

# Mataranka Tindall Water Advisory Committee

**Meeting #:** 12

**Date:** 28 October 2021

**Time:** 10:05 – 11:35am

**Venue:** Teams meeting (video and telephone)

## Present

Rebecca Mohr-Bell	Chair
David Ciaravolo	Recreational fishing interests – Member (Amateur Fishermen’s Association of the NT)
Sarah Kerin	Tourism/environmental interests – Member (Parks and Wildlife Division, DEPWS)
Vin Lange	Irrigated agriculture/Aboriginal economic development interests – Member (Centrefarm / Top End Farm)
Rohan Sullivan	Pastoral interests - Member (Cave Creek Station)
Jenny Davis	Environmental interests - Member (Charles Darwin University)
Julian Martin	Irrigated agriculture interests - Member (Quintis)
Clare Taylor	Assistant Director, Planning and Engagement, DEPWS
Adrian Tomlinson	Water Resources Planner, Planning and Engagement, DEPWS
Michelle Rodrigo	Water Resources Planner, Planning and Engagement, DEPWS
Jayne Brim Box	Senior Scientist, DEPWS
Pru Ducey	DEPWS (Secretariat)

## Apologies

Clair O’Brien	Pastoral interests/Regenerative Agriculture – Member
Helena Lardy	Aboriginal cultural interests - Member (Jilkminggan Community Aboriginal Association)
Judy MacFarlane	Regional community interests – Member (Roper Gulf Regional Council)
Bridie Velik Lord	Aboriginal cultural interests – Observer (Northern Land Council)

## Not present

Ben Lewis	Aboriginal cultural interests – Observer (Jawoyn Association)
Jocelyn James	Aboriginal cultural interests - Member (Jilkminggan Community Aboriginal Association)
Kerry Roberts	Aboriginal cultural interests - Member (Jilkminggan Community Aboriginal Association)

## Action table

Action arising/outstanding from Meeting 12 – 28 October 2021		
Action	Action Officer	Timeframe/comment/Status
<i>Actions arising</i>		
12.1 <i>Chair to forward any correspondence received on AWR response from Controller of Water Resources</i>	Rebecca Mohr-Bell	
12.2 <i>Members to review minutes from Meeting 8 on 13 March 2019 for the Committee's discussion and recommendations regarding the climate period used to model the Tindall system.</i>	Members	Available at <a href="https://depws.nt.gov.au/boards-and-committees/water-advisory-committees/tindall-mataranka-daly-waters-advisory-committee/committee-meetings">https://depws.nt.gov.au/boards-and-committees/water-advisory-committees/tindall-mataranka-daly-waters-advisory-committee/committee-meetings</a>
12.3 <i>Members encouraged to read the recent paper on modelling approaches</i>	Members	<i>Emailed to members from Pru Ducey 12/10/21</i>
12.4 <i>Planning team to discuss WAC comments in relation to rainfall and climate change with the Water Assessment team and provide a concise briefing for the next meeting and an opportunity for discussion</i>	Clare Taylor Adrian Tomlinson	<i>Information to be provided at next face-to-face meeting (#13, Feb 2022)</i>
<i>Actions outstanding</i>		
11.9 <i>Run agreed model scenarios and provide a report.</i>	Water Assessment & Clare Taylor Adrian Tomlinson	<i>Partially complete – 1<sup>st</sup> phase of modelling complete. Meeting #12 will discuss development of acceptable 'limits to change' which are needed to evaluate scenarios</i>
11.10 <i>Provide a summary of the previous work done by the Committee and key decisions.</i>	Clare Taylor Adrian Tomlinson	<i>Partially complete – A report on this action will be provided at Meetings #12 and #13</i>

## 1. Opening 10:05am

### 1.01. Welcome and Introduction

The Chair welcomed everyone to the meeting.

Minutes from Meeting 11 were circulated for comment on 26 August 2021. No changes or comments were received. The minutes were accepted as final, and uploaded to the website. Minutes and appendices are available at <https://depws.nt.gov.au/boards-and-committees/water-advisory-committees/tindall-mataranka-daly-waters-advisory-committee/committee-meetings>

Today's meeting will address:

- work underway to define environmental limits to change to be used to analyse the modelling discussed in the last meeting. Adrian Tomlinson (planner) will talk about the process, and Jayne Brim Box will provide more detail.
- the timeline for completing the plan.

### 1.02. Recap on correspondence

1.02.1. The following items requested at WAC Meeting 11 were provided to members.

- Identified values (emailed 26/8/21)
- Current entitlements summary (emailed 26/8/21)
- Aboriginal water reserve summary (emailed 26/8/21)
- Vision, outcomes and objectives (emailed 26/8/21)
- Research activities (emailed 12/10/21)
- Modelling approaches (emailed 12/10/21)

1.02.2. An e-mail from Parks & Wildlife Commission inviting comments on the NT Parks Masterplan consultation paper was received. Members were advised of this on 12/10/2021, noting there is nothing in the paper specific to the role of Mataranka Tindall WAC but that members were welcome to provide comment outside of the WAC forum.

1.02.3. The Chair wrote to the Controller of Water Resources advising her of the Committee's concerns that water may almost be fully allocated in the Mataranka zones and that there was a need to prioritise the Aboriginal Water Reserve (AWR).

1.02.4. Bridie Velik Lord (21/10/21) and Jenny Davis (22/10/21) emailed members.

*Action 12.1 Rebecca to forward any correspondence received on AWR response from Controller of Water Resources*

### 1.03. Status of meeting actions

11.1 *Distribute Clare Taylor's contact details to Committee and vice versa.*

COMPLETE 26/8/2021 (Email 1 of 3 to members)

11.2 *Consider amending the Terms of Reference (ToR) to reflect the expected declaration date of the Water Allocation Plan.*

COMPLETE 26/08/2021

Amendment not required. The current ToR are considered adequate since the dates included in the text are only indicative and members are appointed until a water allocation plan for the Mataranka Tindall Limestone Aquifer is declared

- 11.3 *Circulate the values from the Committee and the Aboriginal values, and the values identified by the Committee.*  
COMPLETE 26/8/2021  
Requested Paper – Identified Values (Email 3 of 3 to members)
- 11.4 *Circulate the Vision, Outcomes and Objectives for the draft plan.*  
COMPLETE 26/8/2021  
Requested Paper – Visions, Outcomes Objectives (Email 3 of 3 to members)
- 11.5 *Provide a summary sheet on the AWR.*  
COMPLETE 26/8/2021  
Requested Paper – AWR summary (Email 3 of 3 to members)
- 11.6 *Provide a summary sheet on current water entitlements by management zone.*  
COMPLETE 26/8/2021  
Requested Paper – Current entitlements summary (Email 3 of 3 to members)
- 11.7 *Provide a paper on the modelling approach taken for noting/identifying any concerns (include climate period, climate change considerations, consecutive dry years, assumptions, economic depth, model peer review history etc).*  
COMPLETE 12/10/2021  
Requested Paper – Mataranka Tindall Limestone WAP Modelling approach (Email to members)
- 11.8 *Provide an assessment of the mid-80s to mid-90s dry period and subsequent recovery to inform WAC decisions.*  
COMPLETE 12/10/2021  
Requested Paper – Mataranka Tindall Limestone WAP Modelling approach (Email to members)
- 11.9 *Run agreed model scenarios and provide a report.*  
*Partially complete* – 1<sup>st</sup> phase of modelling complete. Meeting #12 will discuss development of acceptable ‘limits to change’ which are needed to evaluate scenarios
- 11.10 *Provide a summary of the previous work done by the Committee and key decisions.*  
*Partially complete* – A report on this action will be provided at Meetings #12 and #13
- 11.11 *Ensure future Agenda papers summarise the purpose of the agenda item, provide background options and the outcome it is seeking.*  
Ongoing
- 11.12 *Provide a summary of research activities in the WAP area relevant to the WAP.*  
COMPLETE 12/10/2021  
Requested Paper – Research Activities (Email to members)
- 11.13 *Pru to conduct Doodle poll to determine suitable date for Meeting #12.*  
COMPLETE 31/8/2021  
Meeting date 28/10/2021
- 11.14 *The Chair to take to members not present, the proposal of the Committee writing to the Controller of Water advising her of concerns raised that water may almost be fully allocated and still need to provide for AWR. Bring to her attention in case another application is received.*

COMPLETE 26/10/21.

Correspondence sent from Chair to Controller.

## 2. Process to finalise the WAP

Planner (Adrian Tomlinson) presented the proposed timeline to finalise and declare the plan. A copy of the slides from the presentation is at **Appendix 1**.

Members made the following comments.

Timeline:

- Can the timeline to produce the water allocation plan be shortened by using information from other WAPs such as management, decision making, structure and information?

*Planner advised that wherever possible policies and approaches from other plans would be used for consistency and to speed up the process. All going well this may expedite the process. However, there is a substantial amount of work involved in preparing a plan and fixed times needed for steps such as the public comment period and time for committee members to read agenda papers, so the timeline presented is considered realistic.*

Rainfall data and impact on ESY and recharge:

- The presentation and paper “modelling approaches” (e-mailed 12/10/21) raises some issues on the rainfall data and period to be used. I consider further discussion is needed.
- The approach to the climate period has changed. We had a detailed discussion on rainfall data and what period should be used at Meeting 8 on 13 March 2019. At that time median annual recharge based on longest period of data was our agreed recommendation. This differs from more recent Department advice that a shorter period is likely to be more appropriate as this dataset is more suitable.

*Planner commented that it is important that Committee members understand the rationale for the selected climate period, and ideally be satisfied that it is appropriate. It is intended that members can discuss any questions about the circulated papers at the next meeting, including the rainfall period. The Department can also arrange individual meetings with Committee members between now and the next meeting if needed.*

**Action 12.2:** *Members to review minutes from Meeting 8 on 13 March 2019 with regard to discussion and recommendations made on the rainfall record - <https://depws.nt.gov.au/boards-and-committees/water-advisory-committees/tindall-mataranka-daly-waters-advisory-committee/committee-meetings>*

**Action 12.3:** *Members are encouraged to re-read the paper on modelling approaches.*

Approach to Larrimah zone:

- Consideration of the Larrimah zone as an arid aquifer is a new approach. It was previously treated like Mataranka South and Mataranka North, based around ESY and recharge. I'd like more discussion on this.
- A shrimp (stygo fauna) from a bore in Larrimah is found extensively throughout the Tindall aquifer, including at 50m and 80m depths, indicating high connectivity across the system. This suggests the system is acting more as a Top End aquifer than an arid aquifer.
- I would like to see what the model says, and then an independent review of the model. Hydrological connectivity is very important as well. How well does the model take this on board?

Climate change:

- I generally support climate change projection data being used in water allocation plans. It would be remiss to say everything should be based on past climate, when we know it is different now.

- We have had presentations on climate change indicating it is likely to be more variable, but probably wetter. It is such important information, we need to go through it as a group together again. The Department said the longest data set was not appropriate. The plan should be using the best data.
- Process has been drawn out and membership has changed. Fundamentals need to be gone through and explained so it becomes contemporary to us again.
- Committee needs to be confident that the modelling process accords with current BOM and CSIRO advice. It would be remiss to do something that conflicts with the latest advice.
- Could we model using different climate data sets and compare the results?
- We need a common understanding and to move forward.

*Committee asked the Planning Team to obtain advice from the Water Assessment Branch on the above comments and provide a concise briefing for the next meeting with opportunity for discussion.*

*Action 12.4: Planning team to discuss WAC comments in relation to rainfall and climate change with the Water Assessment team and provide a concise briefing for the next meeting and an opportunity for discussion.*

### **3. Explain 'limits to change'**

Water Planner (Adrian Tomlinson) presented the planned approach to establish environmental, cultural and consumptive limits of acceptable change to groundwater levels and/or flows. These are needed to evaluate modelling scenarios and arrive at an estimated sustainable yield. A copy of the slides is at **Appendix 2**

Members made the following comments:

- The proposed approach provides more clarity on cause and effect.
- The approach will take opinion out of discussions on the plan's effectiveness.

### **4. Work undertaken and planned to define environmental limits to change**

WAC members were briefed by Dr Jayne Brim Box on recent field work undertaken and work planned for the next couple months to define environmental limits to change.

(Members were also shown a presentation to enable discussion. This presentation relates to ideas and research in progress so is not published in the minutes.)

Key points in Jayne's presentation:

- The amount of water that can be extracted is the estimated sustainable yield (ESY).
- Environmental and cultural (Aboriginal and non-Aboriginal) water requirements need to be provisioned before allocating water for extraction.
- This is done using all available science and both western and Aboriginal knowledge.
- The ESY must demonstrate that extraction will not compromise cultural/environmental values, ecosystem function, the productive base of the resource or water quality standards.
- We are researching the limits to change in the system to ensure water-dependent ecosystems are protected.
- These limits allow us to evaluate possible extraction scenarios to check that water dependent ecosystems (GDEs) will be protected (i.e. limits to change are met)
- This allows determination of the ESY.
- Within the WAP area, there are potentially four types of GDES
  - Terrestrial (e.g. palms and melaleuca)\*
  - Aquatic/surface expression of groundwater (e.g. spring snails)

- Subterranean (e.g. stygofauna)\*
- Animals/plants dependent on river flows driven by groundwater (e.g. sawfish)\*.
- Limits to change need to be defined for each type.
- Preliminary comments on each type include:
  - **Terrestrial**
    - Satellite imagery provides a map of where GDEs may occur in WAP area.
    - We will look at the depth to groundwater requirements of different ecosystems (eg palms) based on considerations such as roots being able to access groundwater and the risk of fire in vulnerable areas.
  - **Surface expressions of groundwater**
    - These include springs and their values.
  - **Subterranean** (Jenny Davis)
    - Stygofauna were recognised in Australia in 1980s and have become an important consideration since then.
    - In mining areas such as the Pilbara the concern has been that specific sites frequently contains unique species
    - In the Northern Territory, genetic work has also identified new species (some quite large) but in contrast to WA it has shown that stygofauna in the WAP area are fairly well hydrologically connected.
    - Stygofauna can potentially influence water quality. For example, if predacious stygofauna (i.e., crustaceans) are lost, than grazing microbial communities can take off. Crustaceans keep microbial communities (bacteria) in check and in turn preserve water quality. Need to protect the whole community/ecosystem.
    - The water requirements of stygofauna are still being researched. Some guidance is available from looking back at past bore records. Stygofauna have persisted though some dry periods. They are potentially less affected by groundwater level changes than terrestrial GDEs.
  - **Animals and plants**
    - A range of animal and plant species depend on flows driven by groundwater, including theargetooth sawfish, gulf snapping turtle and barramundi.
- Limits to change should focus on “umbrella species” – in protecting umbrella species, many other species that occur in the ecological community/habitat are also indirectly protected. Umbrella species can have environmental, cultural or commercial significance, and each umbrella species has its own specific environmental water requirements. Candidate species include theargetooth sawfish cabbage palms, gulf snapping turtle, barramundi and stygofauna.
- The Mataranka area has high environmental significance, it may be sensitive to potentially small changes (e.g. wet season flood flows) and free-flowing rivers are rare in the global context.

Members made the following comments:

- Observations were shared about an apparent shift in vegetation in the upper Roper area. In the 1990s there were extensive areas of kangaroo grass and black spear grass. Following floods in 1998 and 2001, and a huge rainfall year in 2005, groundwater levels were so high some areas could not be accessed by vehicle until October. As a result, a lot of the grasses disappeared and were replaced by melaleucas, with more paperbark extending out from streams. This change would not be captured in the 2013+ dataset.

*Jayne clarified that the research will include satellite imagery going back to the 1980s. This may capture these longer term changes in vegetation type.*

Members then commented on the approach (i.e. agenda items 2, 3 and 4):

- The limits to change is a critical approach that is needed.
- Concur with the approach and principles.
- Feel more confident now that what is produced will be defensible and people will see the logic behind it.
- Presentations were really good, relevant and I agree with approach. In terms of determining limits to change, having hard data on those species and their requirements is good position to start from.
- Aware that people have been worried about the time taken to develop the plan. It is good that this work is occurring as there is now useful and relevant information, and much more knowledge of environment and ecosystems.

## 5. Other Business

The Chair asked members if there was anything we are missing or items that need to be raised.

- Traditional Owners' values - recognition of culturally important species; input from Mangarrayi is also needed.
- Vin Lange advised that the next part of the co-mapping project is scheduled for April 2022. This includes species that are important to Aboriginal people from the area. Potentially the information that is collected in April could be passed on to the Department then.

## 6. Next meeting dates – dates for Meeting #13 and #14

Meeting #13

- Anticipated for early-mid February 2022. Final date to be determined via online poll.

Meeting #14

- This will be a long meeting as it addresses key decision areas. Anticipated for late March or early April 2022. Date to be set soon.

## 7. Key messages and actions from this meeting

A further discussion on climate data will be scheduled into the next meeting. Prior to then members to review information provided and previous meeting minutes.

The limits to change approach and associated research is well supported.

Planning team thanked everyone for making time available for the meeting. Appreciate that it was not a face to face meeting, but worked as well as we could have hoped.

Chair reiterated these comments and thanked members for their contributions.

**Meeting closed 11.35am**

Appendix 1: Process to finalise the plan

Appendix 2: Limits to change





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# Mataranka Water Advisory Committee Meeting #12



**10.15AM**

**Process to finalise the WAP**

# Developing a water allocation plan

## Situation Analysis

- Information gathering stage. Describes:
  - water resources, including numerical model (last meeting and **meeting 13**)
  - environmental, cultural and social values (ongoing)
  - current consumptive use and demand (ongoing)

## Objectives and criteria

- Vision, outcomes, objectives (meeting 9)
- **Have not set *criteria* for assessing estimated sustainable yield (ESY) options** (*introduce limits to change approach in **meeting 12** & consider in **meeting 13***)

## Estimated sustainable yield

- Run different extraction scenarios through numerical model (**meeting 13 & 14**)
- Identify the optimum estimated sustainable yield that meets criteria (**meeting 14**)
- Make allocations to beneficial uses

## Management arrangements

- Guidelines for how the ESY can be accessed (**meeting 14 and 15**)
- Protection areas showing where special guidelines apply (tabled meeting 8)
- Implementation arrangements e.g. monitoring and evaluation

# Plan timeline

WAC advice	Milestone	Proposed
✓	Limits to change agreed	Feb 22
✓	ESY & management arrangements agreed	March 22
✓	draft WAP complete	May 22
	draft WAP approved by Minister	June 22
	draft WAP out for public comment	July 22
✓	consultation report	Aug 22
	Plan to Minister	Oct 22

# Meeting 12 Today

## TAKING STOCK & DIRECTION SETTING

1. Timeline to complete WAP
2. Discuss limits to change approach

# Meeting 13 TBD early Feb

## LIMITS TO CHANGE & ESY

- Consider criteria (limits to change)
- ESY logic
- Further discussion on numerical modelling approach
- Feedback on scenarios to be modelled
- Aboriginal Water Reserve eligible land

# Meeting 14

Late March

**ESTIMATED  
SUSTAINABLE YIELD**

- Results of modelling
- Estimated sustainable yield
- Allocations
- Management arrangements
- Monitoring and evaluation
- Advice on drafting the plan



# Meeting 15

May

**DRAFT PLAN  
FEEDBACK**

- Draft Water Allocation Plan
- Plans for public consultation

# Meeting 16

## August

### RESPONSE TO SUBMISSIONS

- Feedback on submissions and responses
- Draft report on communications and engagement
- Advice on finalising the plan
- Reflect on process

Department of Environment, Parks and Water  
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# Mataranka Water Advisory Committee Meeting #12



**10.30 AM**

**Limits to change**

# Limits to change

- For key values:
  - *What are the thresholds in water availability beyond which that value cannot be sustained to an acceptable level?*
- By establishing these thresholds or limits to change we can:
  - *use the model to test whether enough water will be available under various extraction scenarios*
- This gives more clarity about whether the plan will meet its objectives

# Hypothetical example

This freshwater crayfish is highly **valued**

It needs, **fresh water, stable banks** to burrow in, and water of **sufficient depth** to avoid being prey to birds



Metric	Hypothetical limit to change
Water quality	Salinity stays below (say) 1000 mg/L
Depth	Depth never falls below (say) 1 metre
Banks	At least (say) 50% of banks are vegetated

