAC should be able to complete the plan in 10 meetings, not including this one (to be called Meeting 7(b). Meetings 8, 9 and 10 are to be scheduled for the first half of 2019.

It is proposed:

- Meeting 8 be held in Katherine during the first or second week of February.
- Meeting 9 be held in Mataranka during the first week of April 2019, over 2 days. The afternoon of the first day will include a visit to Jilkminggan by all WAC members so their input can be provided and included.

Small group discussions during these meetings was suggested as the most productive way to get clear feedback from members.

- ❖ **ACTION:** Michelle Rodrigo will circulate briefing papers for members to read and comment on between meetings. Papers will have several key questions to help focus discussion and feedback.
- ❖ **ACTION:** Options for 2019 meeting dates to be circulated via Doodle Poll following this meeting.

Summary of Actions arising from Meeting 7(b)

Action #	Responsibility of	Action	Status
7b-1	WAC members	WAC to consider the Minutes of Meeting 7 held in Mataranka 25 October 2018 out-of-session.	New
7b-2	Pru Ducey	Action items from Meeting 7 to be emailed to members as a reminder to follow up items against their names.	New
7b-3	Michelle Rodrigo & Pru Ducey	Michelle Rodrigo and Pru Ducey to work with individual members to get full names, addresses and any other details required to re-establish the Committee under a formal 'instrument' of appointment.	New
7b-4	Michelle Rodrigo & Pru Ducey	Contact individual members to discuss changes to the way members are to be paid sitting fees/attendance expenses now that the government will not accept invoices from Board (WAC) members.	New
7b-5	Michelle Rodrigo	Circulate a weblink to the Strategic Aboriginal Water Reserve Policy Framework	New
7b-6	Michelle Rodrigo & Pru Ducey	The briefing paper provided for this meeting 7b is to be re-sent to all members, with some key points for consideration at the next face to face meeting. Members can call Michelle Rodrigo with any queries between meetings.	New
7b-7	Michelle Rodrigo	Circulate briefing papers for members to read and comment on between meetings. Papers will have several key questions to help focus discussion and feedback.	New
7b-8	Pru Ducey	Options for 2019 meeting dates to be circulated via Doodle Poll following this meeting.	New

Tindall Mataranka to Daly Waters WAC Meeting 8 (teleconference)

6th Dec 2018

Agenda Item 4 - Update on preparation of water balance figures and process for determination of Estimated Sustainable Yield

WAC Action required:

- Note and discuss the update presented in this paper
- Agree on any relevant recommendations or actions

1.0 Summary Update

Progress since the last WAC meeting (Meeting 7, held 25 October 2018) on development of key areas of the Mataranka Tindall Water Allocation Plan are summarised below. More detail and background is provided in subsequent sections in the paper.

Key output	Background	Progress
Water management zones for new Plan area are endorsed	At Meeting 7, the WAC endorsed the three proposed management zones for the new Plan area. See map at end of this paper.	Department is currently updating spatial data to reflect the new Plan boundary and the three agreed water management zones.
Water balance figures for new Plan area and management zones are prepared	Changes to the boundary of the Mataranka plan area (triggered by the requirement to develop Water Allocation Plans for the Beetaloo South and North areas) necessitates a revision of the hydrogeological assessment of the Tindall Limestone Aquifer and connected surface flows within the new Plan area. Water balance figures (recharge, discharge, stream flows, overland flow, evapotranspiration, lateral inflow, etc.) are to be recalculated, using the Roper catchment model, for each of the new management zones. Preliminary figures were presented at Meeting 7 to illustrate the link between water balance figures and potential water-sharing arrangements in the new Plan. The '80:20 rule' was applied to known recharge and discharge figures to demonstrate possible water allocation scenarios for each management zone.	Department is extracting water balance values from the Roper model for the agreed management zones within the new Plan area. This work is likely to be completed by end December. These figures are essential for discussions and decisions about the Estimated Sustainable Yield of the aquifer and for determining sustainable water-sharing arrangements for consumptive and non-consumptive beneficial uses. Upgrades to the Roper catchment model are occurring in the near future to incorporate the new Beetaloo Plan areas to the south and north of the Mataranka Tindall WAP. This analysis will be available by mid-2019, however, Water Assessment has advised that this is very unlikely to affect the water balance figures being prepared at present for the Mataranka WAP.
Allocations to Strategic Aboriginal Water Reserve (SWR)	Preliminary discussions were held during Meeting 7 regarding the distribution of SWR entitlements across the three management zones.	The Department's spatial data team has re-calculated the land areas eligible for SWR within each management zone. Maps are in production to visualise the three categories of Aboriginal land eligible for SWR (prescribed by the NT SWR Policy Framework) within each management zone.

2.0 Recapping on management zones – Meeting 7

At Meeting 7, the WAC supported the proposal to establish three water management zones within the Mataranka Tindall Water Allocation Plan (WAP) area, being North Mataranka, South Mataranka and Larrimah management zones. This zoning provides a management framework for the WAP which will enable:

- the implementation of surface and groundwater management practices which manage for the particular aquifer conditions and dynamics of each zone;
- the maintenance of groundwater ‘mixing’ regimes which drive the natural dynamics and condition of stream flows in the Roper and its tributaries;
- the protection of spring discharges and seepage areas and groundwater-dependent ecosystems which can be impacted by a concentration of groundwater extraction points and localised aquifer drawdown; and
- the protection of water quality and entitlement reliabilities for existing consumptive users (including stock bores and licenced irrigators) who could be impacted by concentrated groundwater extraction and localised aquifer drawdown.

The Committee reviewed some very preliminary figures for aquifer recharge and groundwater discharge (spring flows) prepared by the DENR Water Assessments Branch for each of the three zones. The purpose of this was to expose the Committee to groundwater figures which will become the key determinants of Estimated Sustainable Yield (ESY) values for each management zone.

To recap further, below is some of the explanatory material provided for meeting 7 in relation to *recharge*, *discharge* and *ESY*:

Recharge is the process by which water enters the aquifer. In Mataranka Tindall WAP area, this occurs primarily through infiltration of rainfall and through lateral inflow from aquifers to the south. Recharge is a key indicator of the availability of water for sustainable uses. Recharge of the aquifer is more strongly seasonal in the North and South Mataranka Zones compared to the Larrimah Zone where the influence of seasonal rainfall is buffered by a thicker layer of Cretaceous sediments of higher clay content through which water must percolate to the aquifer.

Discharge is the volume of groundwater leaving the Tindall Limestone Aquifer via springs and seepages into the Roper River and its tributaries. During the dry season, stream flows in the river are almost solely reliant on this water source, providing approximately 3 to 4 m³/s of discharge through the river bed and springs. This means that for water accounting purposes, stream flows in the dry season should be treated as groundwater. Any measurable impact of groundwater pumping is therefore likely to be detectable as changes to discharge volumes, the equivalent of dry season stream flows.

Hydro-geological modelling has determined that 25% of the annual discharge to the Roper (equivalent of dry season stream flow) is sourced from the Tindall Aquifer in the South Mataranka Zone. The primary source of discharge to the Roper is the North Mataranka Zone, with 75% of total annual discharge entering from springs and seepages in this area.

Estimated sustainable yield (ESY) is the amount of water allocated to all beneficial uses, including the environment, for a defined water resource where the level of allowed water extraction or diversion does not compromise key cultural and environmental values, ecosystem functions, or the productive base of the water resource for existing users.

Once the ESY is determined and the environmental and associated cultural water requirements are established, the volume of water that can be allocated for consumptive use is derived, and a process for assigning the consumptive pool across different beneficial uses is undertaken, based on current use, predictions of demand and industry and economic development goals.

In the absence of alternative scientific evidence, the *NT Water Allocation Planning Framework*, is used as a contingent water allocation approach to determine water-sharing arrangements between consumptive

and non-consumptive beneficial uses. This is also known as the 80:20 rule. Applied to the Mataranka Tindall WAP, this means that at least 80% of instantaneous river flows must be allocated to the environment and at least 80% of annual recharge to the aquifer is allocated to environmental and cultural flows to maintain the requirements of all ecosystems which are dependent on groundwater.

3.0 Beneficial Uses

The Mataranka Tindall WAP area is located within the Daly Roper Beetaloo Water Control District. Under the *Water Act* the following beneficial uses are declared for the District:

Beneficial use	Purpose	Pool
Environment	to provide water to maintain the health of aquatic ecosystems <i>(and terrestrial ecosystems dependent on groundwater)</i>	Non consumptive
Cultural	to provide water to meet aesthetic, recreational and cultural needs	Non-consumptive & consumptive
Public water supply	to provide source water for drinking purposes delivered through community water supply systems	Consumptive
Rural stock and domestic	to provide rights and ownership rights to take water for domestic and/or stock purposes as permitted under the Act	Consumptive
Agriculture	to provide irrigation water for primary production, including related research	Consumptive
Aquaculture	to provide water for commercial production of aquatic animals, including related research	Consumptive
Industry	to provide water for industry, including secondary industry and a mining or petroleum activity and other industry uses	Consumptive

With recent and anticipated amendments to the *Water Act*, the beneficial uses of ‘Mining’, ‘Petroleum’ and ‘Strategic Aboriginal Water Reserve’ will be added to this list and considered for allocations from the consumptive pool under the Water Allocation Plan.

4.0 New water balance figures and modelling

An update to the water resource assessment for the new Mataranka Tindall Water Allocation Plan area will generate **water balance** figures which reflect the system dynamics in each management zone. This will provide an important technical basis for:

- decisions about the ESY for each zone;
- determining water-sharing arrangements among all beneficial uses in each zone; and
- defining specific management rules in each zone to mitigate potential impacts of groundwater extraction on environmental and cultural values and existing users.

An integrated surface water-groundwater model for the Roper River catchment is used to generate water balance figures, to understand how the hydrological system typically functions and how it might respond under different conditions in the future. In 2015, a review of the methodology of the Roper catchment model by *Hydrogeologic* consultants found that the model methodology is consistent with leading best practice in the integrated modelling of surface water and groundwater systems. As such, there is a high degree of confidence in the figures generated by this model for the Mataranka Tindall WAP. In 2019, the model will undergo an update to include new layers of data for the Beetaloo sub-Basin to the south of the Mataranka Tindall WAP. The DENR Water Assessment team is confident that this upgrade will not materially affect water balance figures generated by the current version of the model.

5.0 Guidelines for setting the ESY

In early 2019, the WAC will be asked to consider the following guidelines for determining the Estimated Sustainable Yield (ESY) for the Mataranka Tindall WAP:

1. The *NT Water Allocation Planning Framework* is applied to calculations of ESY for each management zone, that is:
 - a. Total ‘recharge’ is the value assigned to total ESY

- b. Total ESY is the sum of all non-consumptive and consumptive beneficial uses
 - c. The 80:20 rule is applied to streamflows and aquifer recharge i.e. at least 80% of instantaneous river flows are allocated to the environment and cultural uses (non-consumptive pool) and at least 80% of annual aquifer recharge is allocated to environmental and cultural uses (non-consumptive pool), with no more than 20% of recharge allocated to the consumptive pool.
2. The Roper model uses a wide range of climatic and hydrologic variability from 1900 to present to generate values for different components of the surface-groundwater system such as annual recharge. To calculate '**median annual recharge**' for each management zone, recharge values generated by the model for the period 1960-2018 will be used.

The basis for this approach is summarised here:

- a. The time period 1960-2018 includes significant climate variation ranging from extreme dry (1960s) to very wet conditions (1974/5).
- b. 1960-2018 is the period for which more reliable and continuous streamflow data and (more recently) groundwater data is available, improving confidence in figures that can be calibrated with actual observations (not just modelled data).
- c. Consistency with the *Hydrogeologic* review of the Roper model methodology which recommended that the full variability of system performance under extreme climatic conditions (especially prolonged drought) should be considered in determining hydrologic parameters such as annual recharge.
- d. 'Median' recharge values are used in preference to 'average' values because medians represent the more typical values for that time period. 'Averages' can be skewed by infrequent extremes in the data, so are less typical of the values over that time period.

6.0 Strategic Aboriginal Water Reserve (SWR) calculations

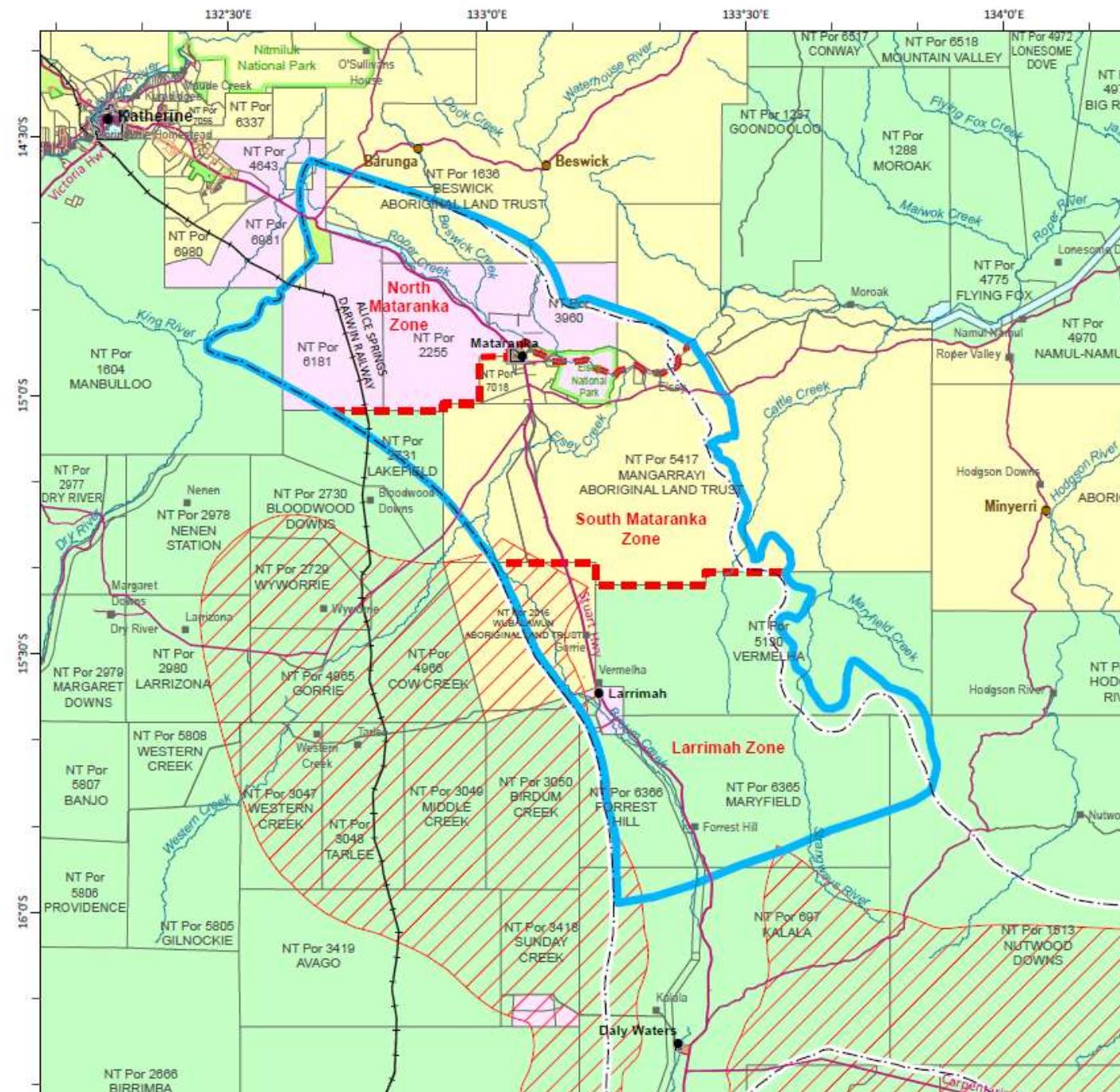
Since the 25 October WAC meeting, the Water Resources Spatial Data team have calculated the area of eligible Aboriginal land under SWR for each of the three Mataranka Tindall management zones.

Management Zone	Total Area (Ha)	Area of eligible land under SWR (Ha)	Proportion of zone eligible under SWR (%)	Percentage of available consumptive pool* reserved in SWR (%)
North Mataranka	269,237.6	61,551.2	22.86	22.86%
South Mataranka	282,122.4	234,380.7	83.08	30.00%
Larrimah	376,897.3	38,679.4	10.26	10.26%

* 'Available consumptive pool' is the portion of the consumptive pool available for economic consumptive use, not including water allocated for public water supply or rural stock and domestic use, which are prioritised above other uses. (*NT Strategic Aboriginal Water Reserve Policy Framework*, Oct 2017)

The new WAP will incorporate provisions for the implementation of the *NT Strategic Aboriginal Water Reserve (SWR)*. Until such time as the SWR is defined as a discrete beneficial use under the Water Act, the SWR is to comprise water allocated to one or more of the consumptive beneficial uses of agriculture, industry, aquaculture and cultural (where cultural use is considered consumptive). The allocation of SWR to beneficial uses must be clearly articulated in the water allocation plan. A 'notional' SWR will be identified if existing allocations result in insufficient un-allocated water to provision the SWR of beneficial uses contained therein. Water entitlements returned through surrendered, amended or cancelled licences may be re-allocated to the SWR, after the beneficial uses of environmental/cultural use and public water supply are met..

**Mataranka -
Tindall Limestone Aquifer
Water Allocation Plan, 2019 - 2029
Management Zones**



Legend	
	Management Zones
	Revised WAP 2019 - 2029
	Previous WAP Area
	Beetaloo Sub-basin
	NT Parks and Reserves
Cadastral - Tenure Type	
	Freehold
	Pastoral Lease
	Crown Lease Perpetual
	Crown Lease Term
	Crown Land
	Government Use
	Special Purposes Lease
	Reserve
	Other Leases

DATA SOURCE:
Water Resource Information: Department of Environment and Natural Resources
Parks: Parks and Wildlife Commission NT
Cadastral/Roads/Placenames:
Department of Infrastructure, Planning and Logistics
Drainage: 250K © Commonwealth of Australia (BoM) 2014

**DENR discussion purposes only
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Map compiled: 19/10/2018
Department of Environment and Natural Resources
Geospatial Services
Drawing No. DENR2018083

