ALICE SPRINGS PLAN REVIEW WATER ADVISORY COMMITTEE

Meeting No. 2
8.30AM-4.30PM, 14 December 2020
AZRI, Stuart Hwy

Minutes

Meeting opened 8.36AM

Attendance

PRESENT:

Members

Mr John Huigen (Chair)	Local resident, Huigen Advisory
Barbara Shaw	AAPA representative and Traditional Owner
Greg Owens	NT Farmers
Rod Cramer	Alice Springs resident (Rural Resident's Association)
Jimmy Cocking	Arid Lands Environment Centre
Mr Glenn Marshall	Alice Springs resident (urban water efficiency expert)
Martin Campbell	Central Land Council

Observers:

Mr Mervyn Rubuntja	Expert on aboriginal cultural values

Apologies:

Mr Eli Melki	Alice Springs Town Council
Robyn Grey-Gardner	Alice Springs resident (remote water & water quality expert)
Adam Davis	Power & Water Corporation

NT Government representatives (Non-members)

Tim Bond	Director, Water Planning & Engagement
Adrian Tomlinson	Water Resource Planner, Water Planning & Engagement
Michelle Foate	Water Resource Planner, Water Planning & Engagement

1.0 Acknowledgement to Country - Chair

John Huigen (Chair) acknowledged that the meeting was occurring on Arrernte Country, and acknowledged the existing, present and future Traditional Owners including those present. John noted that the work of the Alice Springs Plan Review Committee (The Committee) was extremely important to Arrernte people and country.

2.0 Opening - Chair

The Chair welcomed attendees, introduced the meeting and confirmed the agenda.

The Chair asked Committee members to briefly introduce themselves.

2.1 Correspondence

The Chair advised that correspondence dated 3 December 2020 had been received from the Controller of Water Resources in response to the longevity of the committee (Action 8 below) once the review of the WAC has been completed.

Tim Bond reiterated that after the review process is completed, a new committee could be formed with the current members, however it would require a new Expression of Interest process and appointment of a committee under a different section of the Water Act.

The Chair commented that he was confident with the pathway described by Tim.

2.2 Business Arising

Action	Who	Due date	Status
1. Provide the stakeholder analysis report to committee members for feedback	Water Planner	20 Nov	Completed
2. Advise the water planner of any additional stakeholders who should be contacted and to forward information through their networks	Members	4 Dec	Completed
3. Write to CLC advising of the review and offering a briefing	Water Planner	24 Nov	Completed
4. Offer the opportunity for the mining and petroleum industry to be an observer at future meetings	Water Planner	27 Nov	Completed
5. Re-craft the survey provide the final survey to members for information	Water Planner	20 Nov	Completed
6. Complete the survey and forward it through stakeholder networks	Members	Closes 11 Dec	Completed
7. Circulate charts on water use and aquifer levels	Adam Davis	20 Nov (complete)	Completed
8. Seek a meeting with the Controller of Water Resources, principally to raise the issue of longevity of the committee, with the aim of retaining the present committee for a period to enable engagement with the outcomes of the review and capacity to contribute to addressing those issues and updating the plan. I.e. a new WAC needs to be in place after the review is complete (and to clarify the Controller's expectations about the role of a water advisory committee beyond the plan).	Chair	20 Nov	Completed
9. Circulate the outcome of the discussion with the Controller of Water Resources	Chair	Before next meeting	Completed

3.0 Work plan for the day – Adrian Tomlinson

The Water Planner outlined the workflow for today's workshop and desired outcomes. Adrian reminded the WAC that the WAP is a guide aimed at influencing the Controller of Water Resources in making decisions. The aim of today's workshop is for the WAC to provide advice on priorities and guidance on what to include in the write up of the review of the current WAC.

The Chair asked how the review document will be presented and whether the WAC would be presented with a track changed document of the original WAP.

Tim Bond stated that unless there is a need for significant change to the WAP, that is; a complete re-write of the WAP through the usual consultative process, the review will consist of a WAP Review Report to the Minister and the Controller of Water Resources. The WAP Review Report will act as a companion document providing guidance to the Controller of Water Resources. In today's workshop the WAC will be presented with information to assist them in identifying any priorities and recommendations for the WAP review.

It was commented that there needs to be a new iteration of the WAP. Considering the statutory limitations of the WAP and in recognising that it is only a guidance document, the Plan should include demand management and have a broader scope with more community input. A broader scope may enable future investment in water conservation or water development in the Alice Springs area.

Tim Bond responded that in a broader sense, the WAP cannot go beyond the boundaries of the Water Act. There are limitations to the Water Act that cannot be fixed in a WAP, for example; the National Water Initiative (NWI) recommends for perpetual licences not tied to land, however the Water Act does not have provisions for this *yet*. Tim also stated that the Department, or a WAP, cannot tell a licensee how to manage their water entitlement, only licence conditions can include water efficiency.

It was commented that the arbitrary cap for Power and Water Corporation (PWC) in the previous WAP enabled opportunities for conversations on water management and was key to attracting funding for the community driven WaterSmart program.

The Chair suggested that the topic be placed in the "Parking Lot" for future discussion if there was time. The Chair expressed concern that the WAP Review Report would be a companion document that may not be that accessible to community and may not be useful or practicable in informing management.

Tim Bond clarified that the WAP Review Report was a report to the Minister and should include pathways to resolve and issues identified with the current plan. Tim asked that the WAC consider the consequences of the plan continuing on in its current form and what opportunities may be lost if preparation of new plan is recommended before gaps in knowledge are addressed.

The Chair summarised and reminded the WAC that the aim of today's workshop going forward is to identify issues and prioritise those issues, not resolve issues.

4.0 Water resources – Adrian Tomlinson

Adrian Tomlinson presented historic climate and rainfall data to the WAC. Average and annual rainfall data was presented from 1970 to present with 2019 the driest year during that period. The three year rolling average was at an historic low for the last three years.

Average and annual temperature data for the month of January was presented from 1942 to present. It was noted that the average January temperature for every year within the WAP review period was above average, with the last two years having highest average temperatures of that time period.

Surface water flows within the WAP area are driven by rainfall. Roe Creek and Todd River are the main surface water watercourses. Surface water flows recharge the alluvial basin and supports environmental and cultural values including groundwater dependent ecosystems. There have been no substantial river flows during the life of the WAP, and groundwater levels are at historic lows similar to the early 1970s.

Amadeus aquifer is the major water source for Alice Springs, including for public water supply and some agricultural use. Big surface water flows recharge the Amadeus aquifers. New data suggests the water resources are larger and will last longer than initially modelled. Before ecologically sustainable yield and allocations can be updated in the plan, the model needs to be updated with the new data. Infiltration pathways to deep aquifers from the alluvial areas are significant. Capture zone modelling is needed to define where groundwater contamination could impact on current and future supplies. The model could be extended beyond the plan area however there is a lot of hard rock and limited information and monitoring.

Water availability in the alluvial aquifers is based on mean annual availability rather than medians. It was noted that there is a requirement to manage adaptively for sustainable outcomes with reference to limits of change for cultural and environmental values and water quality. Further work is needed on quantifying the estimated sustainable yield for the Wanngardi Basin.

The Chair asked how climate change will influence the resource.

Adrian explained that climate change is predicted to result in higher temperatures and more extremes in weather conditions and events (droughts and floods). Increased temperatures will also result in higher rates of evapotranspiration.

It was commented that Lhere Mparntwe Management Group are undertaking monitoring of River Red Gum tree health in the Todd River including in relation to increasing temperature.

Martin Campbell asked about the lowering of the water table and if the 8m below ground level is sufficient to sustain River Red Gum health and culturally significant waterholes. Adrian noted the 8m trigger value is conservative including consideration of studies of other groundwater dependent ecosystem tree species, however there has been no long-term monitoring of River Red Gum health in the Todd River. Adrian also noted that the groundwater height around the Golf Club is below 8m, and that we must keep in mind other variables such as salinity and tree condition, not just a trigger value.

Jimmy Cocking commented that the Town Basin is over-allocated and questioned if conversations have been had with licensees that 'you can't use what you have been allocated.' Adrian responded that the department liaises with licensees about the need to limit take when aquifer levels are low, however the ability to be adaptive to climatic events and respond to fluctuations in salinity and groundwater levels may just be as important as the 8m trigger value, particularly when we consider climate change scenarios. We need to undertake more study in this area.

In relation to the Rocky Hill aquifers and irrigation for agricultural use, it was queried if there was any evidence to suggest that salts were not getting into the groundwater?

Adrian referred the WAC to the report: 'The Potential Impact of Irrigated Agriculture on Groundwater Quality in the Rocky Hill Region, Northern Territory' and will provide a short summary to the WAC directly.

ACTION: Adrian to provide further information regarding salts and irrigation water in the Rocky Hill region.

Adrian highlighted the following issues to be addressed:

Alluvial Basins

1. Groundwater levels are at historic lows
2. Climate and river flows drive basin storage and use
3. Water balance elements are based on means not medians inappropriate for systems relying on year to year top ups
4. Wanngardi Estimated Sustainable Yield is poorly defined and more work is needed before the next plan
5. Greater focus on "limits to change" i.e. aquifers levels needed to keep vegetation healthy, protect private bores and cultural sites rather than the water balance in setting estimated sustainable yields.
6. Aquifer groundwater levels respond to rainfall events, although overall the resource is being mined.

Amadeus Basin

1. New data suggests resources for public water supply are underestimated and will likely last longer.
2. Before the ecologically sustainable yield can be updated in the plan, model needs to be updated with the new data.
3. Infiltration pathways to deep aquifers from the alluvial areas are significant.
4. Capture zone modelling is needed to define where groundwater contamination could impact on current and future supplies.
5. The model could be extended beyond the plan area however there is a lot of hard rock, with limited information and monitoring data.

Refer to PowerPoint presentation attached

Other Comments, Questions and Discussions:

It was queried whether the Department is planning on undertaking any more drilling and monitoring bores will be undertaken in the Amadeus Basin.

Adrian stated there are currently no plans for further drilling in the Amadeus Basin, however airborne geophysical surveys were recently undertaken and the results from those surveys will be used to update the current model. This would assist in defining the size of the resource, identifying capture zones and pathways, defining future management zones and risks to water quality.

It was commented that this could infer that we should focus on minimising the water coming out of the aquifer.

It was commented that Power and Water Corporation need to do savings for demand management, and that discussions regarding water infrastructure and use are only centred on economic costs which may not drive demand management. Adrian commented that demand management was also being necessitated at a Territory-wide level via the Territory Economic Reconstruction Commission (see page 97 of its final report) and formation of the proposed Office of Water Security.

In relation to economic costs and investment, it was commented that to attract investment in agricultural infrastructure there generally needs to be 30 years of consistent policy and planning to ensure a level of certainty, whereas the current water allocation planning policy is only on a timeframe of 10 years at best where the review process doesn't include a rewrite or major change in policy.

Desalination, grey water reuse and sewer mining were all mentioned as strategies that could be greater explored and possibly utilised and may be considered economically viable if the true economic cost of mining the aquifer were considered. It was also noted that a large percentage of use of treated water was for domestic gardens.

ACTION: Martin Campbell tabled a document on a South Australian project implementing water technologies.

It was asked if there has been any PFAS testing conducted for the resource, which should be considered important especially as the aquifers are close to the surface. There should be baseline studies of PFAS and other pollutants of the water resource, particularly at and around the airport.

It was also commented that there should be a cost-benefit analysis for the use other technologies for water use and demand management other than just mining the resource.

ACTION: Adrian to provide information on water quality legacy issues including non-conforming land uses in the aquifer recharge zones.

Morning Tea

5.0 Water entitlements and use – Michelle Foate

Water use

A chart of overall entitlements and graphs showing use and entitlements for each year of the review period, for each groundwater management zone were presented.

A difference between entitlements and use was noted. It was discussed that unused water policy guides this. It was also noted that development plans can go slower than expected due to unforeseen circumstances, and securing markets. This is especially the case in remote locations.

The following comments related to particular management zones.

Town Basin: Concern raised about the ESY being less than Town Basin entitlements. It was discussed that an holistic approach to management of entitlements and trigger levels was needed.
Michelle noted that GDEs need to be monitored as a condition on licences. It is also the recommended that the requirement on licences that depth to groundwater should not fall below 8m beneath the ground surface needs to be better described. It was commented that the way this licence condition is set shouldn't be a barrier to licensees' being able to understand and meet their licence conditions.

Wanngardi: There was concern that the estimate of rural stock and domestic use is greater than the estimated sustainable yield. It was also noted that some bores are drawing water from underlying Bitter Springs Formation. While this is partially topped up from alluvial aquifers it may not be the whole story. This is already described in the current plan but needs to be considered in defining the ESY

The following points were discussed in relation to review of Chapter 16 – Licensing of the WAP

- New plans have a risk table which makes clear what the risks to users are and can guide adaptive management and licence conditions. The risk that water may be unavailable or not suitable for the intended purpose is borne by water users. However the plan needs to make clear the risks. Risks mentioned in the discussion were that climate change could impact on water availability, there are risks to water quality from contamination and risks associated with possible fracking and mining.
- Trade rules – Water planner (Michelle) advised that the section on bore construction permits and trading "rules" are no longer correct. This needs to be corrected, potentially via the review.
- Strategic Water Reserve is absent in the current plan and should be defined in a next plan.
- An adaptive management framework is absent in the current plan and should be defined in a next plan.

- It was suggested a decision making framework could be provided in the review report which highlights the key considerations in decision making and their relative weight. For example reserving water for and protecting the quality of drinking water sources is the main priority in the Amadeus Basin.
- The principles in this plan need to tie in with other government initiatives related to water security.

6.0 Environmental Values – Jayne Brim Box and Peter Jobson

Information in the plan:

- River red gums in the river corridor are protected via depth to groundwater (8 metres below ground level)
- Other ecosystems are protected via the estimated sustainable yield, and limits on licensed take of surface water.

New information and plan performance:

- A measure of water stress for trees is canopy die-back; trees drop their leaves to further reduce water use.
- Measuring water stress in trees generally involves measuring individual tree canopy density overtime to in a repeatable way.
- Satellite imagery enables the measurement of a lot of trees at the same time down to individual pixels which correspond to how vegetation responds to rainfall and access to groundwater (and some other things including rocks and roof tops).
- Ground truthing at a variety of sites allows the training of the model.
- In the river corridor there is no evidence that River Red Gums are stressed due to pumping.

Discussion:

- Trees stressed throughout the plan area due to drought and heat stress.
- The plan currently does not protect stygofauna, springs, and other plants using groundwater.
- Need to recognise that groundwater dependent ecosystems (GDEs) and IDEs are not confined to river red gums but also include swamp and claypan ecosystems with species such as ghost gums, bloodwoods, coolabah and hakea.
- New information on water requirements for GDEs should be used.
- More information needed on surface water features which have disappeared/reduced in the Todd River.
- More information on spring-fed wetlands (i.e. waterholes with groundwater input and other wetland areas).
- Many of the water-dependent species are like 'the canaries in the coal mines' as they are indicators of healthy habitat; anecdotally these are disappearing from known sites.

Priorities:

- Consider other ecological entities and concerns beyond River Red Gums.
- Monitoring in real time using remote sensing (e.g.; satellite imagery)
- Mapping and extending existing map to entire Water Control District and assigning values to colours).
- Identifying GDEs within the Upper Amadeus Basin and the Mereenie Aquifer.

There was discussion about if and how ground-truthing and on-ground monitoring could include the community and local Ranger groups.

The comment was also made about how to incorporate Traditional Ecological Knowledge, which is largely viewed as 'cultural values' into identifying GDEs and indicator species, and equating those to ecosystem and habitat health as well as cultural identity.

Overall the comment was made that this project and the pictorial representation of ecosystem and habitat health was a great way of communicating the Alice Springs water story to the community and visitors to the town and the Committee welcomed further work using these types of technologies to inform water planning and management of the resource.

Refer attached PowerPoint presentation and agenda paper.

7.0 Cultural Values – Martin Campbell and Mervyn Rubuntja

The Central Land Council organised a workshop with Traditional Owners (TOs) on 29th October 2020 at the request of Water Resources to consult with TOs about their views and concerns regarding cultural water values relevant to the Water Allocation Plan. A field trip was undertaken and included visits to the following sites;

- Roe Creek Bore Field
- Ilparpa Clay Pans
- Heavitree Gap
- Traeger Park to assess the condition of the eucalypts
- Alice Springs Telegraph Station waterhole
- Coolabah Swamp on Stott Terrace

It was noted that most participants had not seen the Dick Kimber report (Cultural Values of Alice Water 2011 D20-66574) which largely informed the cultural values of the current WAP.

The presentation noted that there was a general feeling of disempowerment in being able to protect and maintain cultural sites associated with water, and although the plan mentions the importance of water places to Arrernte people it does not have specific actions around protecting those sites, except for ensuring extraction of water in the Town Basin must not exceed a certain level.

The workshop identified development of an Aboriginal reference group to focus on cultural water values and be part of spreading awareness and devising solutions, as well as participation in protection and remediation of cultural sites. Issues and involvement included monitoring of River Red Gums and GDEs, remediation of Coolibah swamps, impacts due to siltation, management of weeds such as buffel grass, and concerns regarding water not remaining in waterholes as long as it should be or has previously. It was noted that currently the ASWAC still has a vacancy on the Committee for an Aboriginal representative.

The workshop identified that in the next 5 years there needs to be preliminary studies including looking at historical photo records and anecdotal accounts, and monitoring and investigation into sediment transport to find out the causes and propose solutions. It was

commented that any remediation or earth works may be culturally unsafe by upsetting the Water Snake and consequences around that.

There were general concerns that homelands/outstations rely on bore water and a feeling that it's either not nice to drink or undrinkable. There were also concerns that pastoralists were impacting on water availability and quality, and these concerns were echoed in comments about recycled water used for irrigation of public grass areas and whether water quality is monitored. These concerns have identified a need for greater awareness of, and or training in monitoring of water quality and general public awareness around the use of recycled water, particularly for the local Indigenous audience.

The Committee were in agreement that mapping sites associated with water and their significance for Alice Springs would be of great value to telling the water story for Alice Springs, in identifying GDEs and assist in protecting cultural values within the WAP area. The process was also identified as important in facilitating discussion around nostalgia versus acceptance of change in relation to cultural values.

8.0 Results of the 'Have your say survey' – Tim Bond

Total participants: 21

- 84% were Alice Springs residents
- 16% non-government
- 1% were aboriginal people with connections to the area
- 89% users of reticulated water supplied by Power & Water Corporation
- Others users were private bore for residential purposes and irrigated agriculture
- The majority of respondents somewhat agreed or neither agreed nor disagreed with the management arrangements in the plan.
- The majority of respondents somewhat disagreed that the plan has the balance right between protecting cultural and environmental values of water and delivering social and economic benefits.
- Approximately 50% of respondents found it extremely difficult to somewhat difficult in the ease of experience and understanding the plan.

Issues presented in themes and in priority:

- No fracking in the WCD
- Water quality protection for drinking water supplies
- Recognise and incorporate climate change
- Better protect environmental values incl. GDEs
- Better incorporate Aboriginal values, views and management
- Incorporate water efficiency strategies including on licences, demand management / water conservation
- Re-establish water use sustainability caps
- Prioritise recycling and reuse of water
- More resource investigation and management of the Wanngardi Basin.

ACTION: Submissions received through the 'Have your say survey' to be provided to the WAC.

9.0 & 10.0 Social, Environmental and Economic Drivers – Adrian Tomlinson

Social Drivers:
The Alice Springs regional population is stable.

The WAC discussed how the high turnover of the town's population, the town's shifting demographics with a relatively high immigrant population, mean that community education strategies focusing on water saving and demand management need to be both cross-cultural and ongoing, not just a one off three year project like the previous Water Smart project.

Adrian discussed how several reports since February 2016 add to and define parameters on social and cultural considerations, and in doing so highlight the different protection zones for the Roe Creek / future Rocky Hill bore fields across the following Plans:

- Alice Springs Airport Draft Masterplan
- Alice Springs Regional Land Use Plan 2016
- Petroleum - Reserved Block Policy 2019
- Alice Springs Aquifer Protection Zones report (Read, NR2000/013).

The conflicting boundaries for protection zones highlights the need for boundary based modelling (when available) and defining land uses consistently through the NT Planning Scheme. The consistent land use definitions and boundaries could avoid potential land use conflicts and issues including:

- Wanngardi – no more water is available for unlicensed use and further subdivision that increases groundwater use is inappropriate
- Airport – industry and horticulture land use has been identified without adequate consideration of the water resource, and potential contaminants (PFAS)
- Petroleum reserved blocks – follow lot boundaries not catchments
- Budget for flood mitigation structures on the Todd which are considered in isolation from social, environmental and cultural values.

Recent water allocations plans contain a new section called "Plan context" in Chapter 1 which includes an expanded consideration of the social and cultural context at a regional level. Inconsistency between all policies and plans that define rules for land use in the drinking water source protection area demonstrate a need for areas to be defined by groundwater modelling and latest information, not just through cadastre or arbitrary boundaries which may prioritise other land uses that are fundamentally dependent on the quantity and quality of the water resource.
(Refer attached briefing paper and PowerPoint presentation.)

Environmental Drivers:
Not unlike social drivers, the current plan does not describe how it fits into the 'regional context' or how the plan compliments or underpins other environmental policies and plans.

Adrian discussed how in relation to climate change policy, there is now a dedicated section in new water allocation plans and ESY should be considered for climate change scenarios. There are several climate change documents that provide further context in the Alice Springs WAP area as follows:

- NTG Climate Change Response: Towards 2050
- Alice Springs Town Council Climate Action Plan 2018-2021
- NTG Annual Review 10 year infrastructure Plan 2019-2028.

These documents encourage water efficiency and re-use as key planks in the climate change response.

The **Alice Springs Town Council webpage** lists the **'Significant Trees' policy**, which includes both European and Aboriginal cultural heritage. While the current WAP is broadly compatible with ecosystem and community resilience as GDEs and environmental values to be protected, this is largely only discussed in relation to River Red Gums in the Todd River corridor and does not mention the Alice Springs Town Council 'Significant Trees' policy or management strategies.

Further, the **Town Basin Report** recommends refining the 8m depth to groundwater condition, plus vegetation condition monitoring on licence conditions, while the **Lhere Mparntwe Management Strategy 2019** recommends checking the effectiveness of existing controls on extraction in the Town Basin on water table, tree health and salinity levels.

In relation to existing groundwater contamination, more information could be provided on existing contamination sites / plumes (petrochemicals) and risks in the Town Basin. Potential risks across the WAP area and areas prioritised for further investigation, for example; testing for PFAS contamination at the airport and Pine Gap base.

(Refer attached briefing paper and PowerPoint presentation.)
Economic drivers:
The current plan does not describe how it fits into the context of economic strategies and priorities (although these have been considered). A reformatted Chapter 1 "Plan context" would include information on the regional economy and economic drivers.

Overall economic activity is stable or slight decline in the period. Alice Springs Town Council details that agriculture and mining are a comparatively small part of the economy, at 1.6% of GRP and 0.7% of GRP respectively, whilst tourism is at 7.6% of GRP). There is declining activity especially due to COVID-19 however there are strategies to turn this around, most notably within the Territory Economic Reconstruction Commission Final Report 2020 (TERC). Strategic Aboriginal Water Reserve have been established since the WAP was written and is identified in key economic development strategies as an economic driver.

There has been an expansion of the mining and petroleum industry has been occurring since the WAP has been written. A description of mining and petroleum leases in the plan area would be included in a new plan.

There are numerous planning and policy documents related to economic development across the Alice Springs region, which include:

- Our Economic Future - Northern Territory Economic Development Framework, NTG 2017
- Territory Economic Reconstruction Commission Final Report 2020
- NT Farmers Plant Industries economic impact analysis
- Aboriginal Land Economic Development Agency website
- NT Landcorp "Land for Tomorrow" at Deep Well
- NTG Annual Review 10 year infrastructure Plan 2019-2028
- Hydraulic Fracturing enquiry and protected areas policy

- NTG mining, petroleum water licence databases

Key aspects of the TERC report which are relevant to water include:

- Focusing on "enablers" to development such as defining economic water resources
- Improvements to water resources legislation to maximise efficient use of water
- Establishment of a comprehensive Territory wide water demand management strategy to reduce water waste in the Territory,
    - Provide opportunities for water re-use
    - Include aboriginal people in economic development opportunities
    - Climate change is considered
    - Public water supplies are prioritised.

In relation to economic drivers, investment in water and agricultural infrastructure and developments needs enough information and certainty to have confidence about the future. It was discussed that the current WAP does not do that for licence holders and investors -a licence holder had advised that the conditions on their extraction licence presented a sovereign risk to their business. It was discussed that further certainty could be provided by: defining quantity and quality of the resources of the Amadeus Basin; clear, achievable licence conditions and policies; and consistency in how water policy is applied across time.

The NT Landcorp has identified "Land for Tomorrow" at Deep Well. The WAC enquired about the quantity and quality of the resource in the area known as Deep Well. Tim Bond stated that there has been some work focused on the area, but at present there is little information about the resource. There is the assumption at Deep Well that the aquifer is too deep to support groundwater dependent ecosystems, however there have been no surveys for stygofauna in the area.

In relation to the allocation of the resource into the future, NT Farmers noted the need for greater water license or allocation security in relation to the duration of the license, for example; 10 years versus perpetual allocations, to foster confidence in the availability of the resource for investment in water and agricultural infrastructure and projects. NT Farmers also noted management and allocation of the resource through a stage allocation process, as is utilised in other areas, such as; an expression of interest release of unallocated water or an auction process. Such as staged process is theorised to place greater emphasis on the cost-benefit for use of the water, rather than the first in first served method that is largely used now for allocation of the resource.

ACTION: Power and Water Corporation reticulated water use data - commercial versus residential to be presented to WAC.

(Refer attached briefing paper and PowerPoint presentation.)

11.0 Changes in legislation and policy – Tim Bond

Tim Bond briefly stepped through the legislative and policy changes since the WAP commenced.

Legislation:

Four key changes to the Water Act since the WAP commenced in 2016:

- Mining and petroleum activities water use and impacts
- Amendments for hydraulic fracturing
- Creation of an Aboriginal water reserve
- Aboriginal economic development beneficial use.

Policy:

Major policy changes since the WAP commenced in 2016:

- Trading water entitlements
- Processing water extraction licence applications
- Recovering unused licensed water entitlements
- Establishing a strategic Aboriginal water reserve
- Managing the transition of mining and petroleum activities to the Water Act 1992.

The minimum requirements of a water allocation plan were also briefly discussed.

The Chair addressed the WAC and questioned whether there was a need to go into too much detail regarding the changes in legislation and policy, or rather that the Agenda Briefing and other documents already supplied to the WAC were sufficient to enable the WAC to provide guidance in relation to the review process. There was agreement from the WAC that the information previously provided was sufficient.

Attached (briefing paper)

12.0 Synthesis and next steps – Group Discussion

This session reviewed the issues arising from discussions during the day which had been written on butchers paper and placed around the room.

The committee's expectation was that all the points on the butchers paper will be dealt with in drafting the review. The comments below relate to points that were discussed during the synthesis. This discussion led to eleven major recommendations (on page 17) which follow the listing of points raised in each area, outlined immediately below.

Water resources and water assessment

- The key to maximising the lifetime of the finite resource is to use it efficiently. It was agreed that "Bringing back the cap" would be an effective way to encourage demand management. The department should advise on how demand management will be achieved.
- The quality of the drinking water resource is not sufficiently protected. Elements of an effective strategy are defining protection areas, policy on land use, investigation of pollution risks and monitoring
- Protection on quantity is needed and fundamental to the plan. Work needed includes rigorously defining the water resources in the Amadeus in the plan area that have been suggested using modelling. The WAC agreed that a cautious approach to planning is needed in the remainder of the Water Control District outside the plan area where there is less information to reduce the risk of over-allocation of the resource. It is preferable to increase entitlements as knowledge of the resource increases rather than be forced to reduce entitlements due to new information.

- Wanngardi water availability needs work.

Aboriginal cultural values

- Surface water values is not working and the plan uses the wrong levers.
- Recognition of the value of Indigenous cultural and ecological knowledge in telling the Alice Springs water story and that this knowledge has been underutilised in the past.
- Assessment of policy and legislative scope for management or mitigation of potential impacts of interfering with water in conjunction with exemptions under the Water Act.
- Aboriginal people need to be (further) included in governance.
- Cultural values condition needs to be monitored and rangers involved.
- Science of changes to flow regimes is needed to understand why waterholes are filling in.

Environmental values

- A bibliography is needed to recognise and build on past knowledge.
- Environment values to be protected are not just river redgums.
- More measurement of "canary species" in wetlands and waterways is needed.
- Start looking at stygofauna.
- Develop capacity of Indigenous rangers to undertake in monitoring.
- Potential case studies/pilot projects for environmental values where greater coordination is needed to be effective were identified:

    a. Ilparpa Claypans: There is potential for case study to develop government coordination – link in with Wanngardi Basin water management

    b. Heavitree Gap: Establish what happened to the permanent surface water – link in in with Town Basin water management

    (Both projects should include a description of previous initiatives and forensic analysis of why there are still problems).

Economic values

- Deep Well development was noted and the need to support sustainable economic development. The plan should anticipate the need to advise on water availability in this area.
- Need to build confidence in the understanding Amadeus Basin resources by new modelling using the new information.
- Need to be able to describe the real cost of using water and the value of the water resource.
- Need to prioritise water values and establish how this is done before doing it.

Social values

- Greater community engagement is needed to motivate people to conserve water and fuel the sense of urgency that is needed. This is not felt because water availability doesn't change from year to year like other places (nor is there a simple measure, like % fill of reservoir).

- Communication of the Alice Springs water story would help. It needs to be two way – Aboriginal culture and science. It should be communicated using multiple media.

Water use and licensing

- The advice that the current licence "rules" fetter the Controller was noted and should be resolved.
- The plan needs to give enough certainty to users of groundwater that their current entitlements are secure, and the ongoing access to water is secure. Uncertainty about meeting conditions should not be a sovereign risks to licences.

Legislation

- Changes in the information presented by Tim were noted and the committee expects the plan to be harmonised with these.

Commentary Overall

- The Committee considered the plan did not meet its requirements by not being engaging with ASWAC in an ongoing way that built trust and knowledge. This should be resolved going forward with an expression of interest for the next committee and a Water Forum to kick of the next five years in March.
- We need to start planning for the next plan now.
- The disconnects between other plans and other organisations that effect this plan and the disconnect between the levers at the Controller's disposal and the outcomes sought by the plan are significant issues – an overarching governance structure for how the other parties that need to be involved participate is needed.
- The plan governance structure needs indigenous representation.
- Involvement of Alice Springs Town Council officers would be useful.
- A decision making framework should be in place as a result of this review. It should not wait for the next plan.

Eleven Major recommendations

1. The life of the finite water resource is not being maximised through demand management. Re-establishing a cap on public water entitlements is recommended.
2. The quality of the drinking water resource is not sufficiently protected.
3. The Wanngardi Basin & Town Basin environmental values and estimated sustainable yield are not adequately defined and there is concern about over allocation.
4. Surface water resources are not effectively managed. (Environmental values that should be protected should not be limited to river gums in the river corridor.)
5. There is a lack of integration in management activities to protect water resources across government and community. It requires:
    a. communicating a meta narrative (i.e. an overarching account or interpretation of events and circumstances, including connection with past plans and strategies)
    b. a governance structure for these activities
    c. a governance structure for Aboriginal representation in plan implementation

Department of Environment, Parks and Water Security

Alice Springs Plan Review Water Advisory Committee Meeting #2

8:30 AM to 4:30 PM, 14th December 2020
Arid Zone Research Institute, South Stuart Highway
Alice Springs

NORTHERN TERRITORY GOVERNMENT

1. 8.30 AM – Acknowledgement of Country

We respectfully acknowledge the past and present Traditional Custodians of this land on which we are meeting, the Arrernte people. It is a privilege to be standing on Arrente country.

Department of Environment, Parks and Water Security

Alice Springs Plan Review Water Advisory Committee Meeting #2

3. 8.45 AM Workshop overview

NORTHERN TERRITORY GOVERNMENT

Agenda

1. Acknowledgement of country
2. Opening
3. Work plan for the day
4. Water resources
5. Water entitlements and use

Morning tea

6. Environmental values
7. Aboriginal cultural values
8. Survey results

Lunch

9. Social drivers
10. Economic drivers
11. Legislation & policy changes

Afternoon tea

12. Synthesis
13. Next steps
14. Close

Workshop flow and logic

1. The water resource – new understanding
2. How the water is allocated and used
3. Non-consumptive values of the water
    a) Environmental
    b) Aboriginal cultural
4. What we have heard
5. Changes
    a) Social
    b) Economic
    c) Legislation and policy
6. Advice for drafting the report

Required outcomes:

1. *Consider reports on how water resources and the values they support are performing and advise on what this means for the water allocation plan review*

2. *Provide guidance to the Department on socio economic considerations related to the plan*

3. *Advise on responding to the feedback from the "Have your Say Survey"*

4. *Advise to the Department on preparing the draft Alice Springs Water Allocation Plan review report.*

Department of Environment, Parks and Water Security

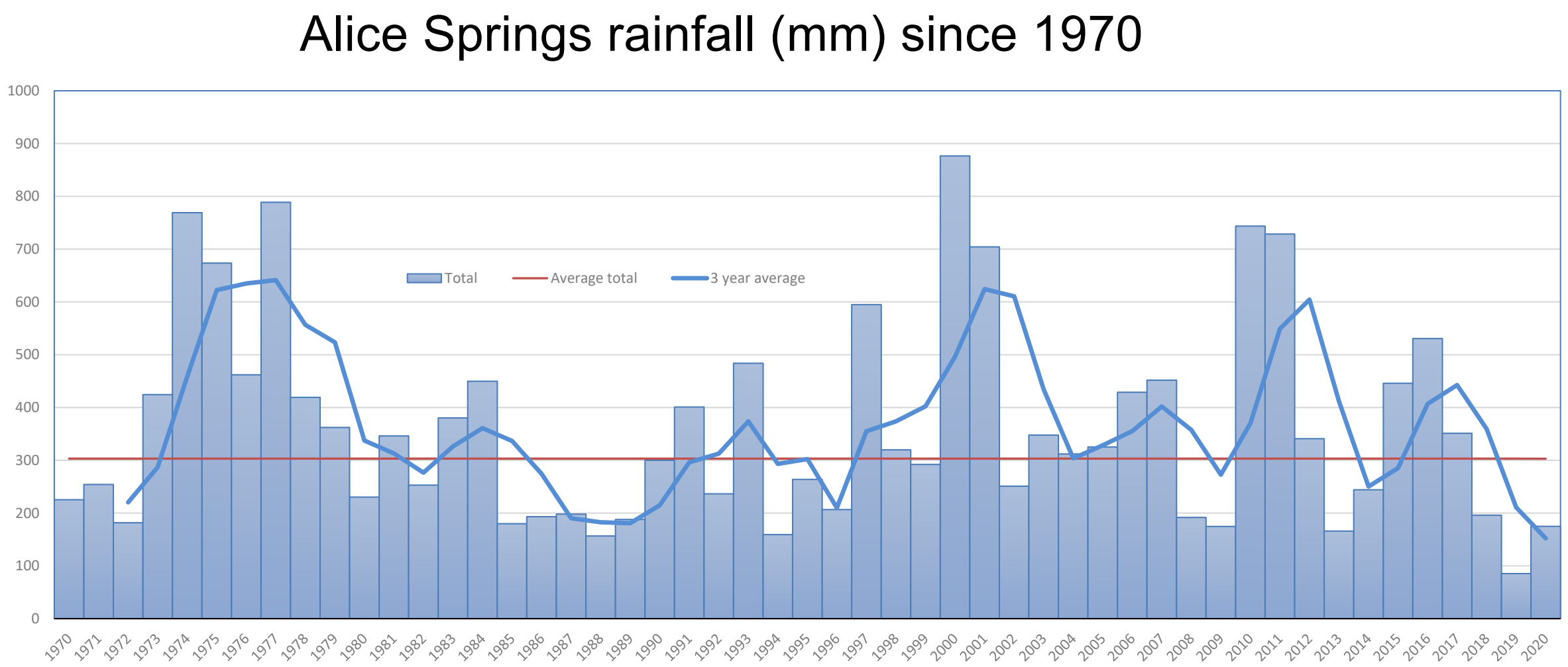
Alice Springs Plan Review Water Advisory Committee Meeting #2

4. 8.55AM
Water resources summary

NORTHERN TERRITORY GOVERNMENT

Climate – Rainfall

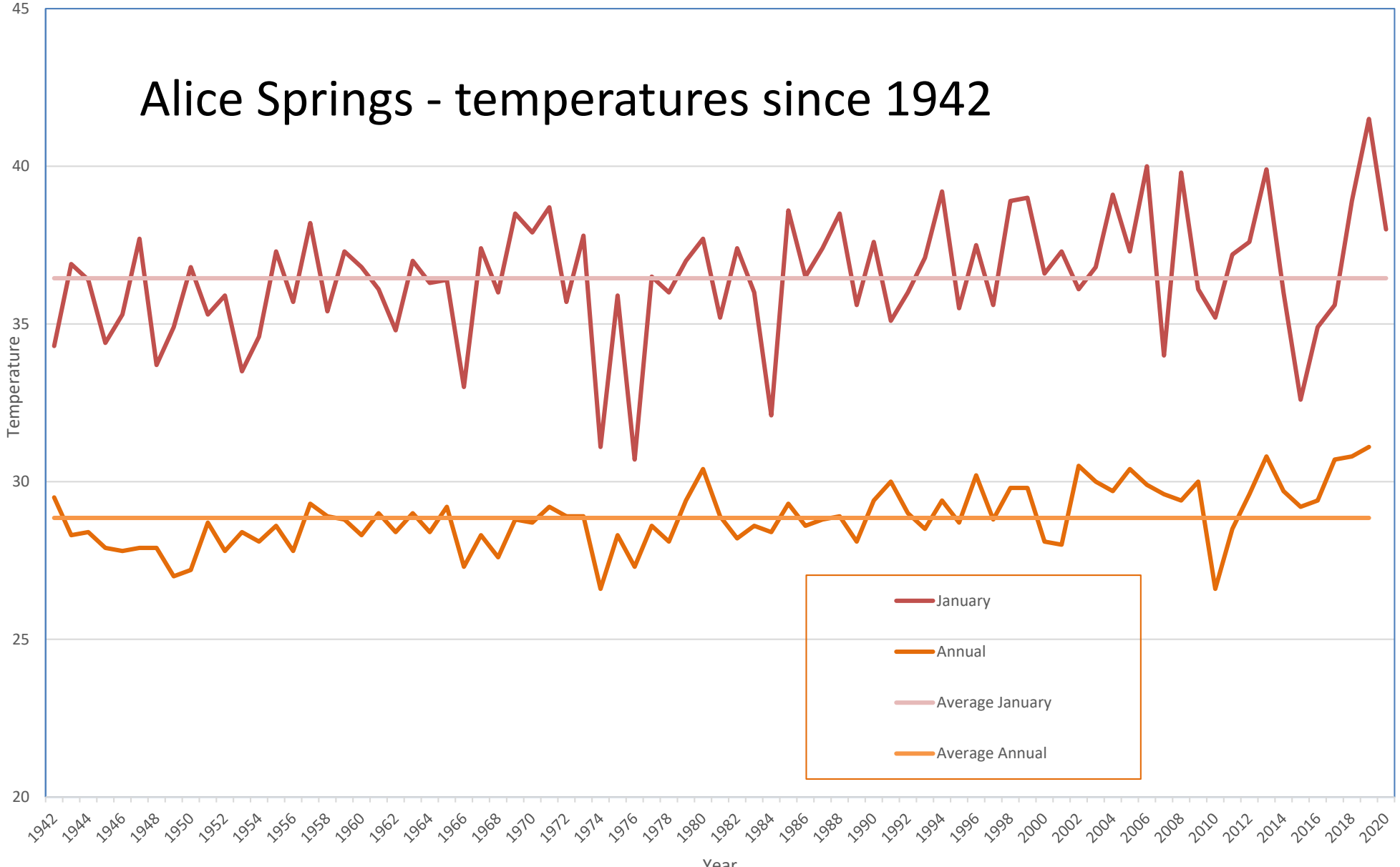
Driest year in 2019, 3 year rolling average is at an historic low



NORTHERN TERRITORY GOVERNMENT

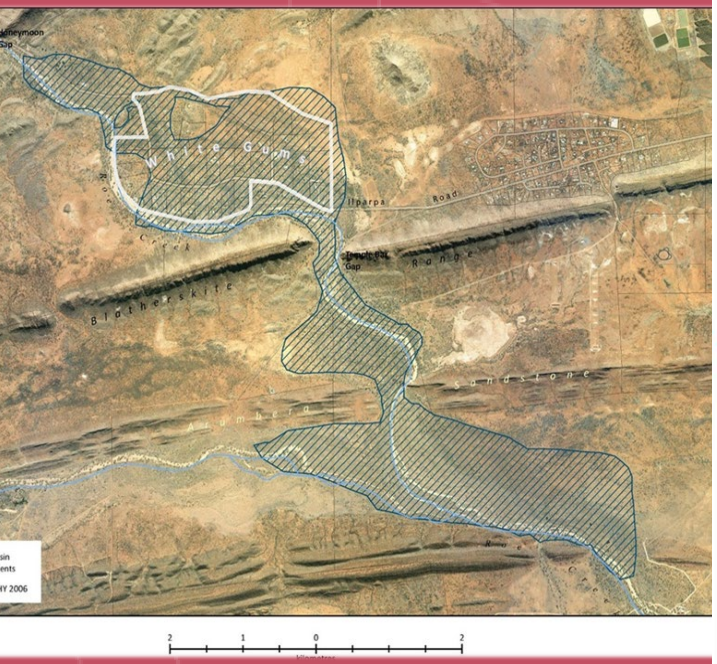
Climate: Temperature

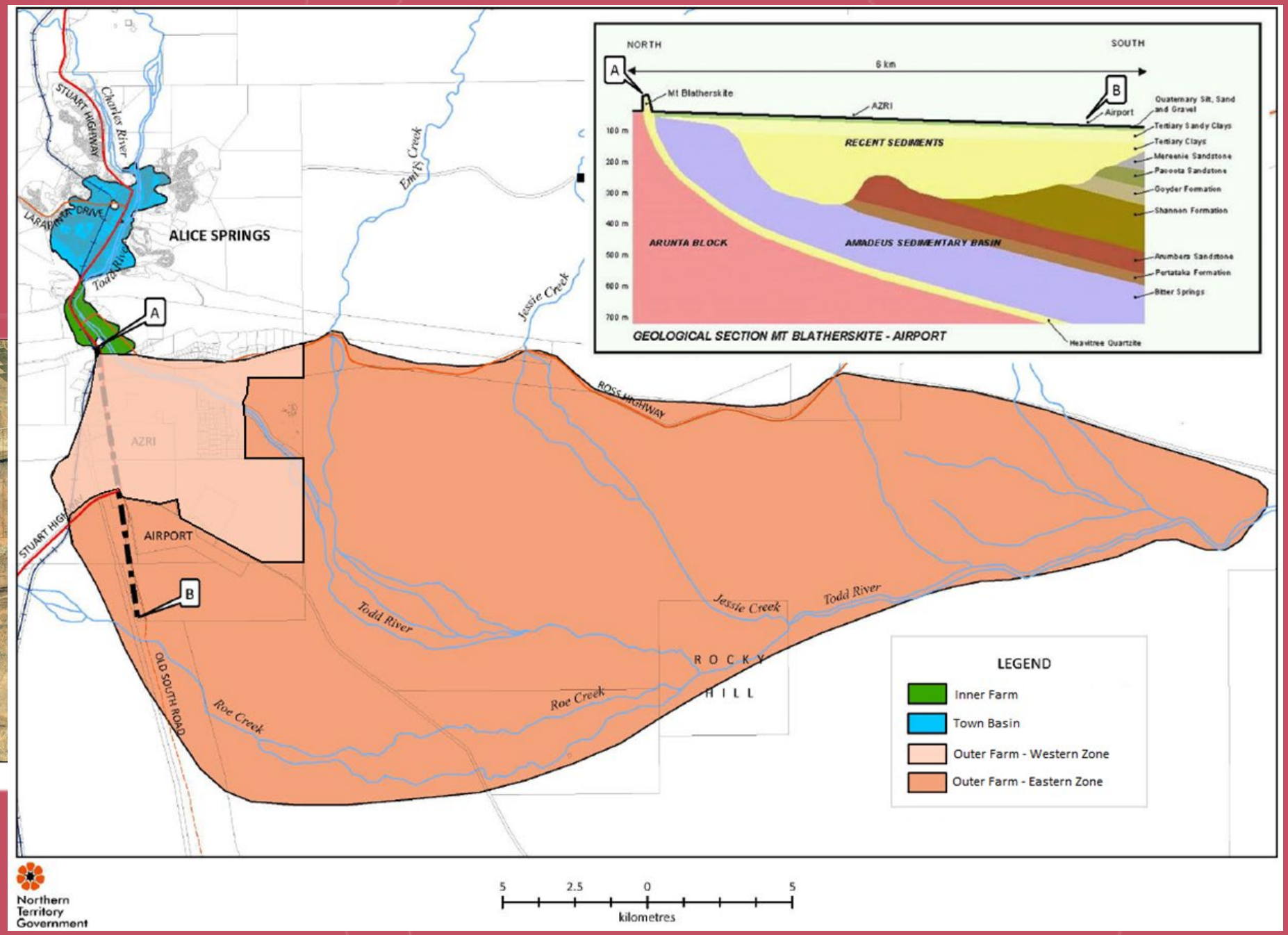
Every year in the review period was above average



NORTHERN TERRITORY GOVERNMENT

Alluvial Basins

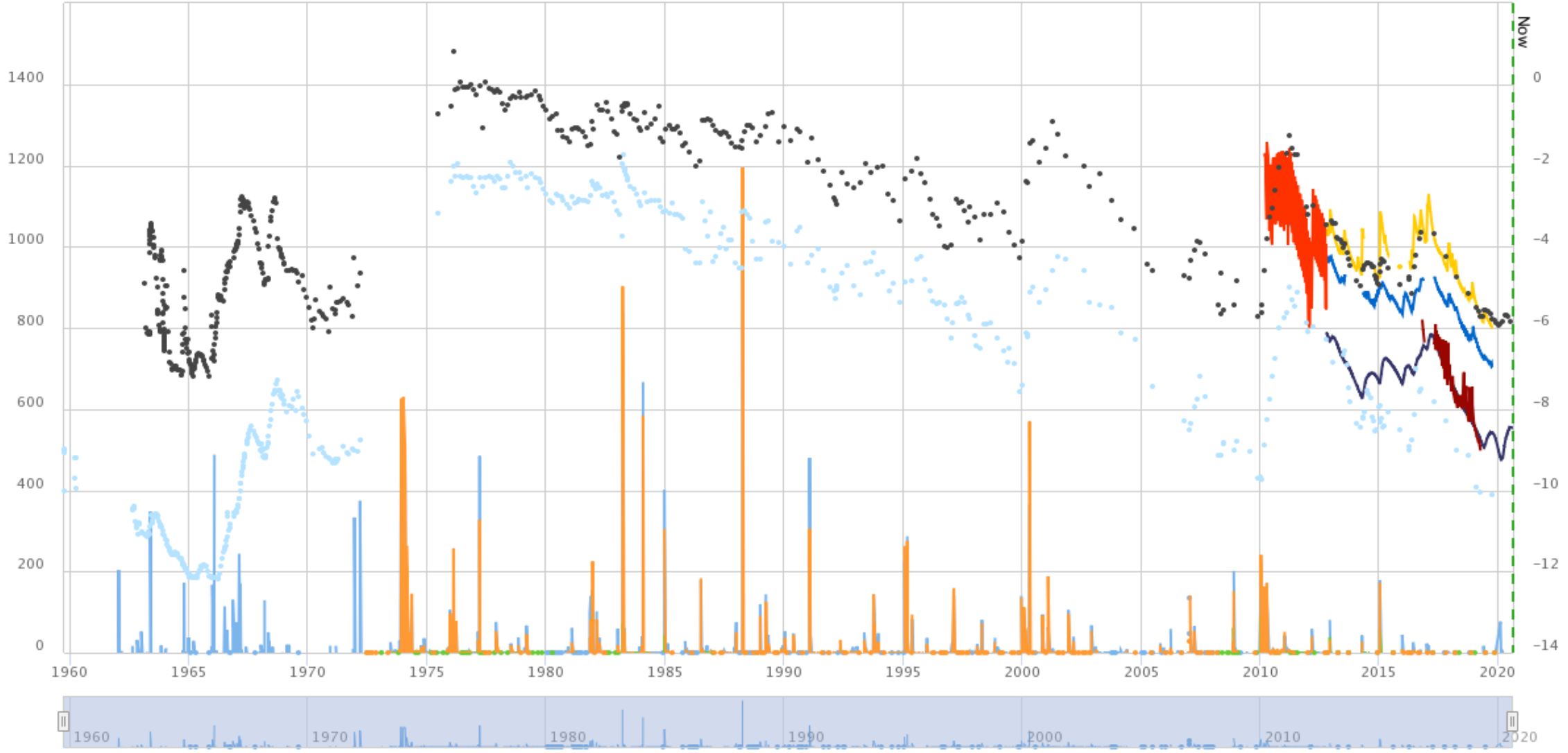




Town Basin

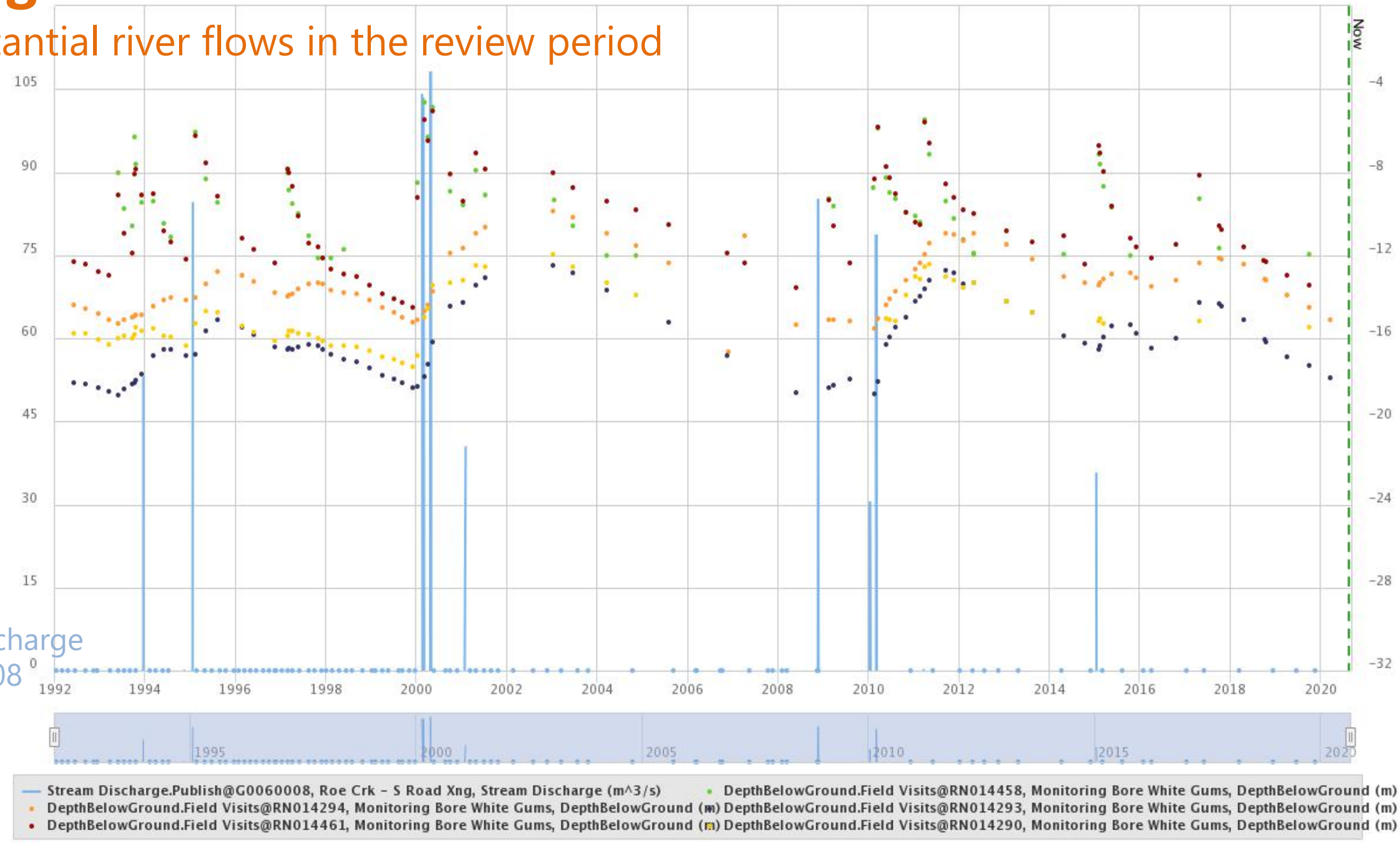
No substantial river flows

Groundwater levels similar to the early 1970s



Wanngardi Basin

No substantial river flows in the review period



Stream discharge at G0060008

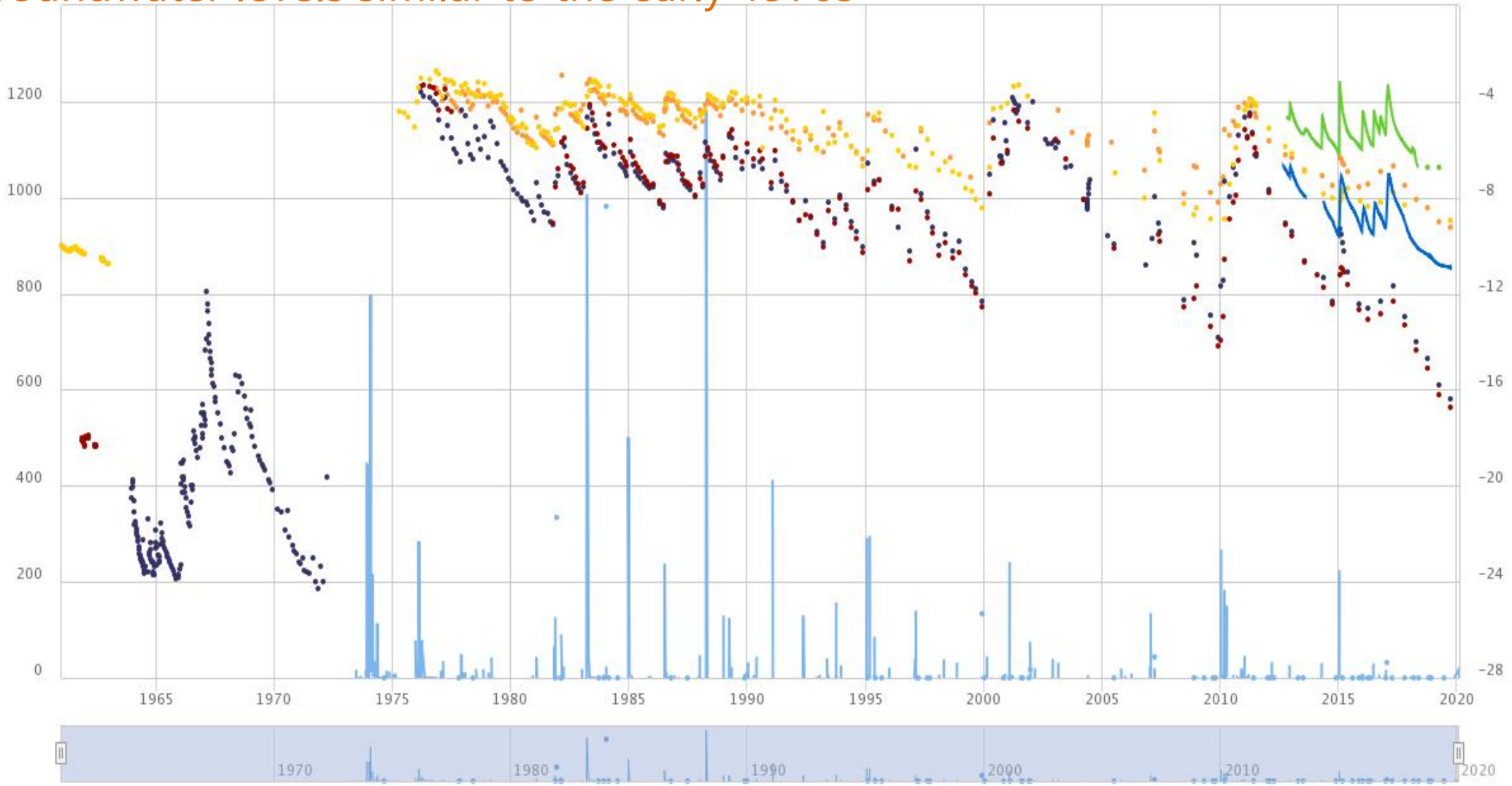
NORTHERN TERRITORY GOVERNMENT

www.nt.gov.au

Inner Farm Basin

No substantial river flows

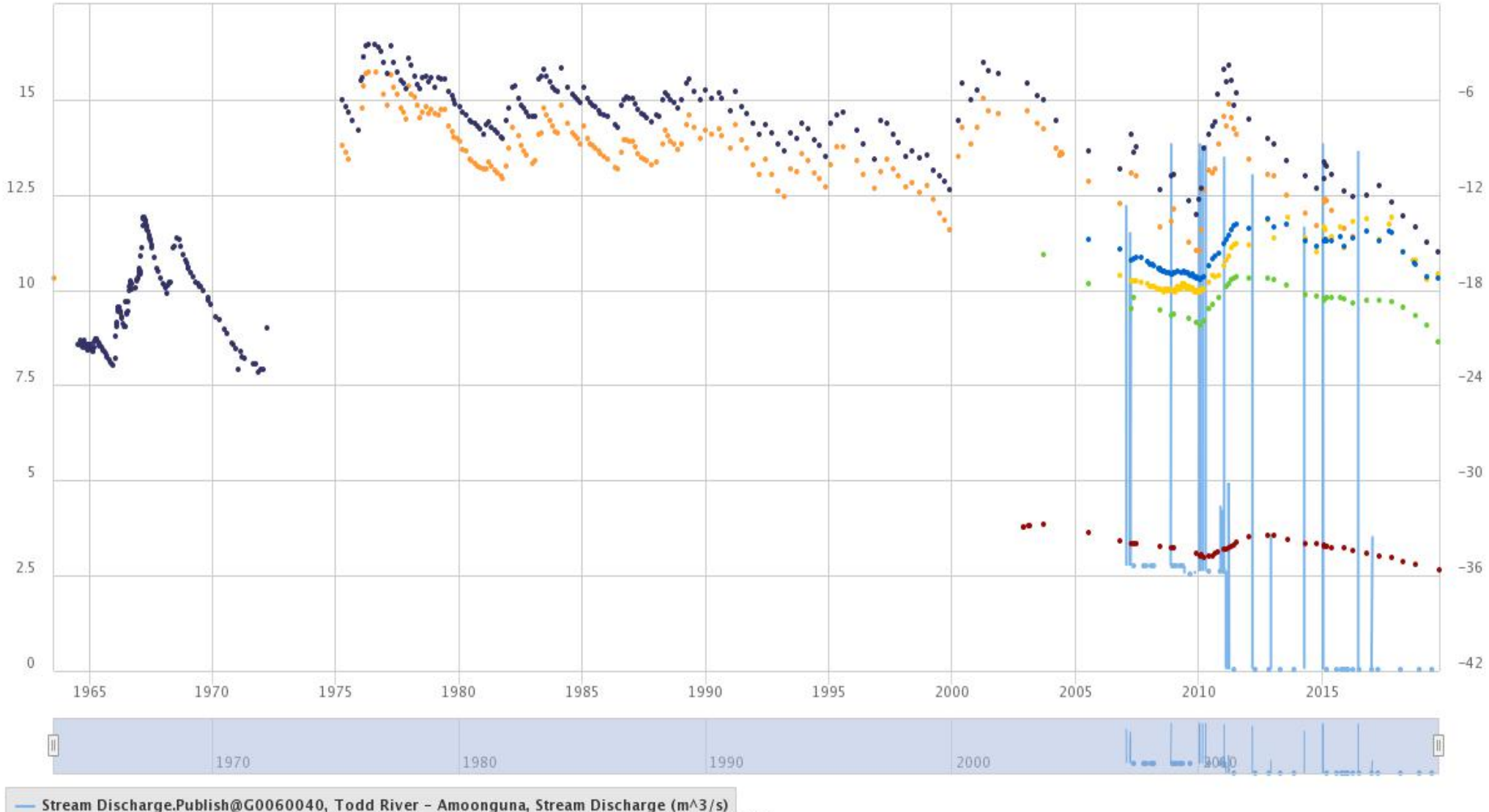
Groundwater levels similar to the early 1970s



Outer Farm Basin

No substantial river flows since 2017

Groundwater levels approaching the early 1970s



New Information

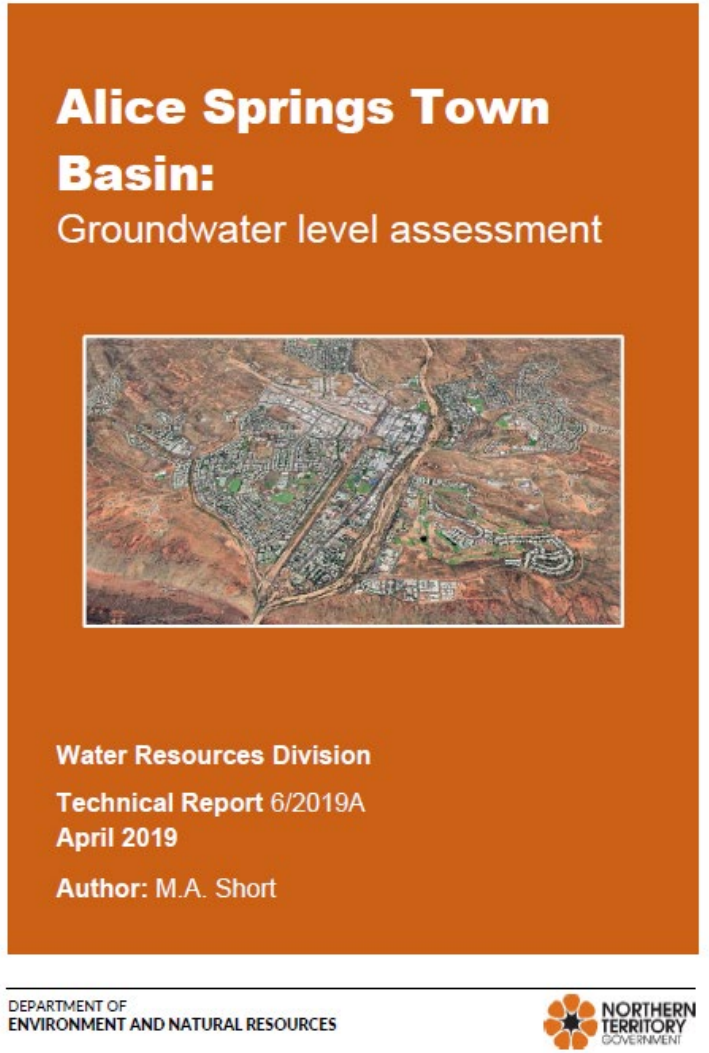
Groundwater levels assessment Town Basin

For >1.0 m rise in groundwater levels

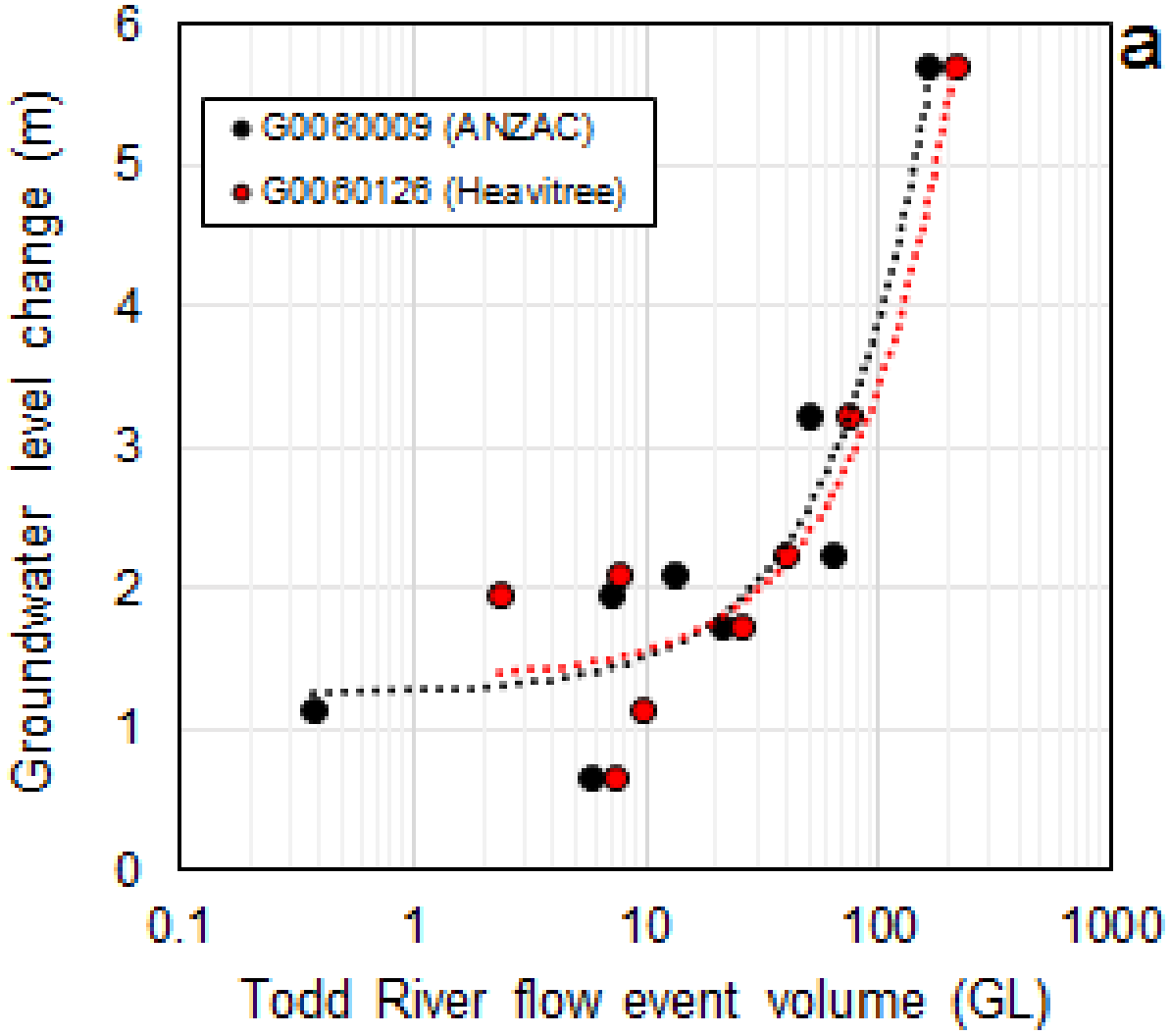
- Todd River flows more than 10 days;
- Todd River flow volume of approx. 1-10 GL
- Total rainfall >50 mm.

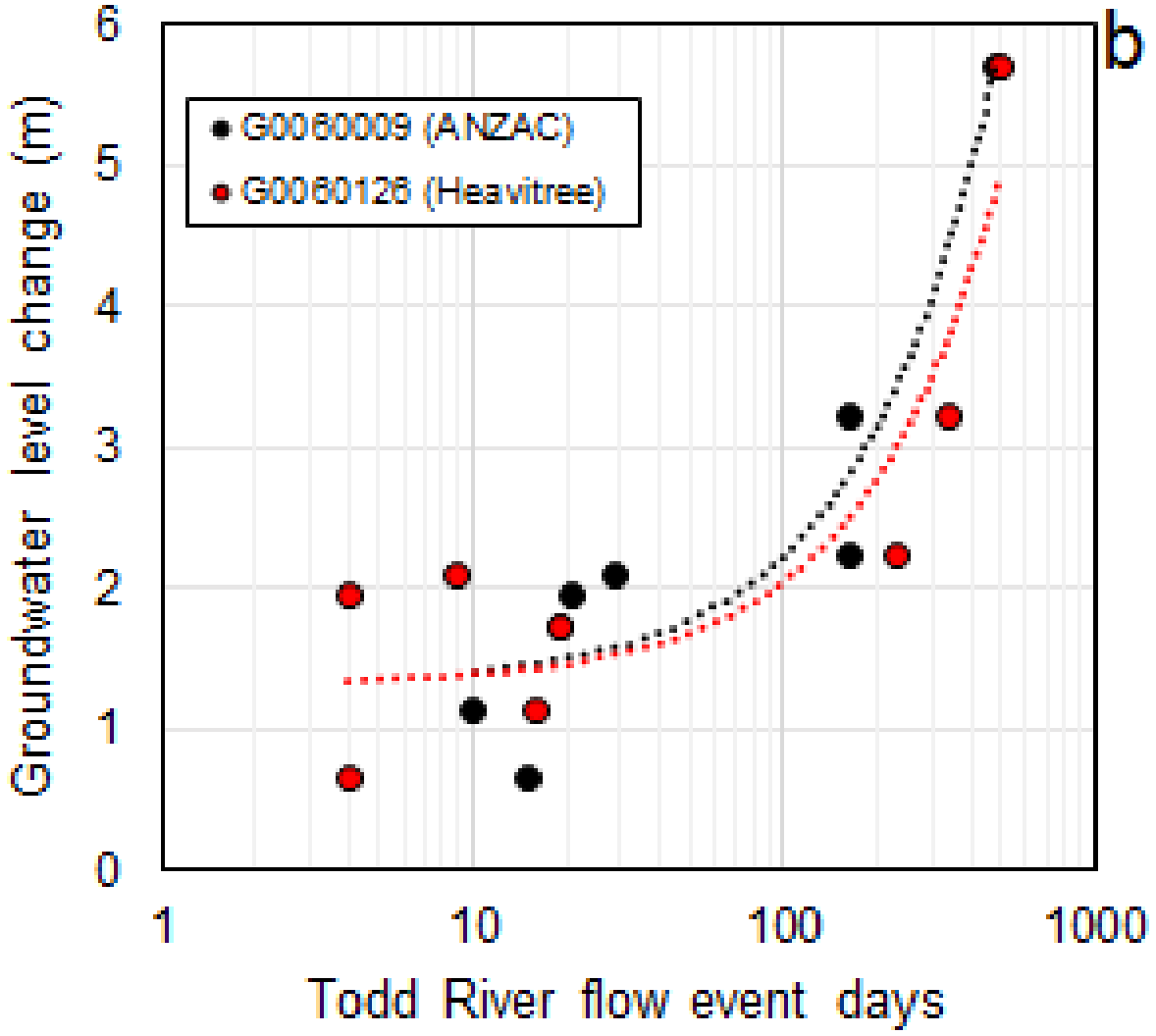
For >2.0 m rise in groundwater levels:

- Todd River flows for more than 50 days;
- Todd River flow volume more than >100 GL
- Total rainfall more than 200 mm.



NORTHERN TERRITORY GOVERNMENT



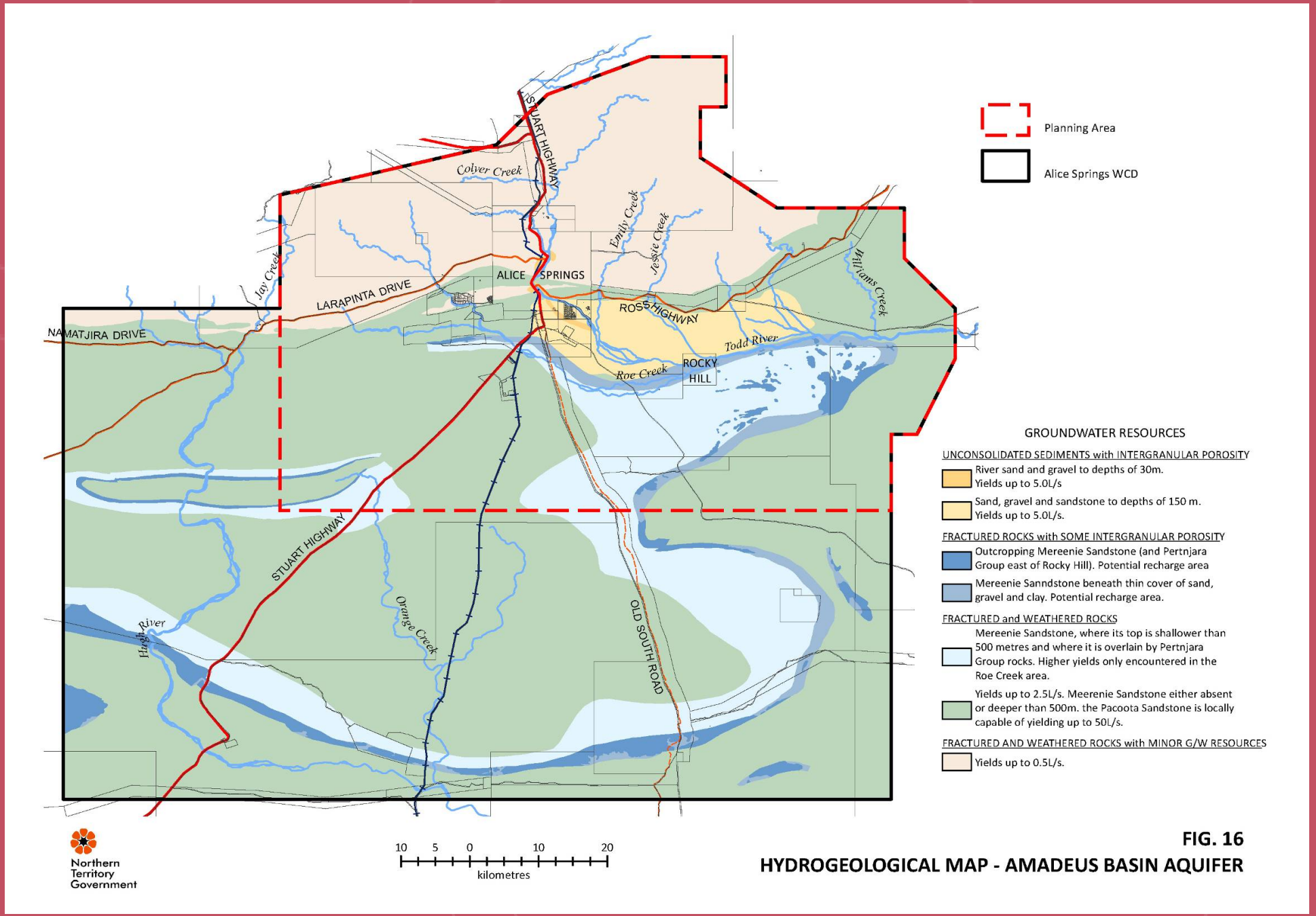


NORTHERN TERRITORY GOVERNMENT

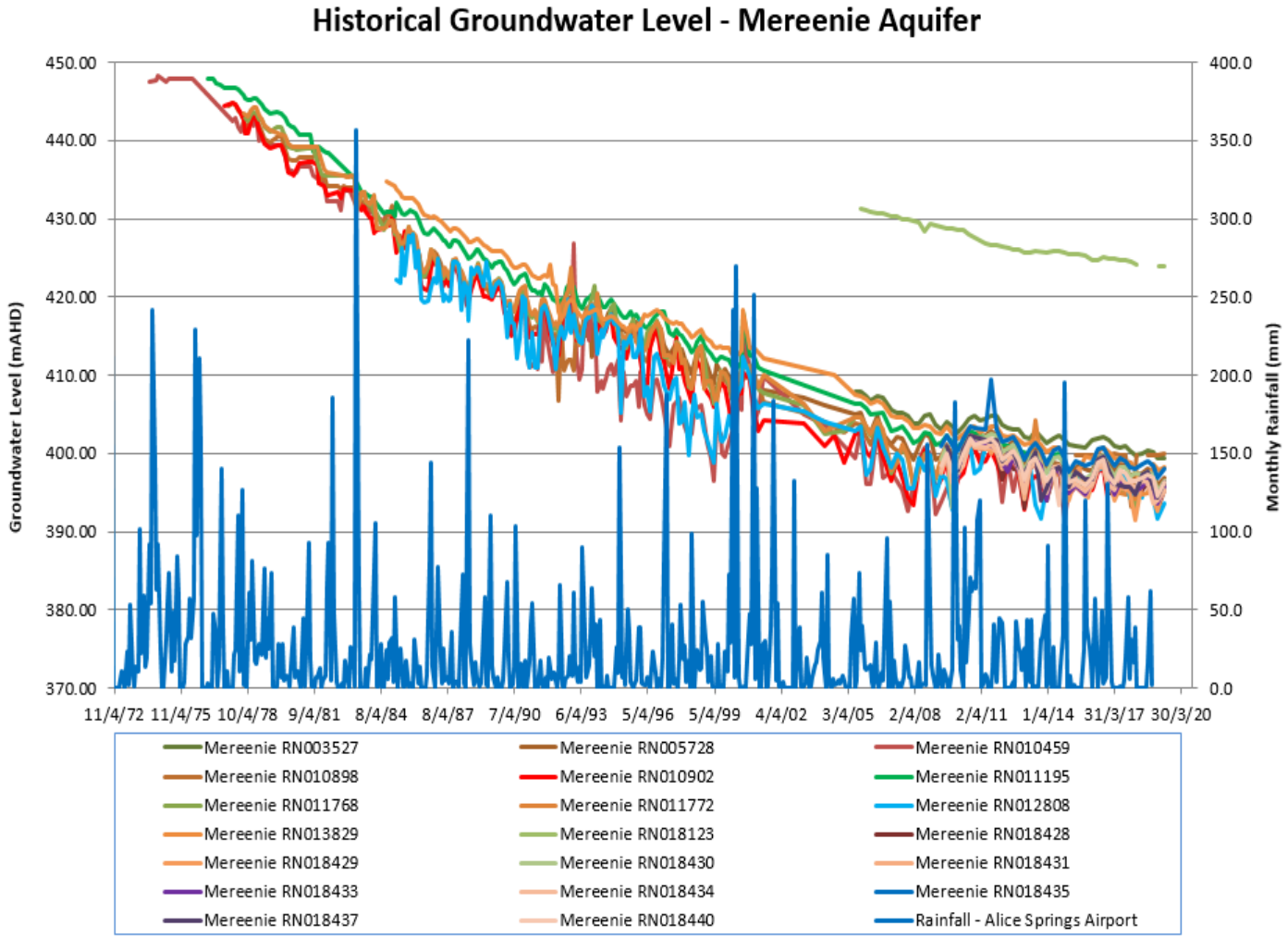
Going Forward – Alluvial Basins

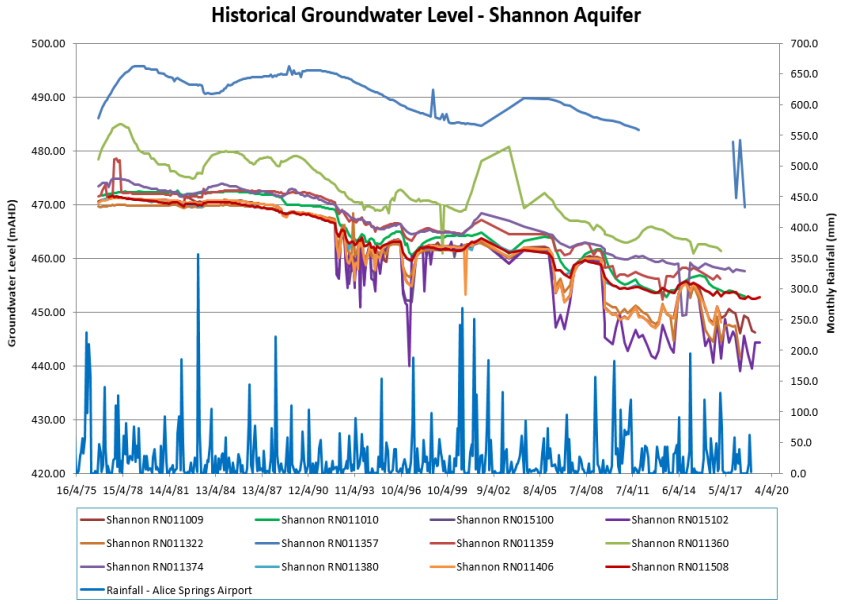
1. Groundwater levels are at historic lows.
2. Climate and river flows drive basin storage and use
3. Water balance elements are based on means not medians inappropriate for systems relying on year to year top ups
4. Wanngardi –ESY is poorly defined and more work is needed before the next plan
5. Greater focus on “limits to change” i.e. aquifers levels needed to keep vegetation heathy, protect private bores and cultural sites rather than the water balance in setting estimated sustainable yields

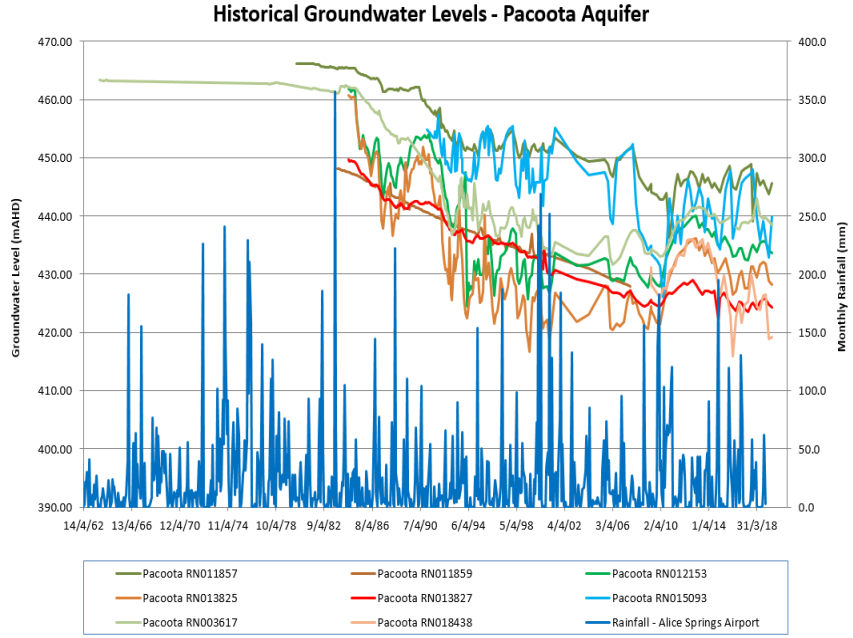
Amadeus Basin Aquifers



How are water levels going?

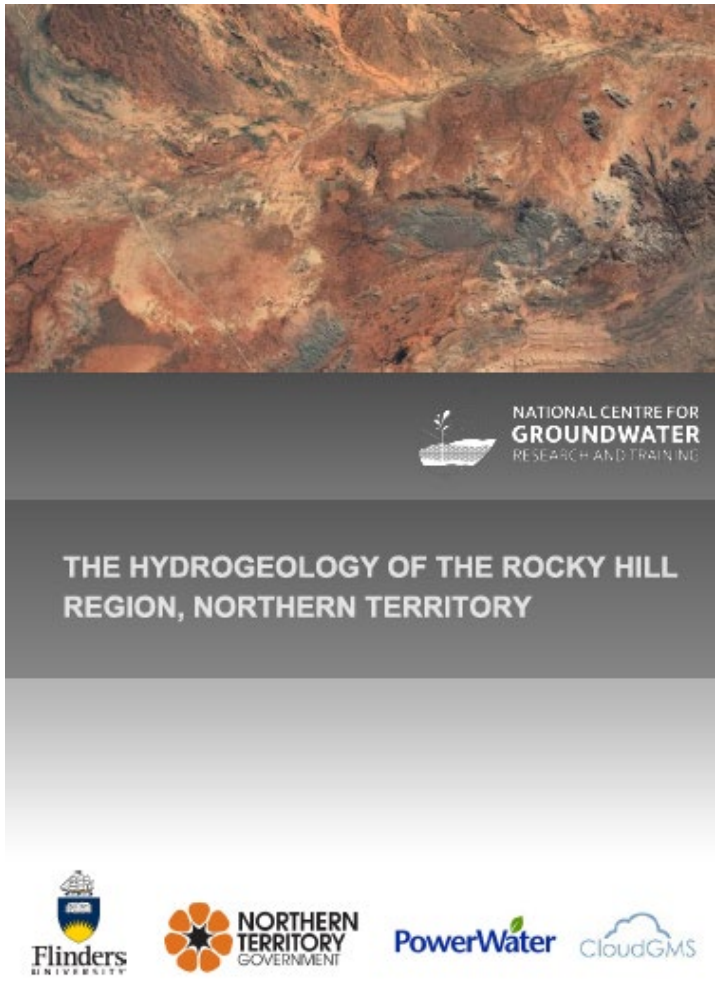






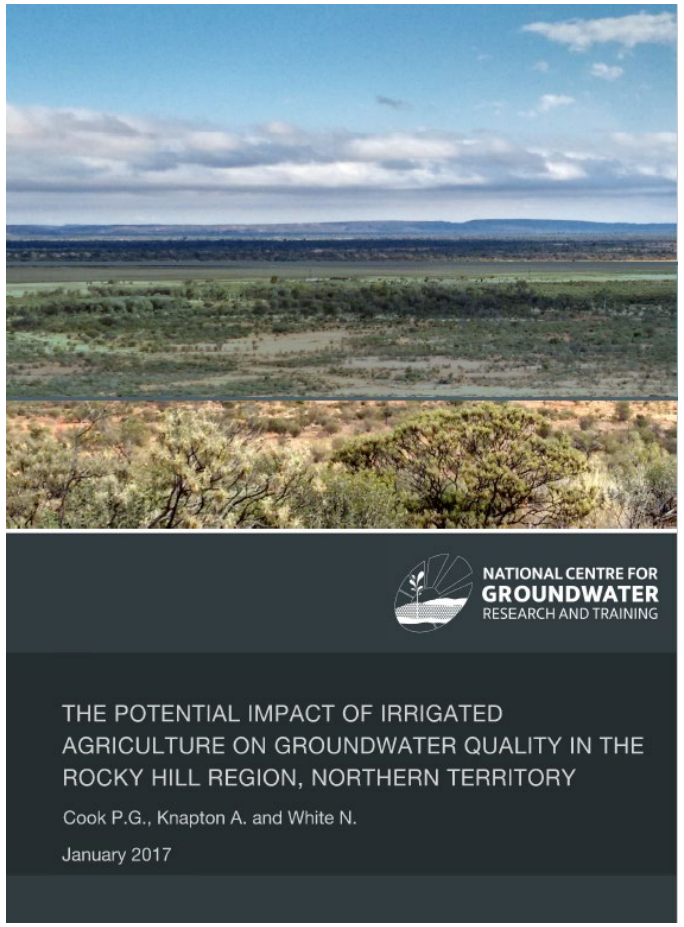
Graphs from: PowerWater

New Information



- Updates Rocky Hill hydrogeology from drilling, sampling and pumping tests
- The information can be used to improve the model
- Pumping tests show water moves more easily to bores than predicted by core samples
- Suggests importance of fractures or thin layers of high permeability
- Increases estimate of good quality groundwater (TDS<600mg/L) to 300m depth in the Mereenie/ Hermannsburg aquifers to 5,200 GL (from 755GL)
- Increases estimate of ok quality groundwater (TDS<1000mg/L) to 10,700 GL (from 3,755GL)
- Identifies deep freshwater in the Pacoota and Goyder/Shannon aquifer (not estimated in current plan)
- Recharge is from Todd River and Roe Creek floodwater in months with more than 60 mm of rainfall.
- Recharge about 2 GL/yr within the study area (an increase)

New Information

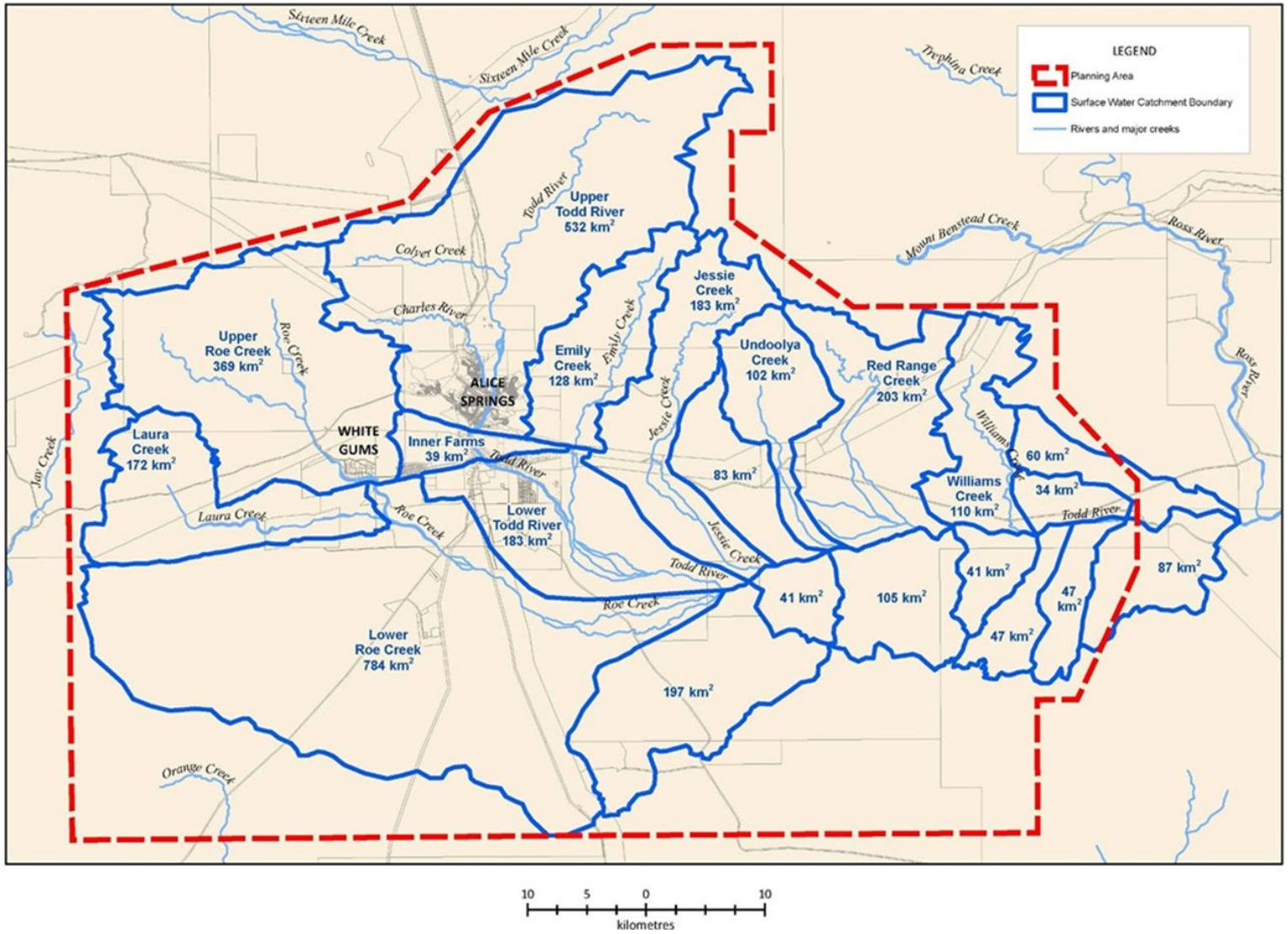


- Investigates the impact of irrigation on water quality
- Salts could increase to around 1300 mg/L,
- Under current conditions recharge beneath the vineyard captured by irrigation bores.
- A PWC borefield on Rocky Hill would likely be in capture zone
- Groundwater modelling recommended to:
  - groundwater capture areas
  - travel times to the borefield
  - the extent of dilution of salts.

Going Forward – Amadeus Basin

1. New data suggests resources for public water supply are underestimated and will last longer
2. Before the ESY and allocations can be updated in the plan model needs to be updated with the new data
3. Infiltration pathways to deep aquifers from the alluvial areas are significant
4. Capture zone modelling is needed to define where groundwater contamination could impact on current and future supplies
5. The model could be extended beyond the plan area however there is a lot of hard rock, limited information and no monitoring.

Surface water resources



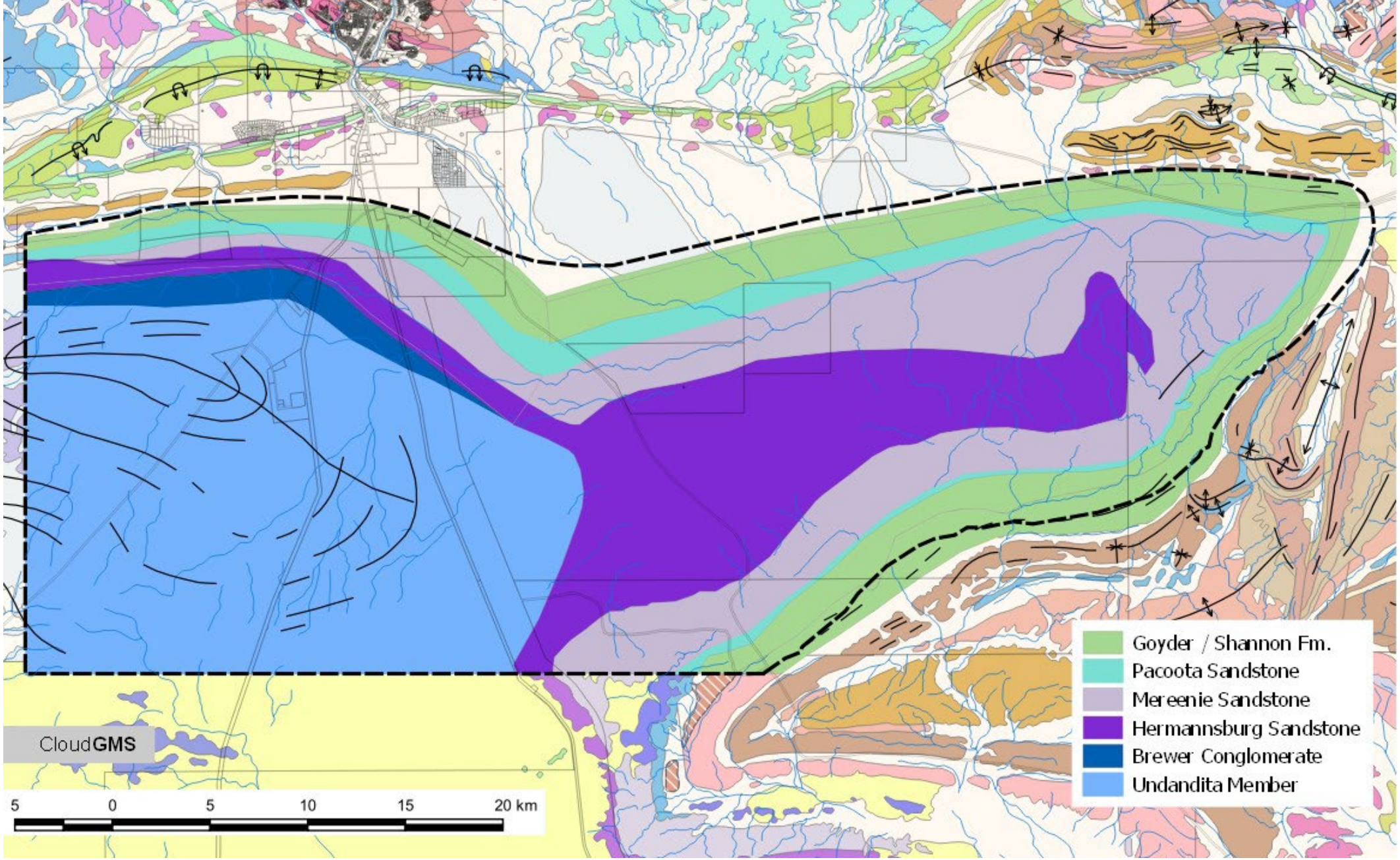


Figure 5. Aquifer structure within the Rocky Hill region. Stratigraphically lower (older) geological units form the upper aquifer towards the edges of the syncline structure.

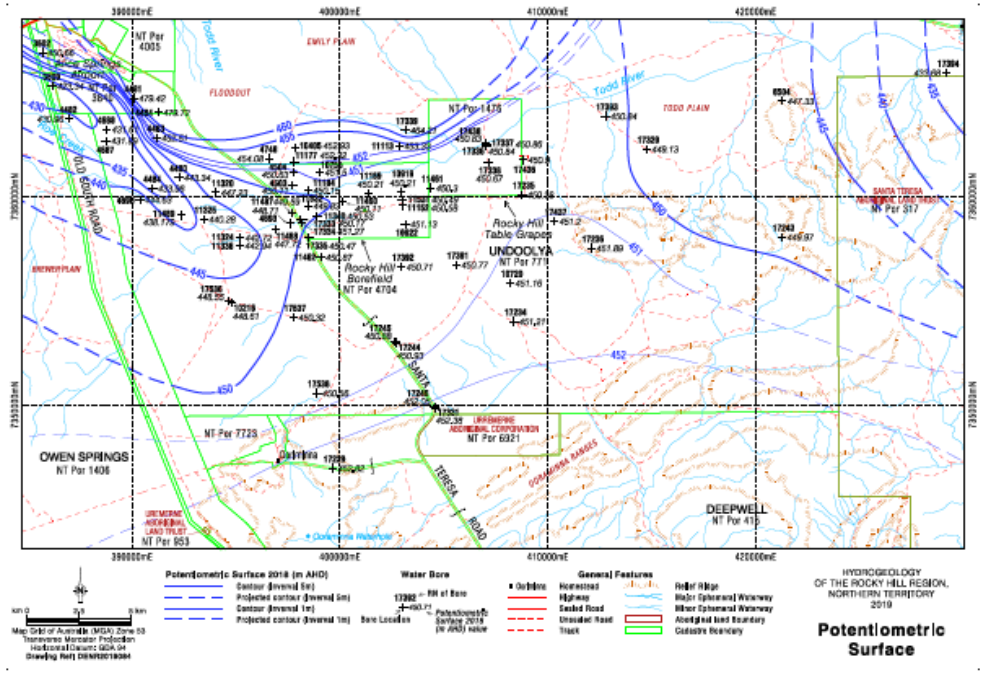


Figure 19. Potentiometric surface map for 2018. (Most measurements were made between in 7-10 August 2018; see Appendix 2.)

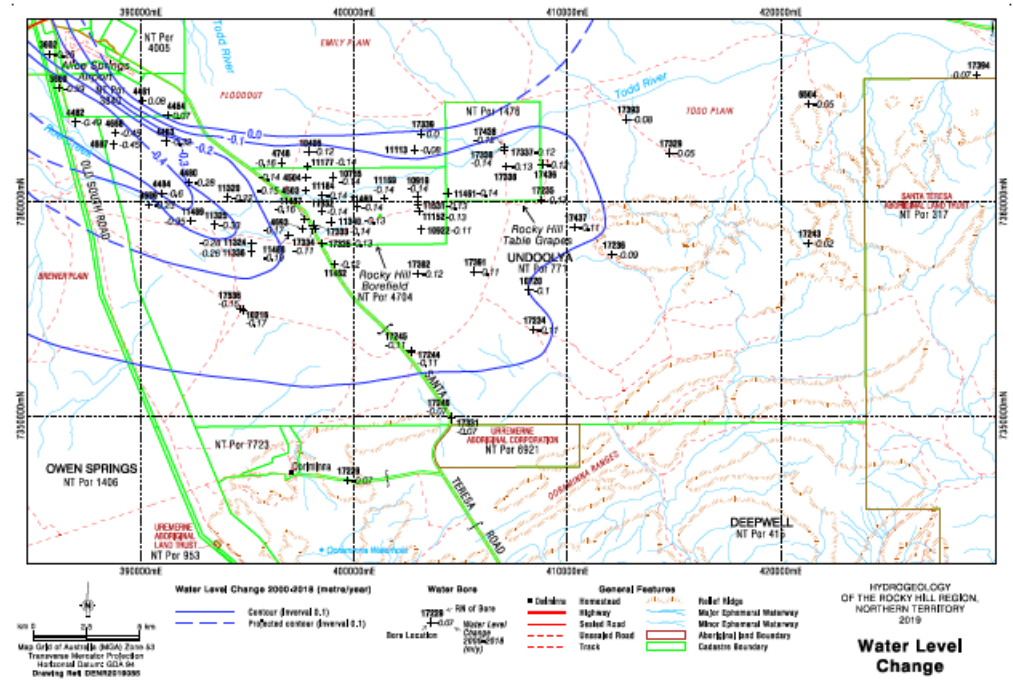


Figure 20. Change in water level between 2000 and 2018 (metres per year).

5. 9.30 AM – Water entitlements and use

Sections 4.1, 5 – 16 in the current plan

- *Information in the plan*
- *Water use and entitlements over the life of the plan*
- *What this means for the water plan*
- *Discussion*
- *Priorities*

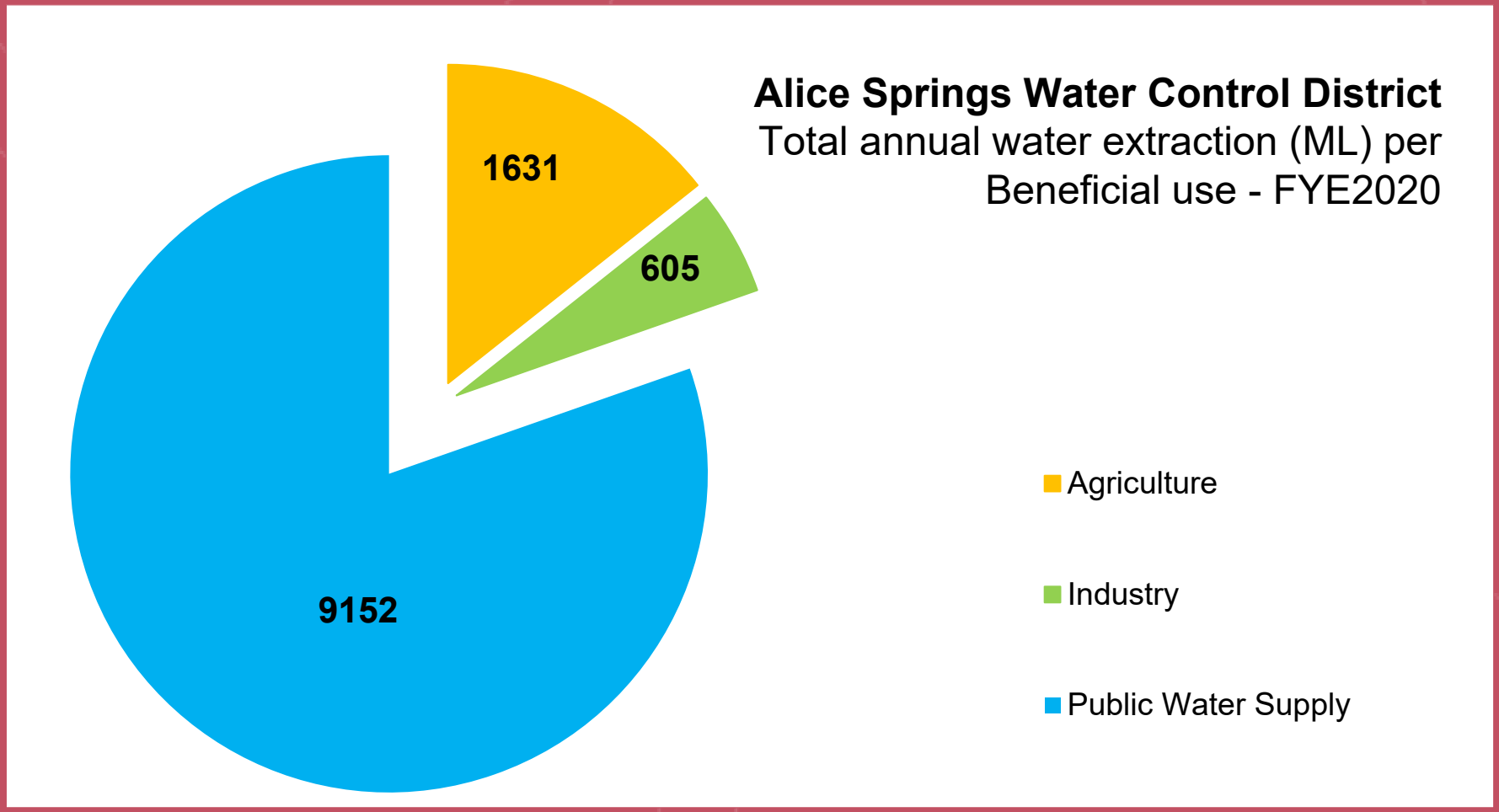
Discuss what this means for water management after we've heard how environmental and cultural values and socio economic factors are going.

Water Entitlements and Use

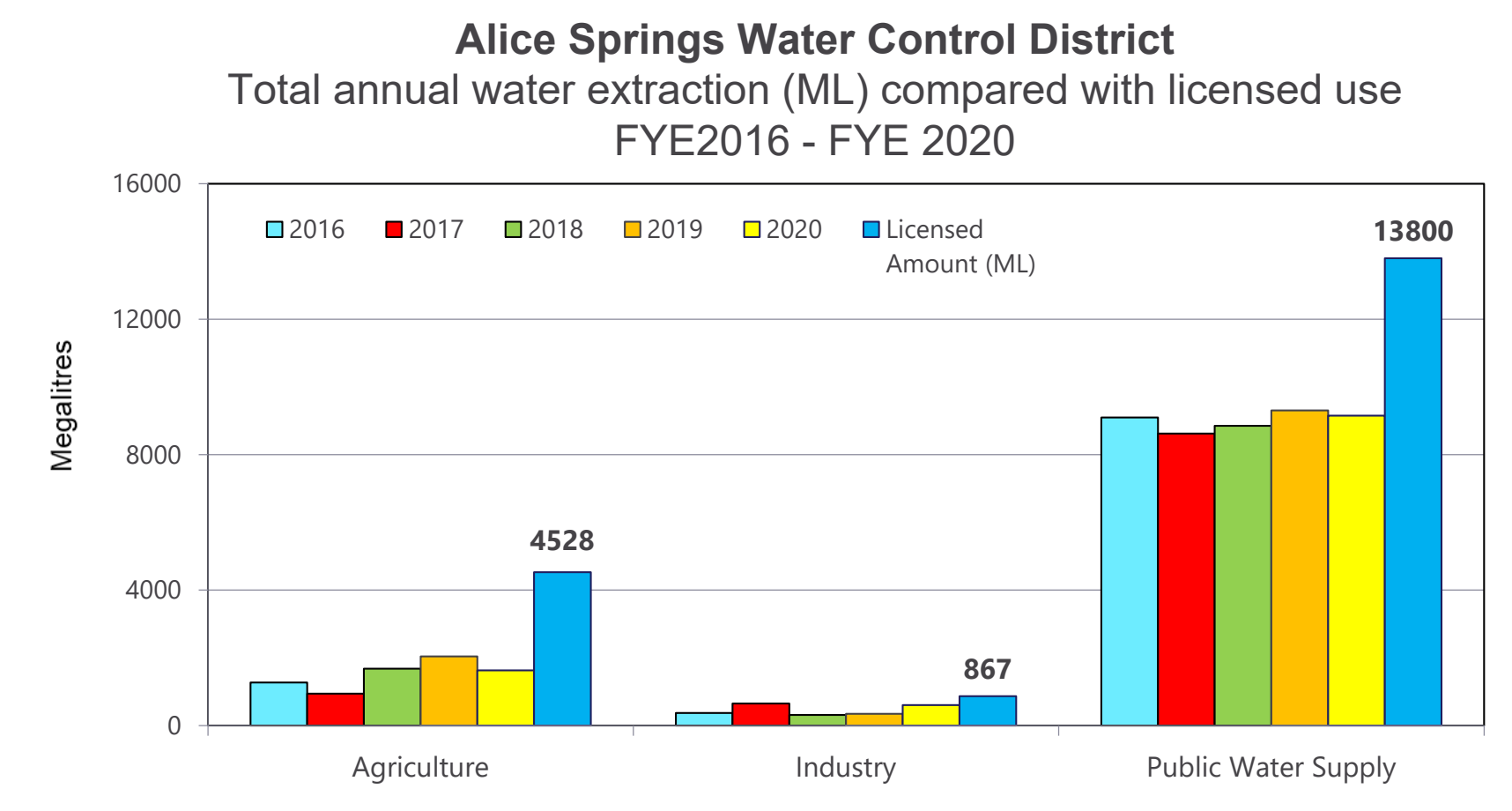
The information and values protected in the current plan

- **Beneficial uses**
  - Environment and culture
  - Agriculture
  - Industry
  - Public water supply
- **Water Licensing Conditions and Trading Rules**
- **Assignment of Risk**
- **Groundwater Dependent Ecosystems**
  - River Red Gums – 8 mbgl (metres below ground level)
  - Springs, waterholes, stygofauna

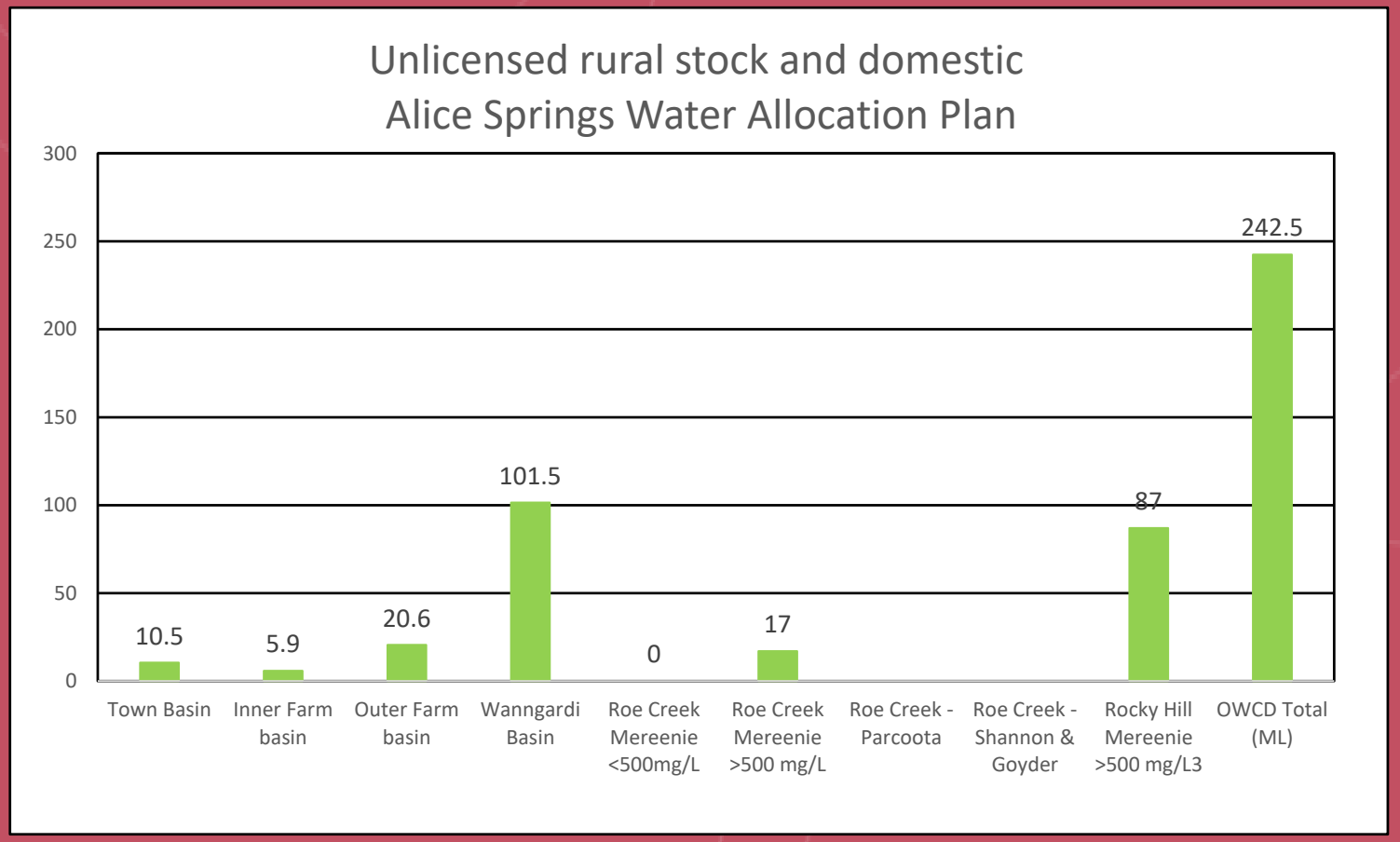
Beneficial Uses



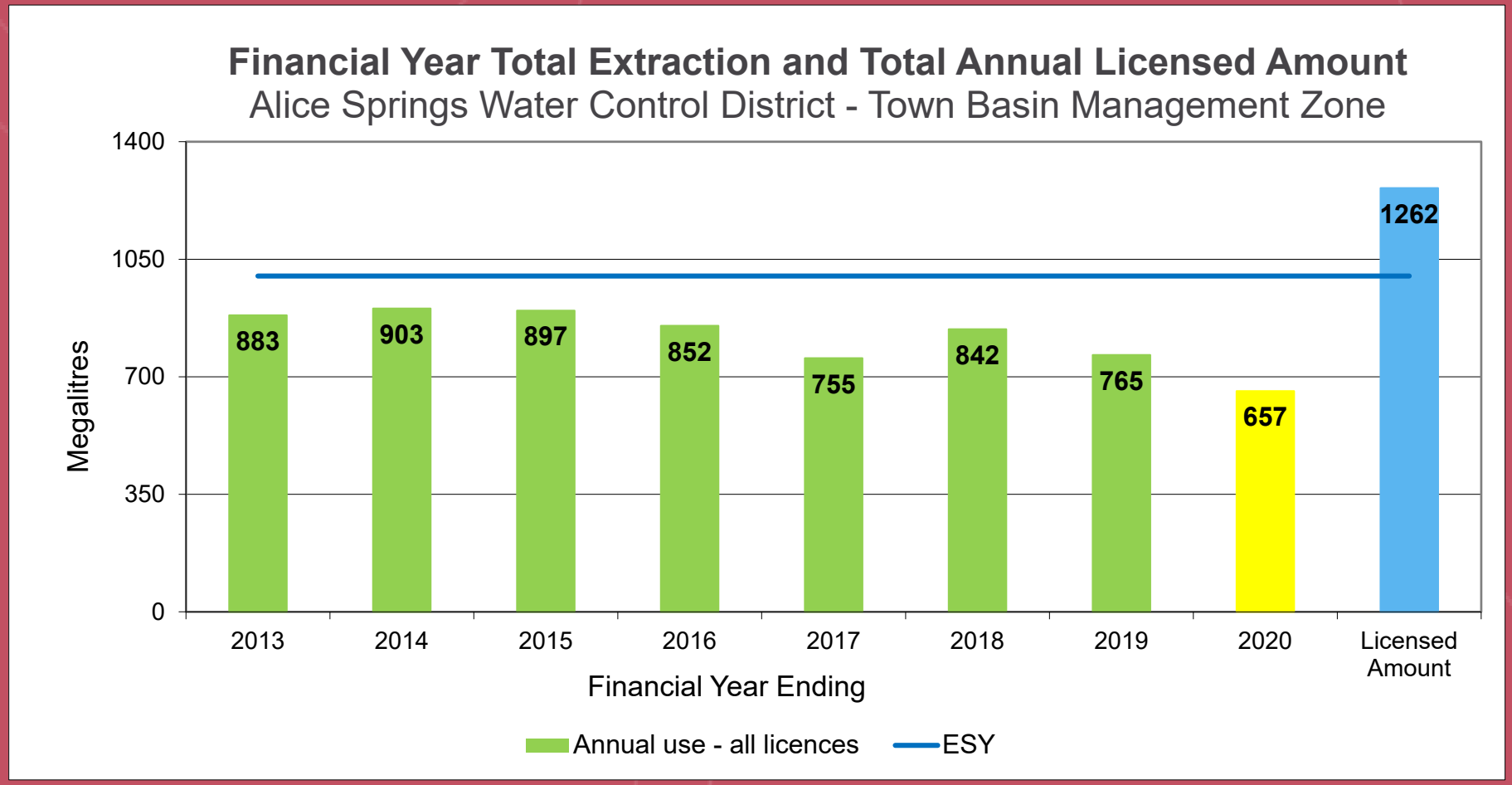
Beneficial Uses



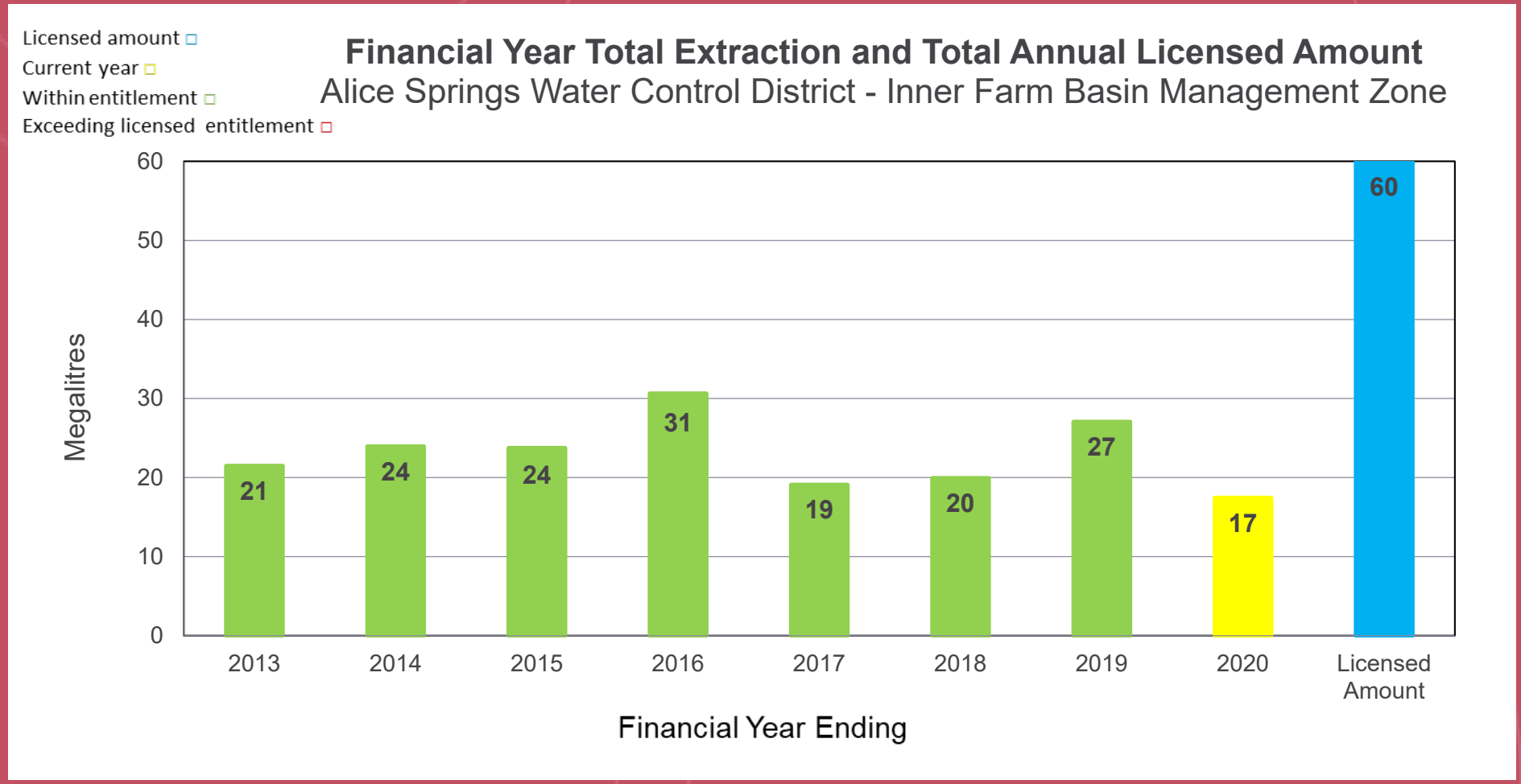
Unlicensed Stock and Domestic Use



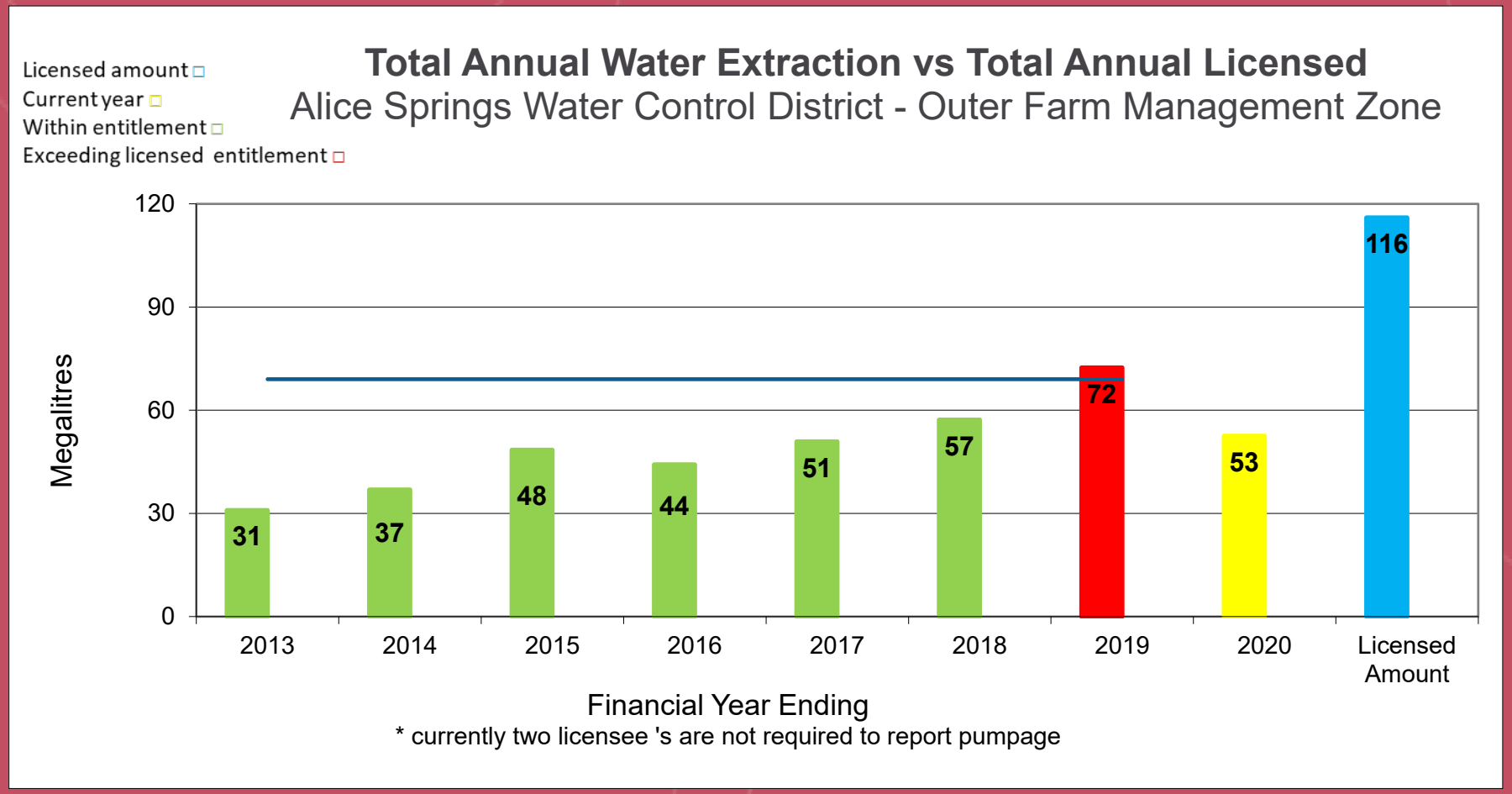
Town Basin Management Zone



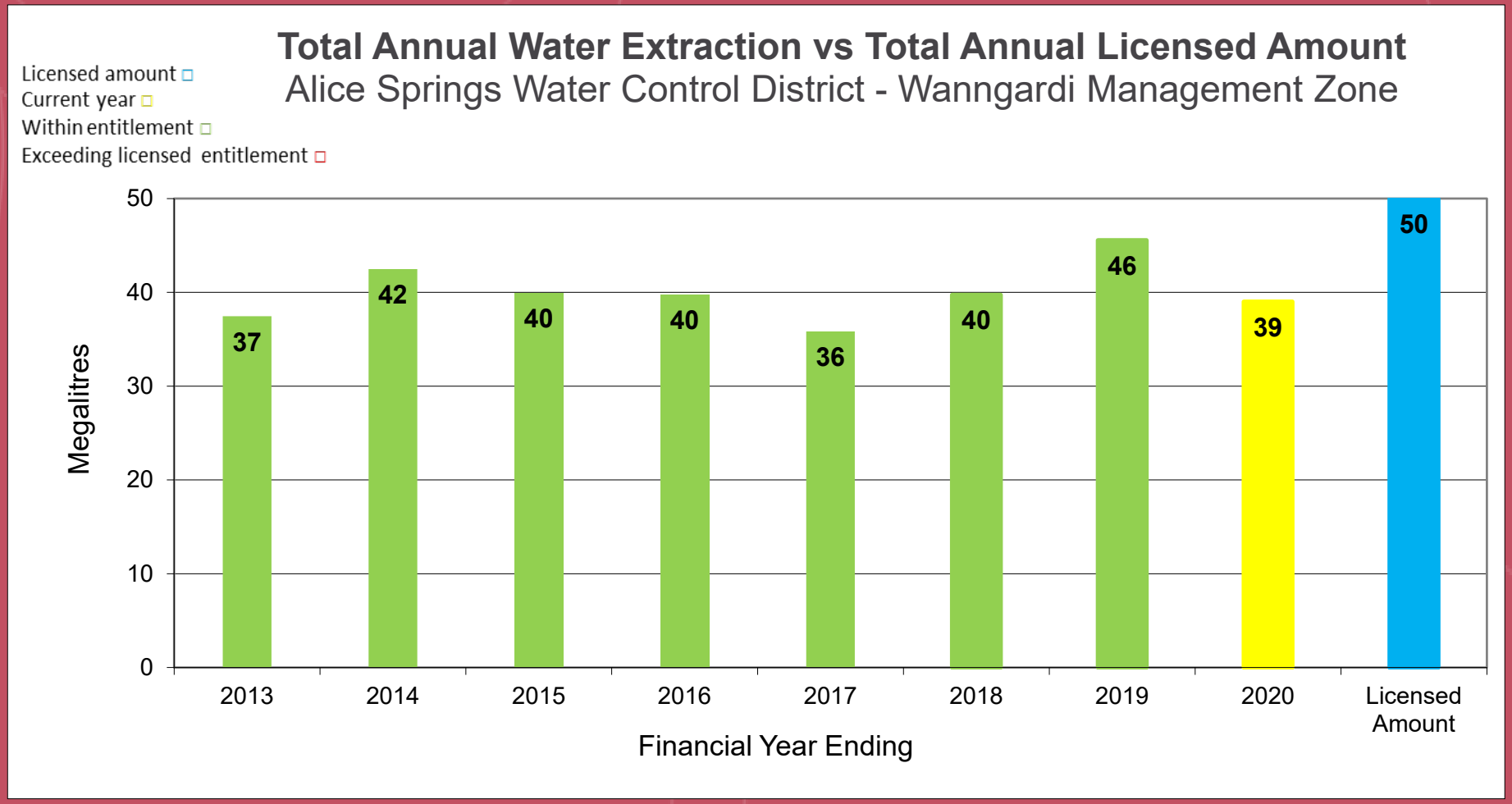
Inner Farm Management Zone



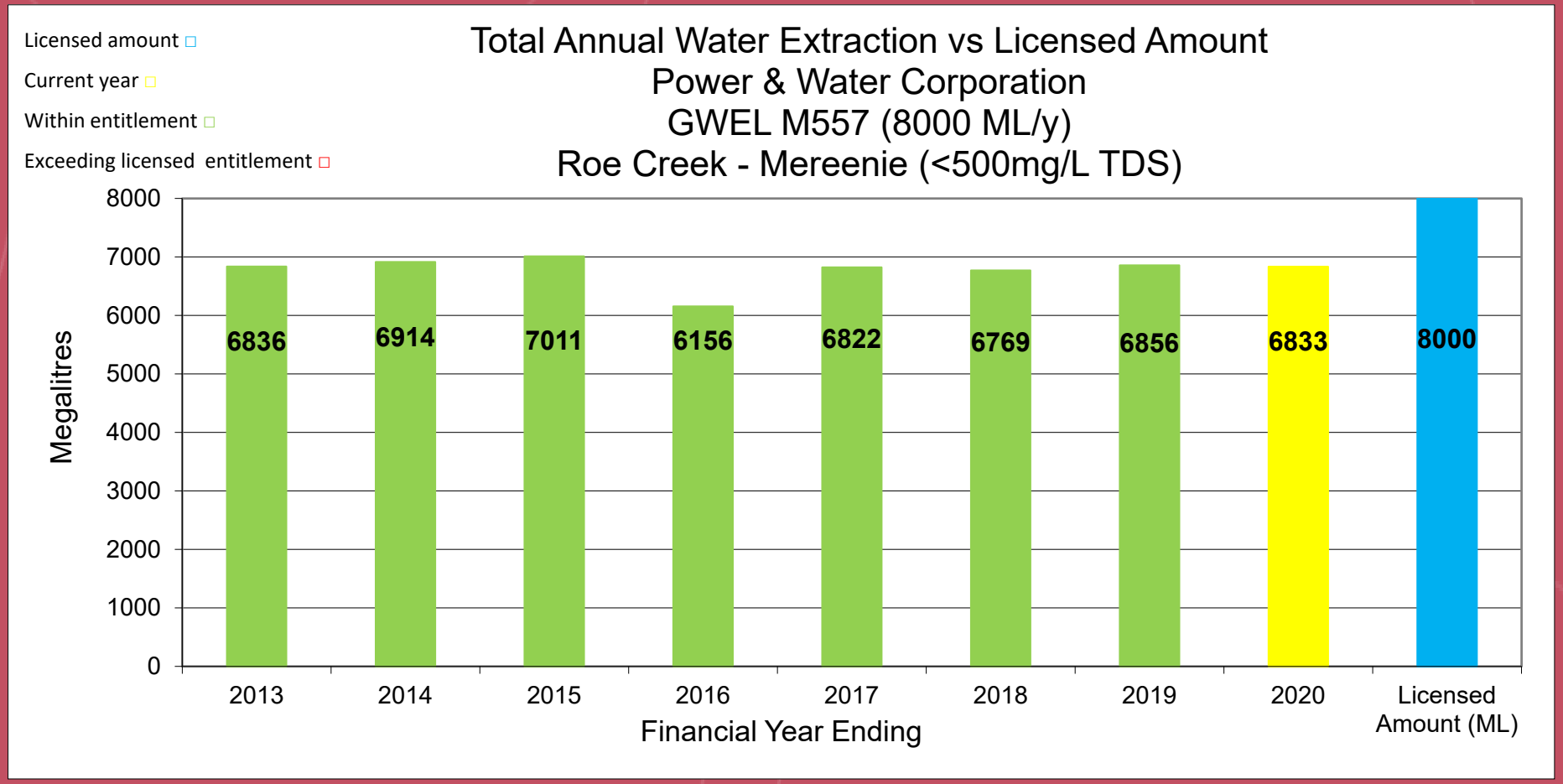
Outer Farm Basin Management Zone



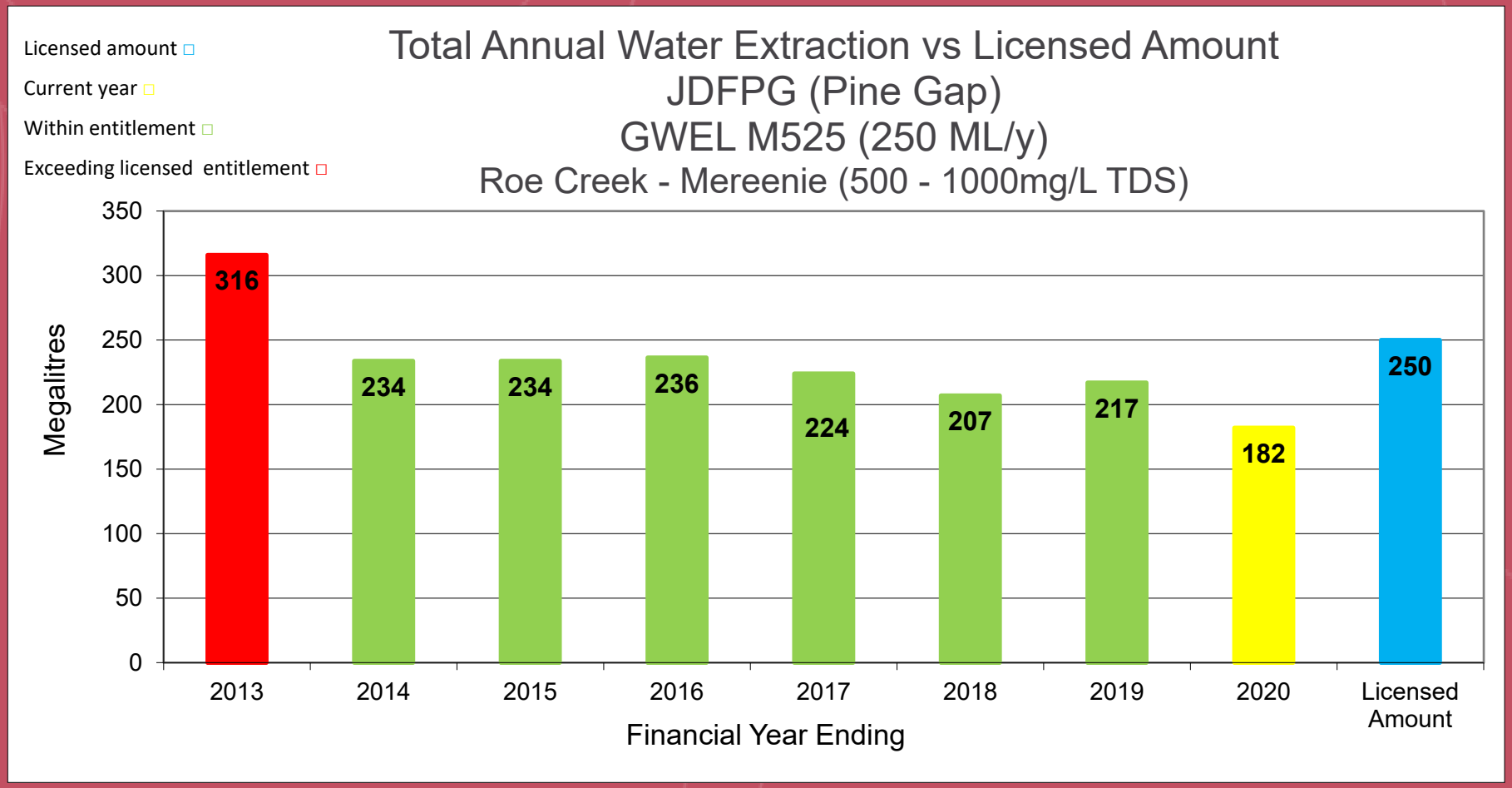
Wanngardi Basin Management Zone



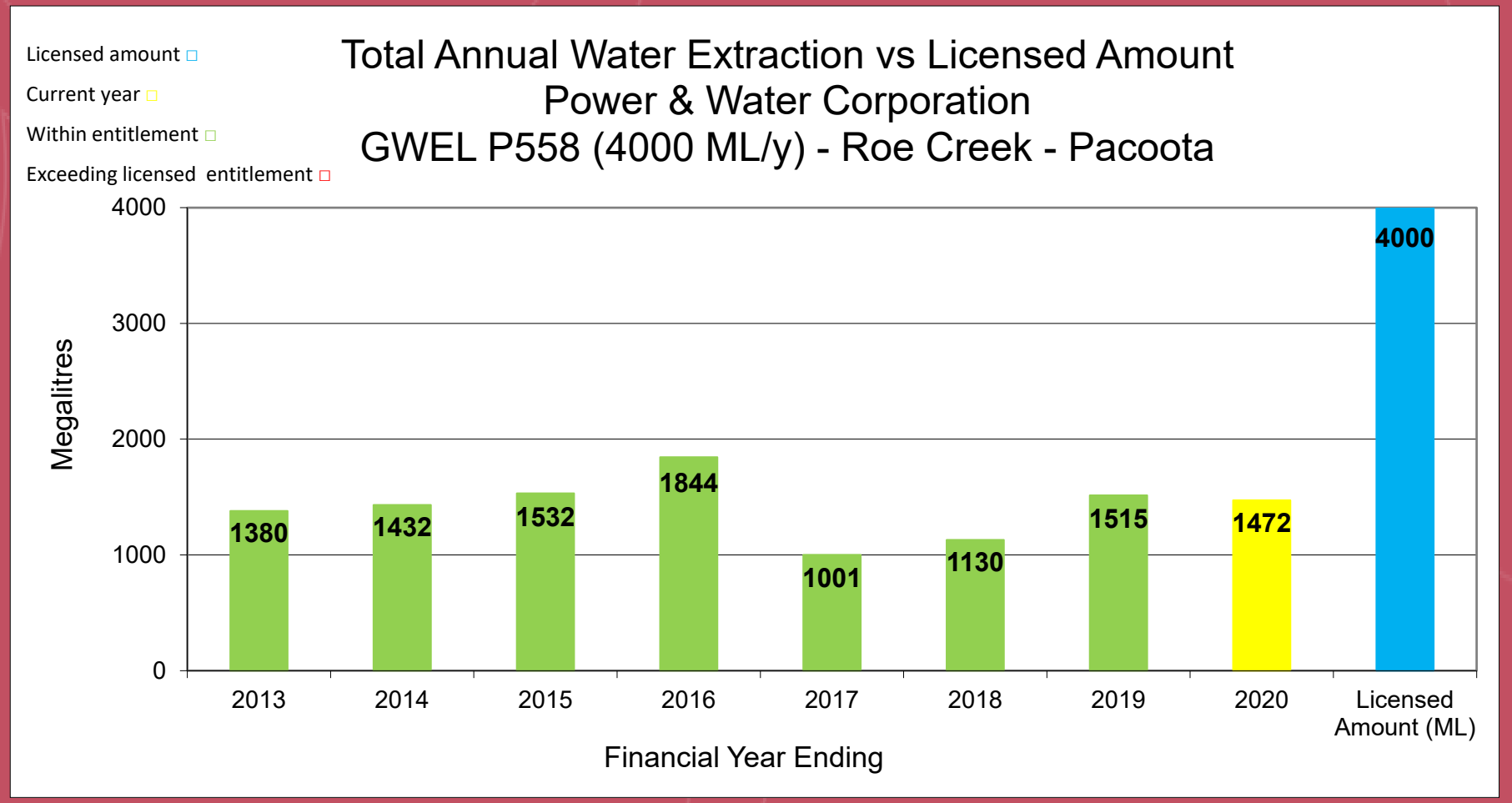
Roe Creek Management Zone – Mereenie *(<500mg/L*



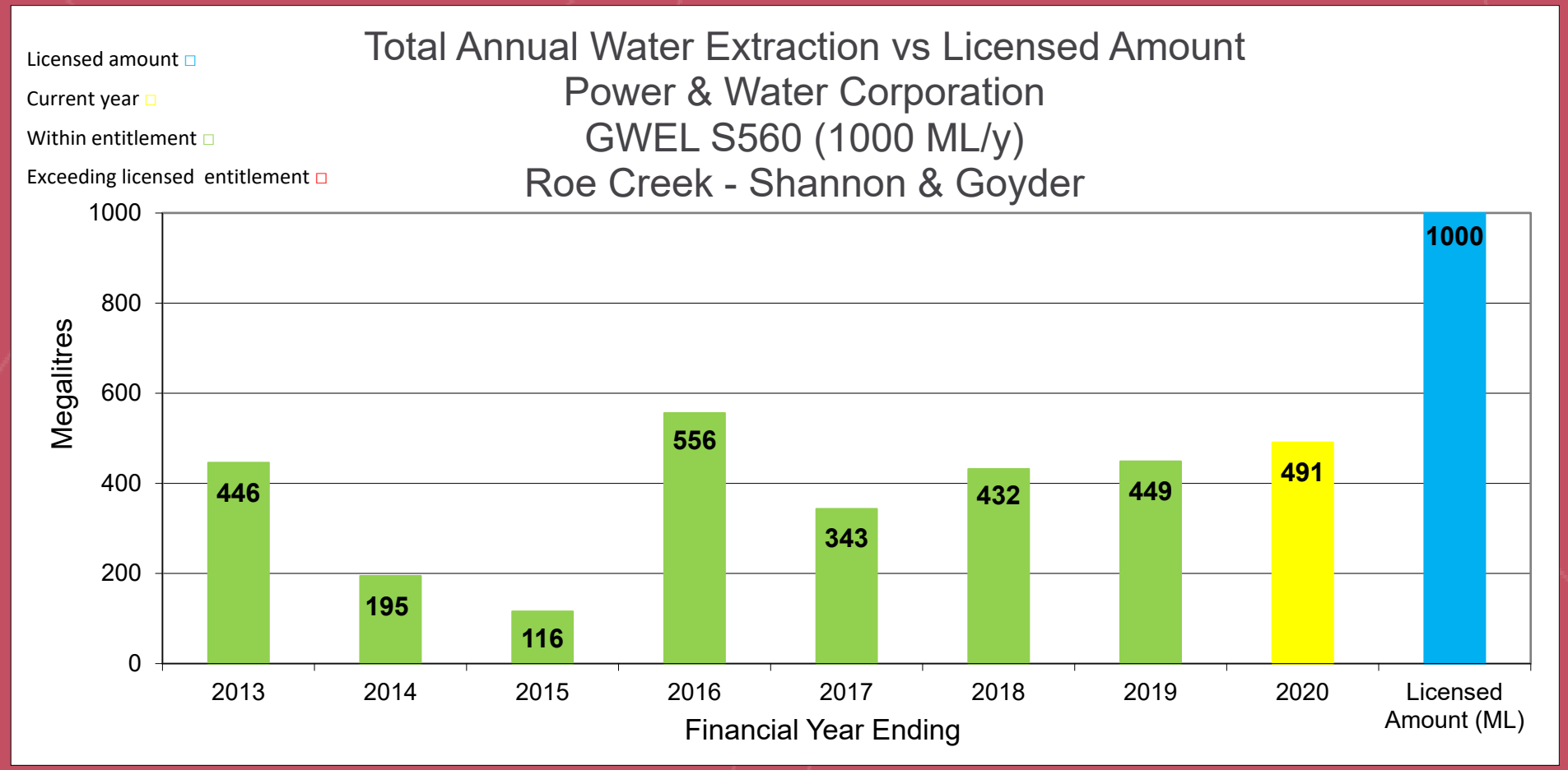
Roe Creek Management Zone – Mereenie *(500-1000mg/L TDS)*



Roe Creek Management Zone – Pacoota Sandstone



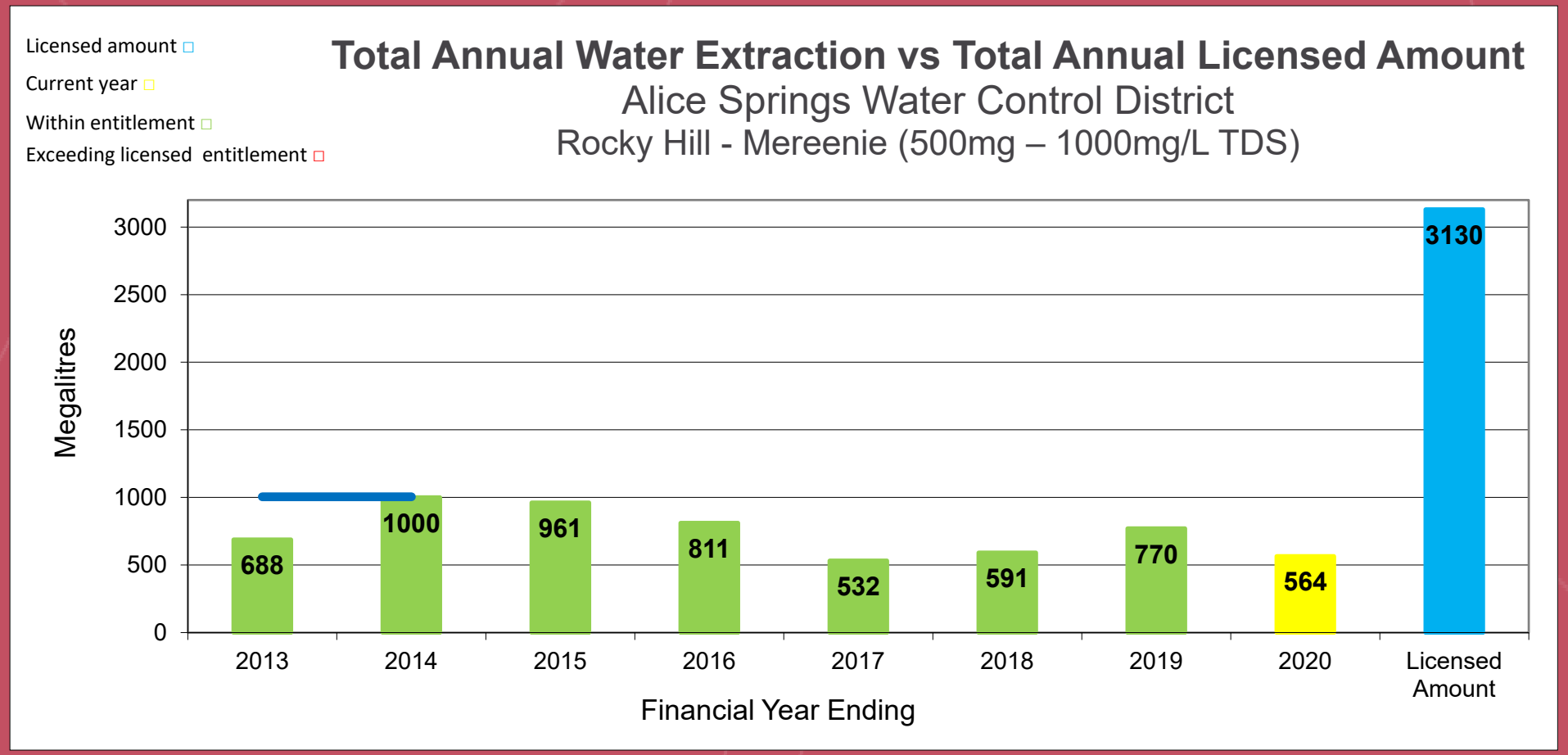
Roe Creek Management Zone – Shannon & Goyder Formation



Rocky Hill Management Zone – Mereenie ***(<500mg/L TDS)***

No groundwater extraction licences.

Rocky Hill Management Zone – Mereenie ***(500mg – 1000mg/L***



Rocky Hill Management Zone – Pacoota Sandstone

No groundwater extraction licences.

Rocky Hill Management Zone – Shannon & Goyder Formation

No groundwater extraction licences.

Water Accounting

2020	Management Zone Water type	Town Basin	Inner Farm	Outer Farm	Wanngardi Basin	Roe Creek Mereenie <500mg/L	Roe Creek Mereenie >500 mg/L	Roe Creek - Parcoota	Roe Creek - Shannon & Goyder	Rocky Hill Mereenie >500 mg/L3	OWCD Total (ML)
Non-consumptive	**Environment**										
	Cultural										
Consumptive Benficial uses (PRIORITY)	**Unlicensed rural stock and domestic**	10.5	5.9	20.6	101.5	0	17			87	**242.5**
	Licensed public water supply					8000		4000	1000		**13000**
Consumptive beneficial uses (LICENSED OTHER)	**Agriculture**		30	78						3125	**3233**
	Industry	1250	30	38	50	800	250			5	**2423**
	Cultural	12									**12**
TOTAL	**TOTAL AMOUNT (ML)**	**1272.5**	**65.9**	**136.6**	**151.5**	**8800**	**267**	**4000**	**1000**	**3217**	**18910.5**

Water Balance

	2015 - 2020 REMAINING CONSUMPTIVE POOLS						
	ROE CREEK				ROCKY HILL		TOTAL AMADEUS BASIN AQUIFERS
	PACOOTA	SHANNON & GOYDER	MEREENIE AQUIFER <500	MEREENIE AQUIFER 500 - 1000	MEREENIE AQUIFER <500	MEREENIE AQUIFER 500 - 1000	
2015	1532	116	7011	234	0	961	9853
2016	1844	556	6156	236	0	811	9604
2017	1001	343	6822	224	0	532	8922
2018	1130	432	6769	207	0	591	9128
2019	1515	449	6856	217	0	770	9807
2020	1472	491	6833	182	0	564	9542
TOTAL	**8493**	**2387**	**40447**	**1300**	**0**	**4229**	56857

Water Balance

2015 REMAINING CONSUMPTIVE POOLS						
ROE CREEK				ROCKY HILL		TOTAL AMADEUS BASIN AQUIFERS
PACOOTA	SHANNON & GOYDER	MEREENIE AQUIFER <500	MEREENIE AQUIFER 500 - 1000	MEREENIE AQUIFER <500	MEREENIE AQUIFER 500 - 1000	
298,549	236,421	301,418	420,845	604,000	2,393,659	4,254,892

2021 REMAINING CONSUMPTIVE POOLS						
ROE CREEK				ROCKY HILL		TOTAL AMADEUS BASIN AQUIFERS
PACOOTA	SHANNON & GOYDER	MEREENIE AQUIFER <500	MEREENIE AQUIFER 500 - 1000	MEREENIE AQUIFER <500	MEREENIE AQUIFER 500 - 1000	
290,056	234,034	260,971	419,545	604,000	2,389,430	4,198,035

The performance of the plan

- **Changes in terminology**
  - Current terminology may be interpreted to fetter the powers of the Controller of Water Resources
  - Controller of Water Resources has discretion when making license decisions
  - Plan to provide guidance for license conditions

- **Reforms to, and new policies and legislation**

The performance of the plan *(cont'd)*

- **Wanngardi Basin**
  - rural stock and domestic use out of the scope of WAP

- **Groundwater Dependent Ecosystems (GDEs)**
  - River Red Gums – 8 mbgl (metres below ground level)
  - Springs, waterholes, stygofauna
  - Monitoring of GDEs

- **Assignment of Risk**
  - Limited to the risk associated with water security is placed with licensee – not NTG

New information – implications for the plan

Is the information in Chapter 16 appropriate?

Section	Page refers	Information described in current plan	What new information should be in the plan?	Change needed	Scale of problem Green - ok Amber – improvement Red - Significant risk of non-compliance with legislation or not meeting plan objectives	Urgency to change Green no change Amber minor adjustment to plan now or in 5 year's time is acceptable Red - needs a plan renewal ASAP	Discussion	Recommended Response
16.1	32	Licensing framework - This section is a restatement of the NT Water Allocation Planning Framework (NTWAPF).	As the NTWAPF is used in setting allocations it needs to be introduced before Chapter 4. It should be discussed in the legislation framework section at the start of the WAP. A summary rather than restatement of the NTWAPF is all that is needed.	Shift this section to Chapter 2 Water Management Policies and processes and summarise rather than repeat the NTWAPF.			No change needed before 2026.	
16.2	33	Heading Water Licensing and Water Trading Rules.	The term rules is not appropriate as it incorrectly states the plan's powers and could be taken to fetter decisions by the Controller of Water Resources	"Rules" should be replaced with guidelines in the heading and terms shall, will etc. replaced with should, would etc. throughout.			In its current form the plan is fundamentally wrong. However the Controller has discretion in respect to how she applies the plan when making decisions.	
16.2	33	Statements 1 to 14 are not trade rules but guidance statements	The term rules is not appropriate and does not provide adequate guidance to the Controller. Language use and legislative and policy changes mean that not all the information is accurate or relevant.	Replace section 16.2 with updated guidelines related to Licence Conditions and current Policies as these Conditions and Polices should be applied to the WAP area.			In its current form, the WAP provides minimal guidance to the Controller. New trade policy.	
Absent		Section on Licence Conditions	Guidelines on Licence Conditions specific to the WAP Basin management areas and Groundwater Management Zones.	Replace Section 16.2 with guidelines specific to Licence Conditions if required.			In its current form, the WAP provides minimal guidance to the Controller. Is there a need for specific conditions?	
16.2.2	34	Section on Permits for Groundwater Extraction	The term 'bore construction permit' is outdated and the section refers to an outdated version of the 'Minimum construction requirements for water bores in Australia'.	Replace Section 16.2.2 with the current terminology; 'Bore Work Permit' and reference to updated version of the 'Minimum construction requirements for water bores in Australia'.			Straight forward task which will be consistent across a number of WCDs and WAPs. Doesn't affect allocation and management of water.	
Absent		Recovery of Unused Licensed Water Entitlement Policy	The Recovery of Unused Licensed Water Entitlements policy was established in June 2020, there is also a procedure and fact sheet.	Include a summary of the Recovery of Unused Licensed Water Entitlements policy and determine if specific guidelines are needed for the WAP.			Straight forward task which will be consistent across a number of WCDs and WAPs. Is there a need for further guidance?	
Absent		Trading Licensed Water Entitlements (Trading Policy)	The Trading Licensed Water Entitlements (Trading Policy) was established in July 2020.	Include a summary of the Recovery of Unused Licensed Water Entitlements policy and determine if specific guidelines are needed for the WAP.			Straight forward task which will include specific information regarding trading within WAP management areas.	

New information – implications for the plan

Absent		Strategic Aboriginal Water Reserve (SWR) policy framework	The SWR policy was published in 2017. The policy provides for a share of allocated water for consumptive use to be allocated to Aboriginal people for use or trade to their economic development and benefit.	Include a summary of the SWR policy and how it applies to the WAP area.			Straight forward task which will require calculating SWR as a percentage of total WAP area.	
Absent		Groundwater Dependent Ecosystems	Trigger values aimed to minimise the impact of water extraction on groundwater dependent ecosystems within the WAP area are not conditioned on all relevant groundwater extraction licences.	Include a summary of groundwater dependent ecosystems with reference to guidelines discussed in other WCDs and WAPs. Condition those groundwater extraction licences in relation to the groundwater level trigger values and reference to Australian Height Datum (AHD).			Implement a program to monitor and evaluate health for groundwater dependent ecosystems to assess adequacy of trigger values and distances for groundwater discharge protection areas before new plan development in 2026.	
Absent		Groundwater Dependent Ecosystems	Trigger values aimed at minimising the impact of groundwater extraction on groundwater dependent ecosystems are conditioned on some water extraction licenses. To date no ongoing assessment and monitoring of groundwater dependent ecosystems to enable assessment of the effectiveness of these trigger values for protecting these ecosystems.	Develop a monitoring program to evaluate to assess the adequacy of the trigger values aimed at minimising the risks of groundwater extraction on groundwater dependent ecosystems, particularly – but not limited to River Red Gum health, and the adequacy of the trigger values has not been implemented (refer report 5a).			Implement a program to monitor and evaluate health for groundwater dependent ecosystems to assess adequacy of trigger values and distances for groundwater discharge protection areas before new plan development in 2026.	
Absent		Groundwater Protection Areas	Groundwater protection areas aim to minimise the risk of impact of water extraction on aquifer recharge areas and groundwater dependent ecosystems. Recent WAPs provide guidelines for consideration by the Controller regarding separation distances and other parameters for the extraction of groundwater in relation to Groundwater Protection Areas.	An updated plan could define protection areas for groundwater dependent ecosystems and public drinking water source protection. The updated plan would include a description of the groundwater protection areas and reference to guidelines outlining special considerations that may apply to extraction licence decisions in these areas.			Straight forward task which will be consistent across a number of WCDs and WAPs.	
16.2.4	**35**	Assignment of Risk	The Assignment of Risk section aims to indemnify the NTG from guaranteeing security of water supply for all water uses. The section does not include discussion of other risks and uncertainty that may impact on demand and water security.	Include a summary of other risks and uncertainty and mitigation strategies including: - Climate variability and change - Land use change - Caveats or limitations on the underpinning science - Surface water extraction and other unaccounted water use.			Straight forward task which will be consistent across a number of WCDs and WAPs.	
Absent		Adaptive Management Framework	An Adaptive Management Framework is an iterative process to assist decision-making when there is uncertainty.	Include a summary of the principles of an Adaptive Management Framework relating to areas of uncertainty and or management issues that may not be addressed in the reviewed ASWAP, with reference to other recent WAPs.			Straight forward task which will be consistent across a number of WCDs and WAPs.	

Discussion and Priorities

Is there any other relevant information?

6. 10.20 AM – Environmental values

Section 3.2 in the current plan

- *Information in the plan*
- *New information and plan performance*
- *What this means for the water plan*
- *Discussion*
- *Priorities*

Department of Environment, Parks and Water Security

Environmental Values of the Alice Springs Water Allocation Plan

Jayne Brim Box, Flora and Fauna & Water Resources Divisions

Peter Jobson, NT Herbarium, Alice Springs

Adrian Tomlinson, Water Resources Division

NORTHERN TERRITORY GOVERNMENT

Values protected in current plan

- Only river red gums in the river corridor are explicitly protected by a limit on the depth to groundwater (eight metres of the ground surface).

- Other ecosystems are protected via the estimated sustainable yield and limits on the fraction of take for surface waters.

How well has the plan protected river red gums?

- Will only talk in terms of water extraction (not fire, buffel, etc.).
- Protection means trees haven't been water stressed due to lack of access to groundwater.
- Protection is only provided in the "river corridor" of the Todd River.

What happens if trees are water stressed?

How measure water stress?

“Canopy die-back as plants drop leaves to further reduce water use”

Proportion of healthy canopy cover: 100%

Proportion of healthy canopy cover: 75%

Proportion of healthy canopy cover: 65%

Proportion of healthy canopy cover: 55%

Proportion of healthy canopy cover: 45%

Proportion of healthy canopy cover: 30%

Proportion of healthy canopy cover: 20%

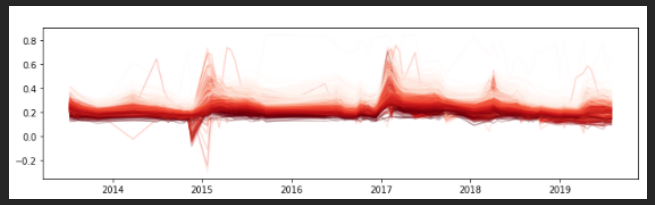
Proportion of healthy canopy cover: 0%

How measure water stress?

Go out and measure individual trees

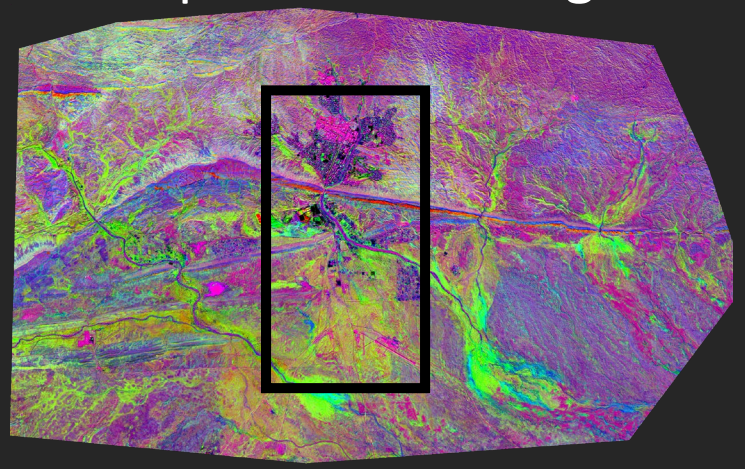
How measure a lot of trees at once? Use satellite imagery

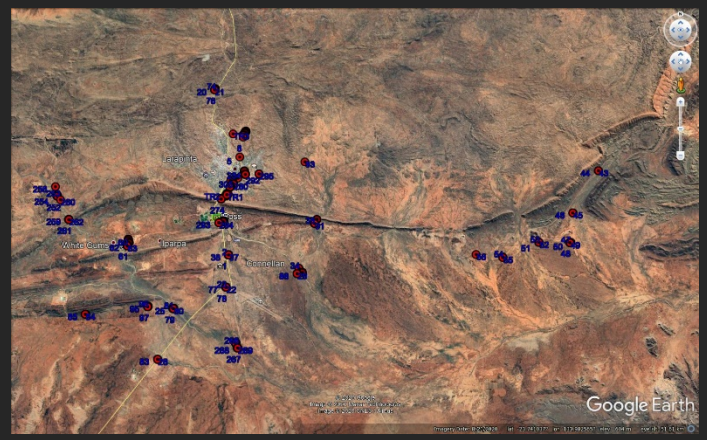
Apply time series across area



(millions of pixels/data points)

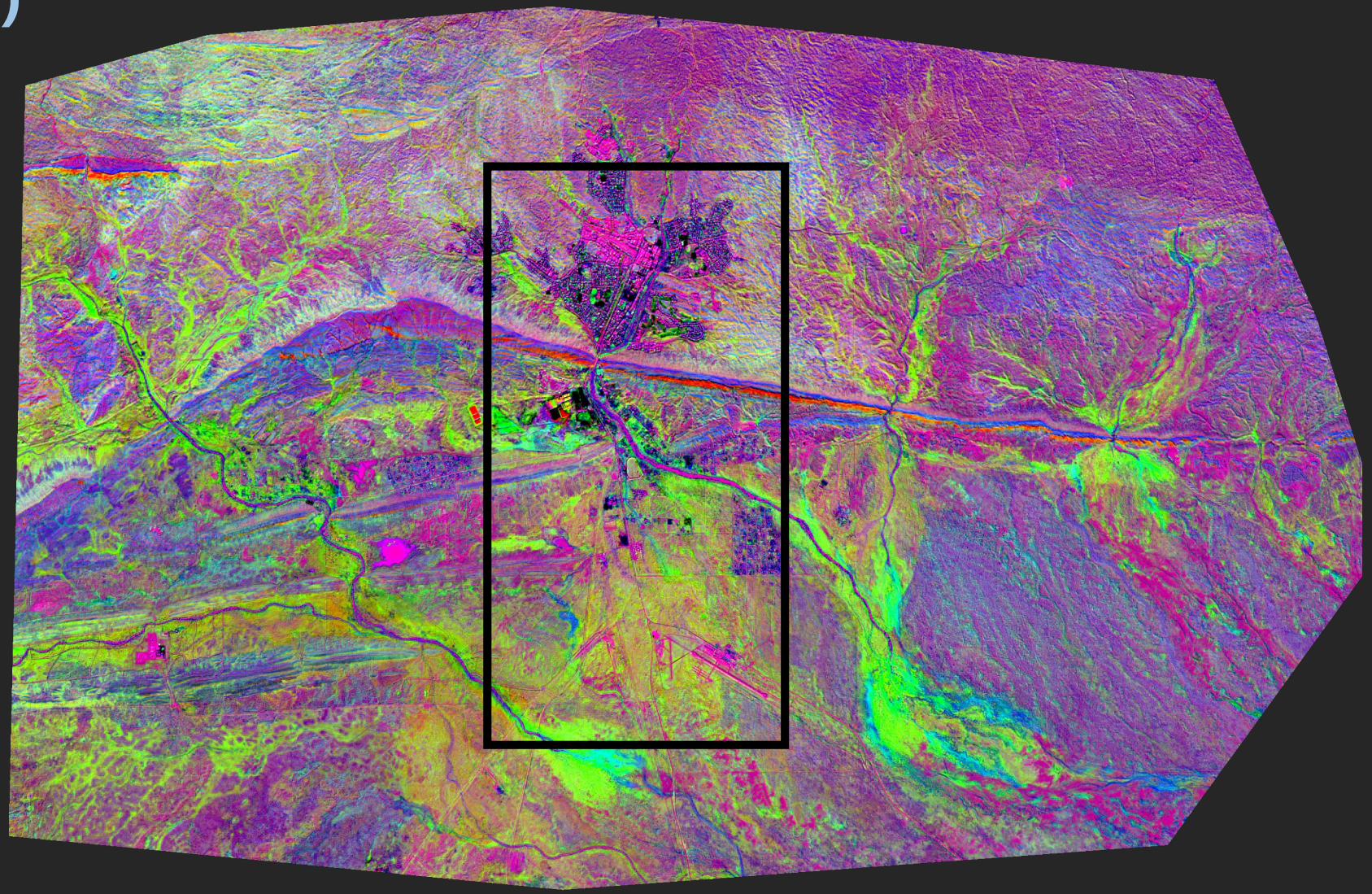
Compress data using SVD





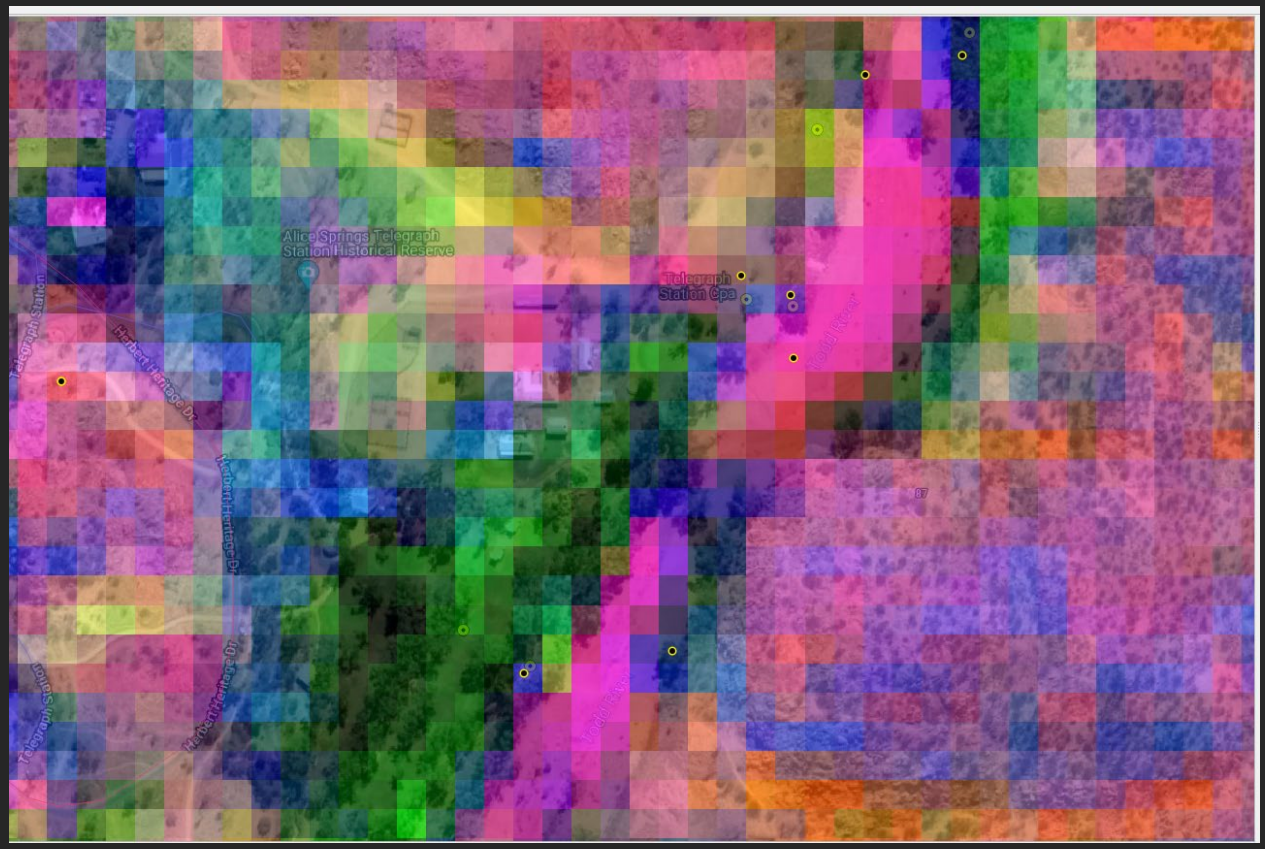
Visit <u>variety</u> of sites to ground-truth and train model

What does this map represent? How vegetation responds to rain and access to groundwater (and some other things……like rocks, and rooftops)



Example: Telegraph Station.

We wanted to know if the red gums around there were healt



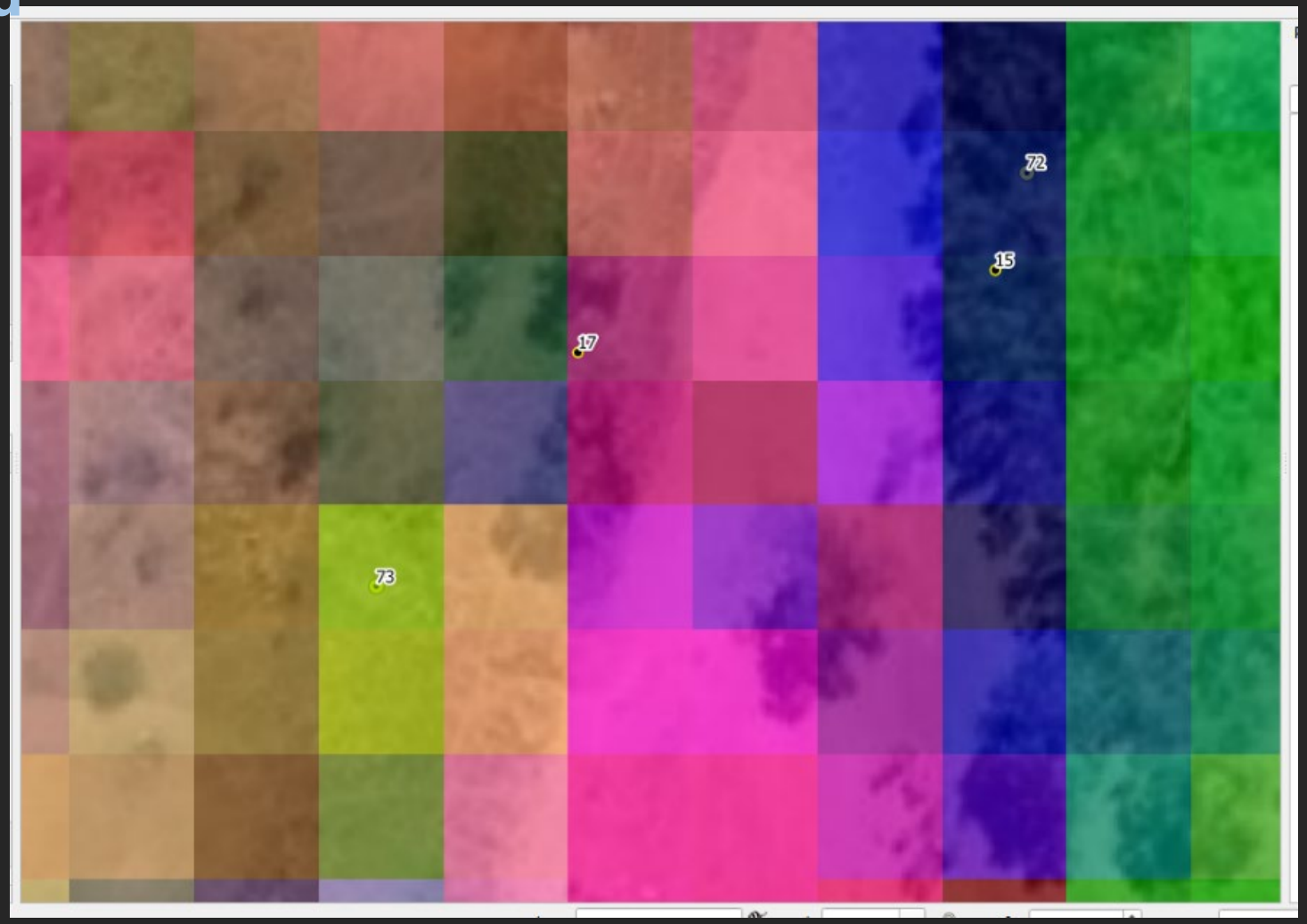
Example 1 : Telegraph Station.

Colour of an individual pixel reflects the response of three vegetation indices over an 8-year period

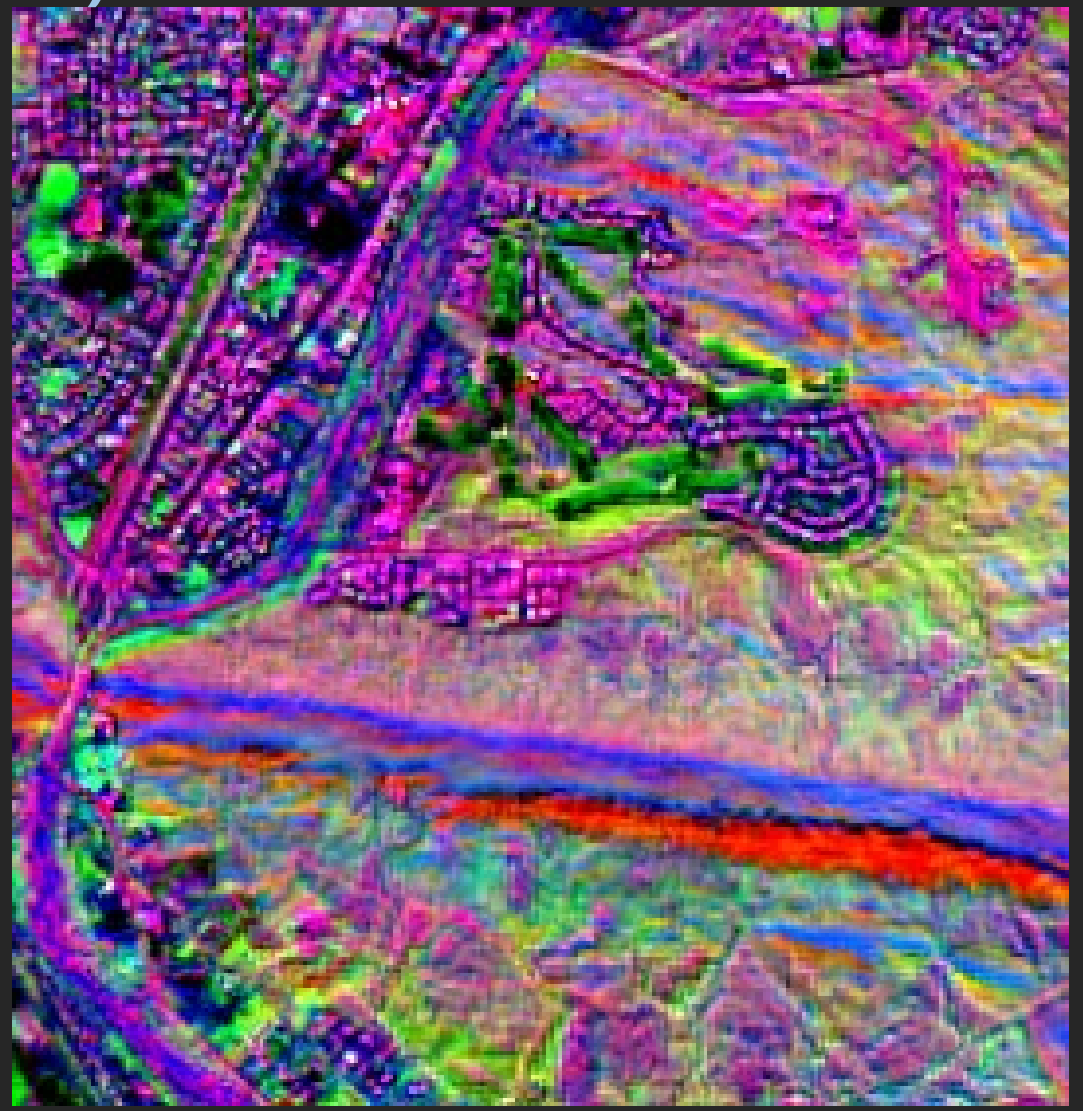
15 + 72 (blue) = healthy river red gums

17 (pink) = buffel grass/sand

73 (yellow) = buffel grass (dried out)



Example 2: Todd River in town (middle river corridor and where pumping occurs).



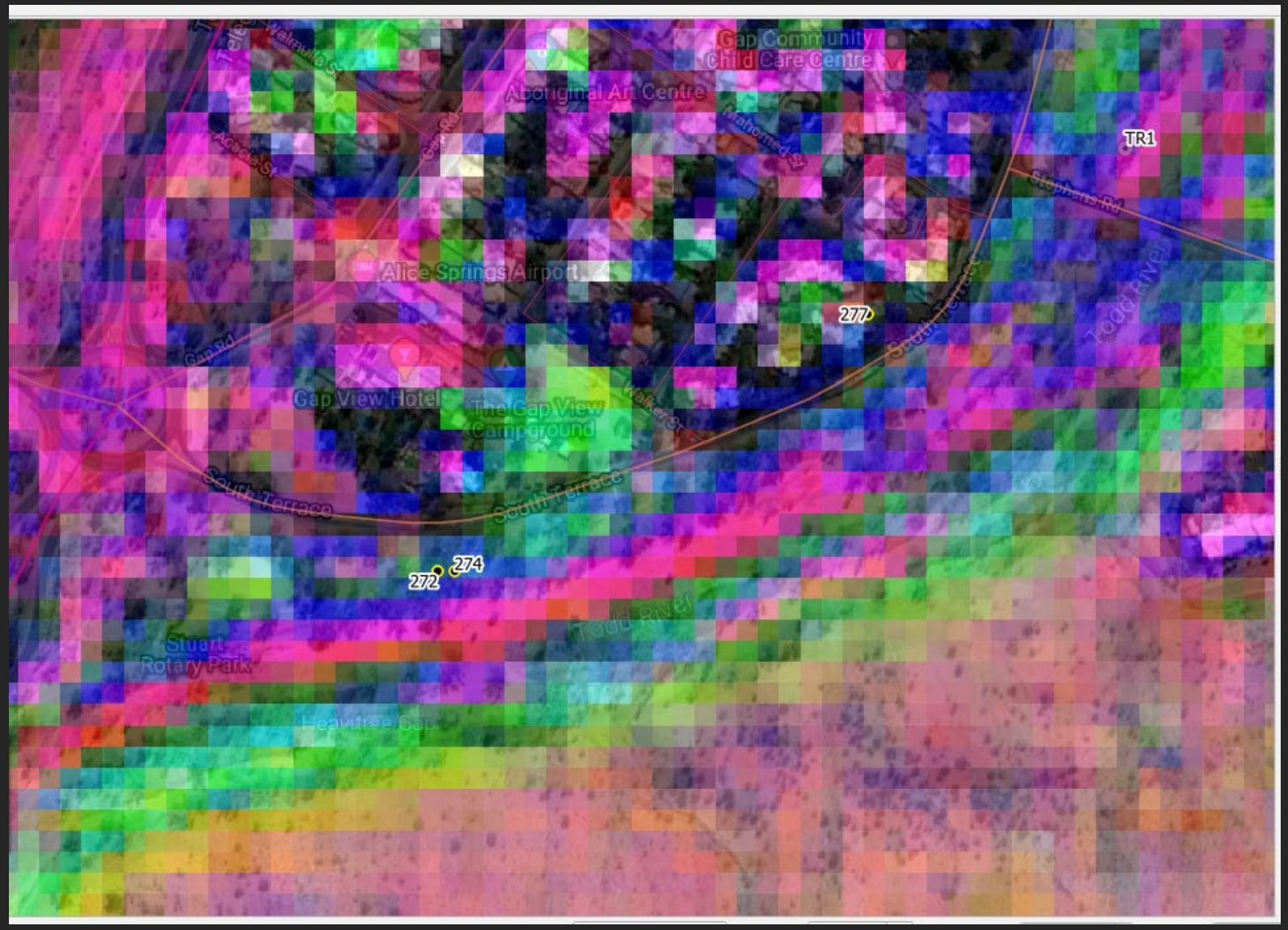
Example 2: Todd River in town (middle river corridor and where pumping occurs).

272 (blue) = healthy river red gum

274 (blue) = healthy river red gum

277 = river red gum (looks a bit water stressed)

TR1 = river red gum/sand

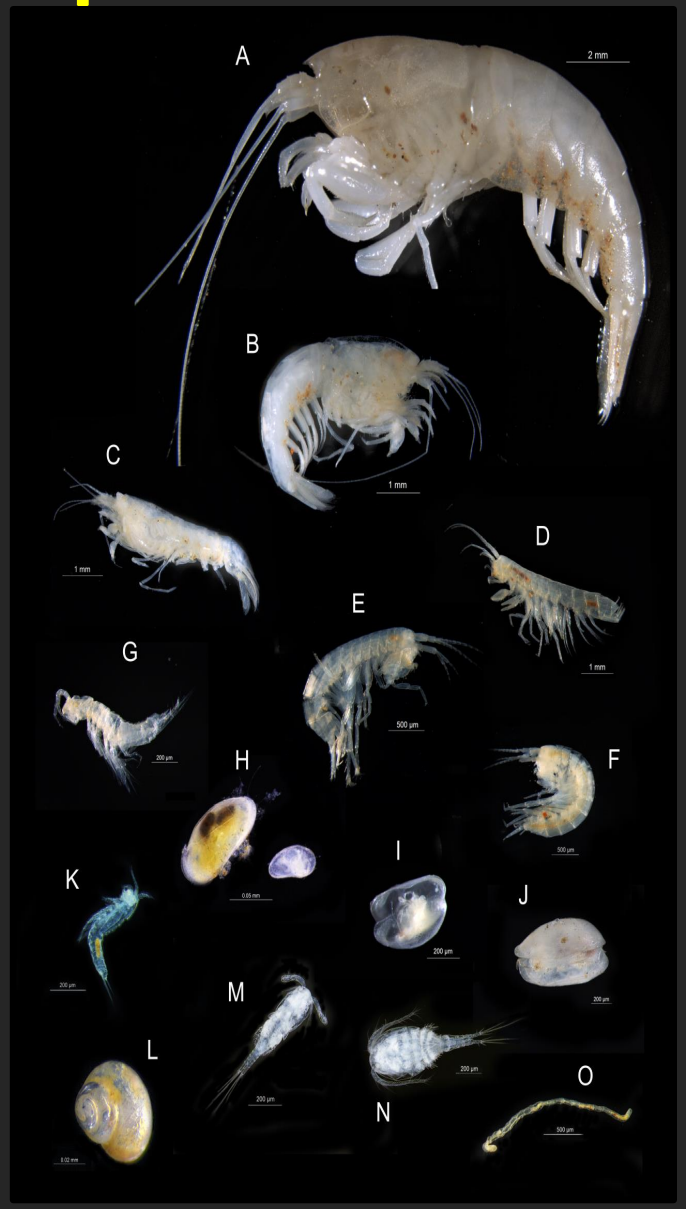


How well has the plan protected river red gums?

- Within the Todd River "river corridor", no evidence that river red gums are stressed due to pumping.
- Stressed trees throughout the plan area due to drought and heat.
- Trees in Todd River corridor look better than trees in parts of the plan area (e.g., Hugh River, Emily Creek).

Currently the Water Allocation Plan doesn't protect:

- Stygofauna
- Springs
- Other plants using groundwater



GOING FORWARD

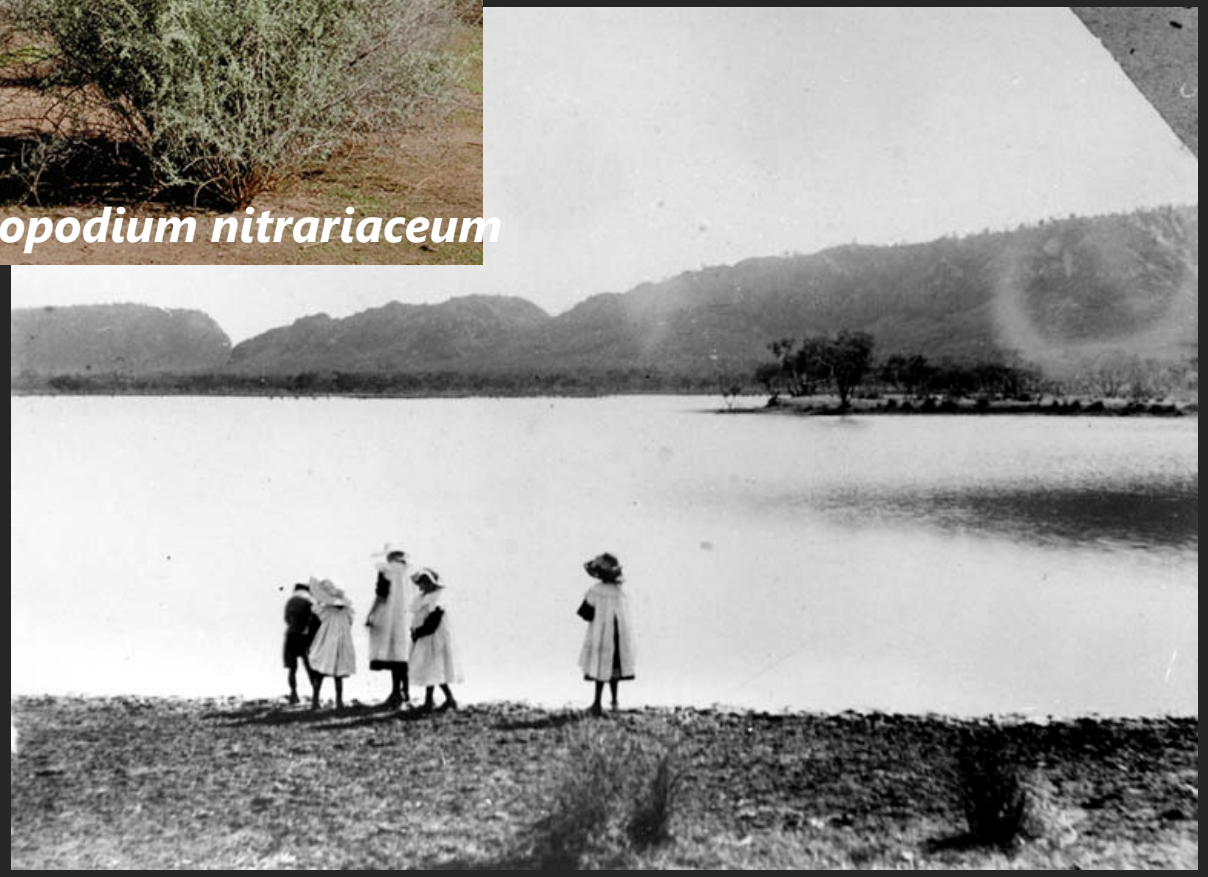
1. Other plants using groundwater

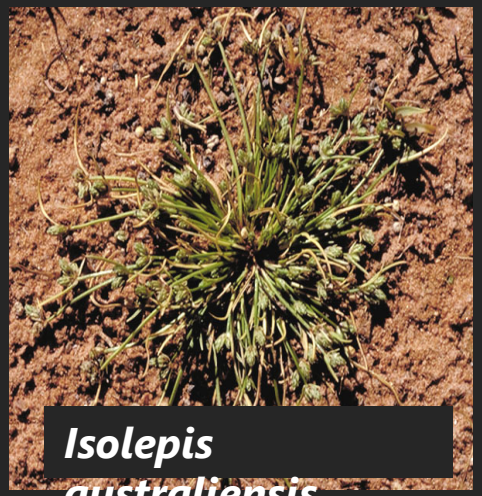
   - Recognise GDEs and IDEs are not confined to river red gums areas but include ecosystems with ghost gums, bloodwoods, coolabah and hakea.

   - New information on the water requirements for GDEs should be used.

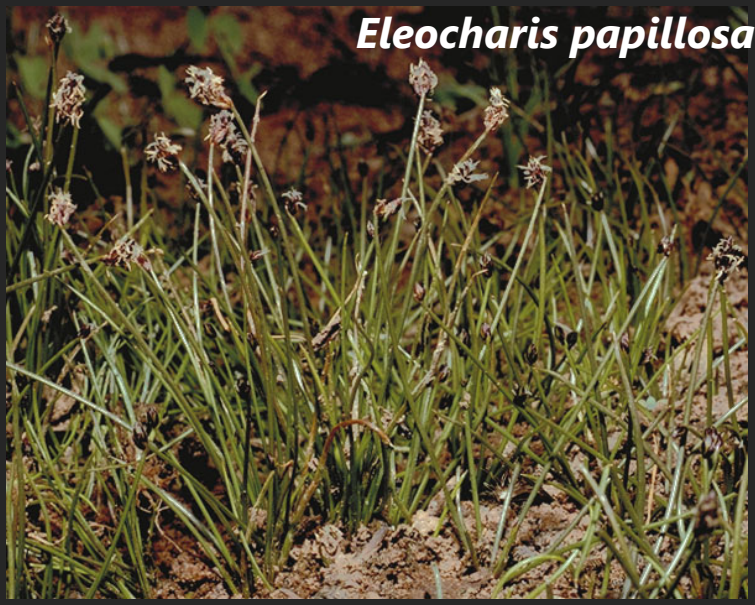
2. More information on coolabah swamps and other swamps and claypans

Chenopodium nitrariaceum





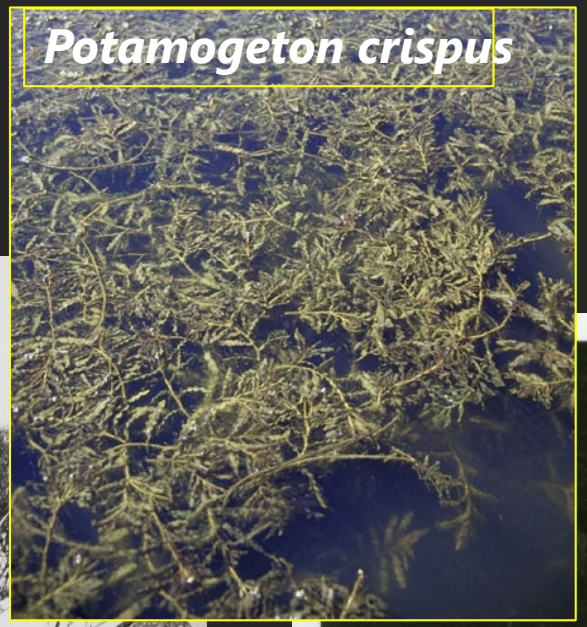
Isolepis australiensis



Eleocharis papillosa

Listed as vulnerable

3. More information needed on surface water features which have disappeared/reduced in the Todd River (e.g. Heavitree Gap, Telegraph Station, Emily and Jessie Gaps)



Used to be in Heavitree Gap

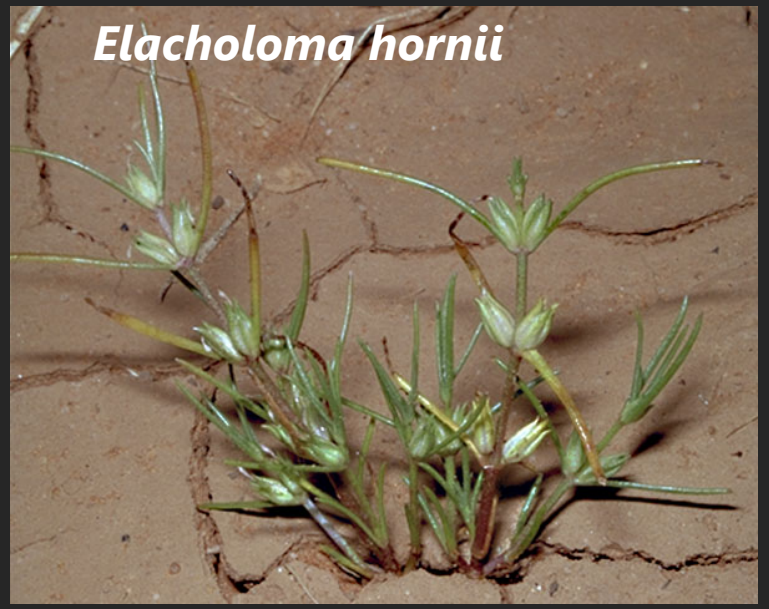
Indicator of permanent water an habitat health

4. More information on spring-fed wetlands (i.e. waterholes with groundwater input and other wetland areas)

Used to be in spring-fed wetlands

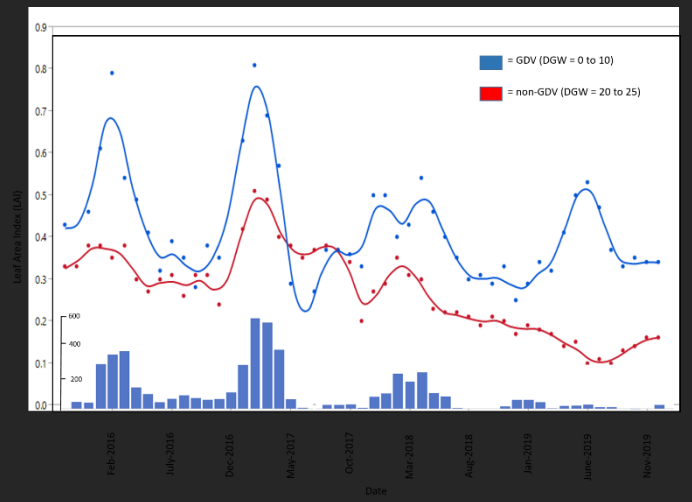
Rarely seen today

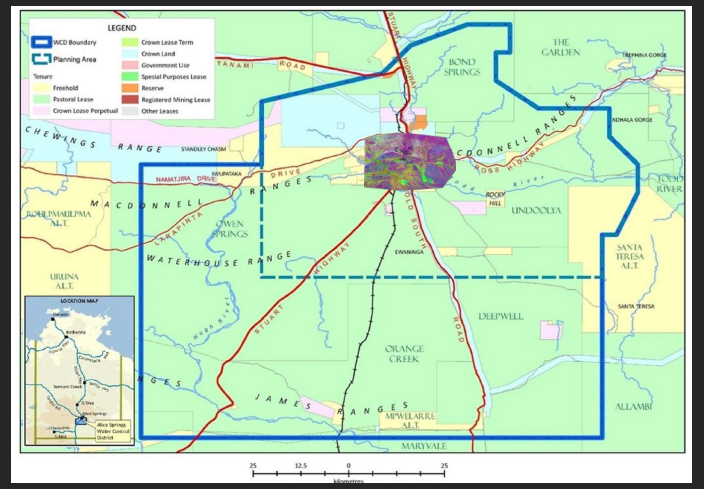
Indicator species of healthy habitats



Going forward:

- Consider other ecological entities and concerns.
- Monitoring in real time using remote sensing.
- Mapping and extending existing map to WCD (values to colours).
- Are there GDEs within the upper Amadeus Basin and the Mereenie Aquifer.





7. 10.55 AM – Aboriginal cultural values

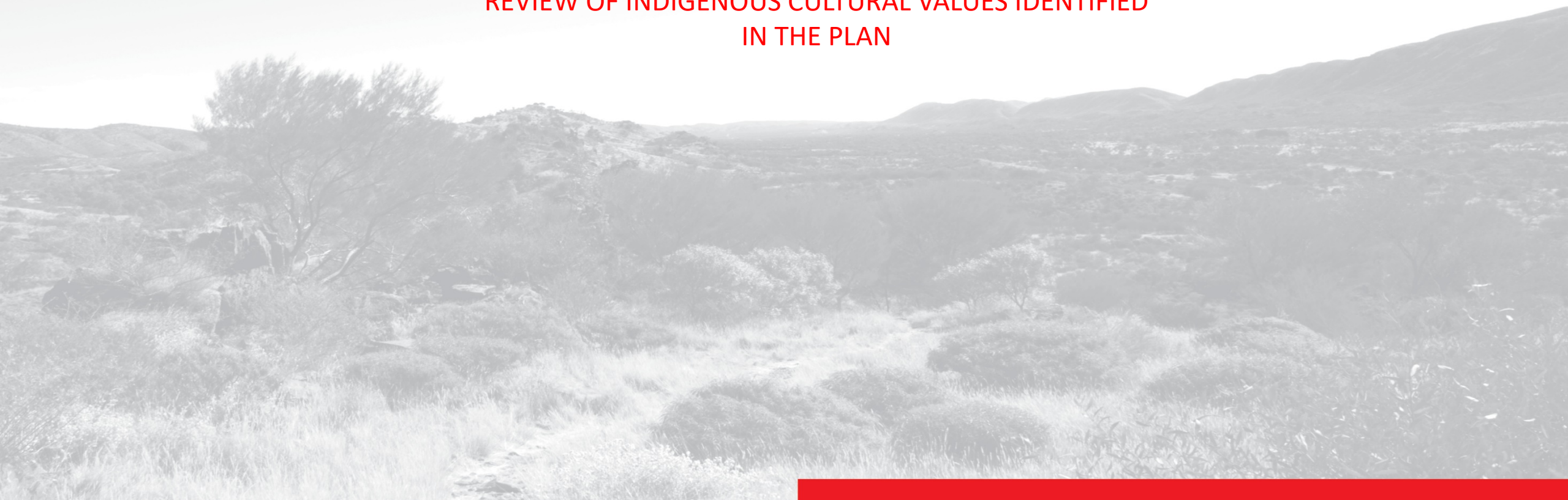
Section 3.2 in the current plan

- *Information in the plan*
- *Traditional Owner report*
- *What this means for the water plan*
- *Discussion*
- *Priorities*

CENTRAL LAND COUNCIL

Alice Springs Water Allocation Plan Review
Water Advisory Committee Meeting #2

REVIEW OF INDIGENOUS CULTURAL VALUES IDENTIFIED
IN THE PLAN



CENTRAL LAND COUNCIL

"That Bond Springs country, that's his head for that Todd River. All the spring country, and rock-holes, all that Wigley Waterhole country and soakages. And that river he got a line [the river-bed], that's his backbone. And town area, that his flanks. Good country that one, grow anything. His hips been *Ntaripe*, Heavitree Gap."

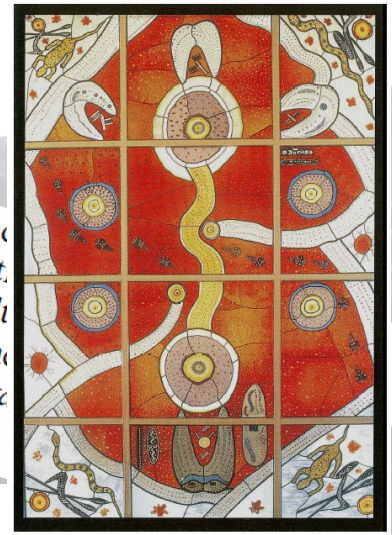
Ooraminna Rockhole 1950 © Boerner Collection, NT Library

Bond Springs, I asked him about them. The Charles River was one of his arms, and the masses of smaller tributaries were his hair. Knowing also that the Todd swung away to the east after passing through Heavitree Gap and by Mount Blatherskite (also associated with the Caterpillar Dreaming and the buttocks area), I next asked about this. "Legs straight south, Dick, all the way to Ooraminna Rockhole." As with many sites in Arrernte country and the wider desert country of Australia, it is the linking of water supplies that is of immense significance. The Todd River having very few soakage sites along its length after leaving Heavitree Gap, the link Wenten made was with the long-lasting Ooraminna Rockhole, reliable water approximately thirty kilometres to the south.

Emily Gap (Antiwerrke) 1950s Photo taken by May Burrows

Acknowledging report by Dick Kimber who shared what he learnt from Wenten Rubuntja and other senior custodians.

Old photographs show that the coolibah surroun
raeger Park oval, with old coolibah trees there represent
vs, once extended to the present hospital site. Both Walu
wade said that there had been a good shallow-water well n
in the old days, and another near Billygoat Hill. Other *kweka*
by coolibahs near the Larapinta Drive railway crossing.



CULTURAL VALUES ASSOCIATED WITH ALICE SPRINGS WATER
By Dick Kimber

easy to forget, when looking at this
registered sacred site, that it led from the Todd River, with a soakage nearby.
Additionally, although barely visible now because of golf-course modifications and
Barrett Drive, when Wenten and I visited there
that ran from the low Caterpillar hills to the
eading the sign that states tha
a prominent little creek-line
the golf-course

It was Francis (Frank) Stevens, a senior Arrernte traditional custodian in the early 1970's, who first told me of the Rain Dreaming that comes in from the west through the vicinity of Pine Gap before sweeping south through Ooraminna and beyond. Stuart Oliver, born on the south side of Heavitree Gap, independently confirmed this, as did Wenten Rubuntja, Walter Smith, Willie Smith, and other senior men. It was a few years later that I also understood that there was a reciprocal sense of the Rain Dreaming; from Ooraminna the Rain Boss had marched north and west along the same route, joining all of the other Rain Dreaming ancestors who came from north, south and west at Koporilya Springs near Hermannsburg.

All from Kimber, 2011.

Kimber, 2011.

PLAN ACKNOWLEDGES;

- Importance of water sites and places/things reliant on water in traditional and contemporary Arrernte culture
- Dreaming sites including sacred sites on/in the river, or immediately next to the Todd and Charles Rivers.
- Large ceremonial gatherings at Telegraph Station waterhole
- Aboriginal land ownership and traditional rights under Native Title in the Alice Springs region;
  - Estate groups for Iwupataka ALT (Owen Springs PL), Athenge Lhere ALT (Bond Springs PPL), Melknge ALT (Undoolya PPL) and Tyurretye ALT (inc. Simpson's Gap).
  - Estate groups for NTH- Mparntwe (Alice Springs), Irlpme (Bond Springs), Antulye (Undoolya)

COMMENTS FROM TOS DURING A CULTURAL WATER VALUES WORKSHOP IN OCTOBER 2020.

Issue- General comments / concerns	Response
Seems cultural water values are mainly associated with surface water, soakages and water dependent veg. intricately linked with dreamings, law, sacred sites, general life and survival. However, TOs clearly understood the importance of groundwater through use and reliance of soaks and springs. TOs requested mapping sites associated with water and their significance for Alice Springs.	Further documentation, assessment and mapping of cultural values associated with water resources.

Issue – Outstations reliant on bore water	**Response**
Sometimes not nice to drink or is undrinkable. Maybe water isn't checked regularly. Worried that pastoralists are impacting amount, and quality of bore water. *Note- Amoonguna and most of the 15 or so outstations on Iwupataka ALT are on town water.*	More monitoring required. More awareness of water quality, and or training in monitoring would be valuable.
TOs were concerned about recycled water used for irrigating public grass areas and whether water quality is monitored, e.g. at Blatherskite park.	More public awareness on use of recycled water.

Issue – State of Todd River/ River Redgums	Response
River reds generally OK but river not ok. 'Trees that look sick could mean there's no water underground' River > deeper with pure sand and now silty. Sand/silt has filled up areas that used to have a rocky base with deep pools that stayed longer and good for swimming. Sand/silt also preventing original flow of water. Water not remaining in waterholes as long. TOs recall catching fish (perch) in the Todd River near the Telegraph station. Maybe Buffel grass and other weeds have changed water flow. Also preventing plants like bush onions from growing. No mention of weeds choking up waterways in Plan.	**Are strategies working?** OK for RR Gums. Need to monitor health of trees. Strategies not suitable for maintaining condition of river and preventing silt build up. Research into the causes of creeks silting up and advice on remediation required. More information on life histories of local fish and their dependency on water or ability to survive/ reproduce without. Research into the affect weeds and grazing are having on altering water flow in the Todd River (weeds altering flow and grazing causing erosion and silt build up?).

Issue - Changed state of Heavitree Gap (Ntaripe)	**Response**
Old soakage just north of Heavitree Gap / Chinaman Creek; Important men's site associated with Caterpillar and is now silted over (*as are others recorded by Kimber*). People could always dig for water here. Would like to see water coming up from there again. If no more water there it could be because of changed flow from Chinaman Ck and Todd.	If water cannot be found request assistance from hydrogeologist to understand why not.
Another soakage/sacred site on the Todd River past gun Club 'Arnkerre Atherrke Atherrke' (lit. always green river banks) Used to camp there but can't now.	Research into the causes of creek silting up and advice on remediation.'

Issue – Changed state of Heavitree Gap (Ntaripe)	Response
Gas pipelines- Some said that they should never have been laid underground through the gap. Felt it could be linked to the cause of the lack of water availability and in general not good for the Todd River and culturally significant trees.	

Facing south towards Ntaripe (Heavitree Gap) with Todd River in foreground 2011

Kimber, 2011.

Issue – Damage to Ilparpa Clay Pans	Response
Part of a dreaming story /significant cultural site/ recognised sacred site, including the two hills. 'All these cars driving about here are disrespecting women'. Cars > Erosion > Compaction> Water run off Big shady trees gone. Could water extraction in the Wangardi basin be linked to less water and loss of big trees? 	Not suitably protected relative to Objective 1 & 2. Note degradation to the site and recommend ways to protect it from further damage.

Issue – Health of Coolabah trees at Traeger Park	**Response**
Observed poor health of some significant/scared trees and tree deaths. Cultural significance of these trees not mentioned in the plan, nor information on their water requirements (e.g. tap root depth to aquifer).	Need to document this cultural value. Determine whether their degradation is attributed to water extraction. Conditions on licences to monitor health and maintain groundwater at accessible depth and groundwater salinity at suitable levels.

Issue; No water pooling at Alice Springs Telegraph Station waterhole (Atherreyurre)	**Response**
Always used to be a lot of water there. 'Never dried out and we could always swim there but now it's full of sand.' Used to catch perch there. *Linked to other concerns about the Todd.*	Research into causes may be the first step followed by preventative actions.

Kimber, 2011.

Telegraph Station Waterhole – date unknown ©Boerner Collection, NT Library

Telegraph Station Waterhole (Atherreyurre) 2011 Kimber, 2011.

Wenten directed me past the large *Ankerre Ankerre* coolibah swamp claypans created by all of them coming together from all directions – the *yeparenye* of the Western Arrernte from as far away as Mount Zeil - to celebrate by dancing at that site. (These large claypans had much saltbush growing about their edges, but were bare until the late 1970's when, after deliberate seeding, the saltbush began to dramatically increase).

(Kimber, 2011)

Issue – Health of Coolabah swamp- Ankerre Ankerre	**Response**
Used to be clear, open space with much less saltbush. Upset about so many dead Coolabahs. Roads and drains have prevented water from remaining on the swamp. Buildings have been built over a soak people relied on for water. Also over parts of what used to be Coolabah swamp. Plan notes swamps are '….filled by rain, runoff and sheet flow.' > clearly unable to retain the required amount of surface water to be healthy. Former Coolabah swamp (North west of Heavitree Gap) has almost no large Coolabah trees anymore.	Strategies do not sufficiently protect this cultural value. Plan- 'Diversion of water for dams may require a permit under Acts such as the Sacred Sites Act ……..' > Diversion of water from swamp(s) could be the reason significant trees have died and caused general degradation. Note obstruction of or interference with waterways is prohibited under S15 of the Water Act. Preliminary drainage studies, hydrogeological investigations (groundwater levels and groundwater quality), veg mapping and development of a concept plan for restoration.

CENTRAL LAND COUNCIL

Issue – General	Response
During the workshop there seemed to be a general feeling of disempowerment in being able to protect and maintain cultural sites associated with water. Some felt that things have changed so much that if the damage is done there's little they can do to prevent it.	High priority to take action before further damage to sites occurs and or cultural knowledge and connection to sites is lost. Although the plan mentions the importance of water places to Arrernte people it does not have specific actions around protecting those sites, except for ensuring extraction of water in the Town Basin must not exceed a certain level.

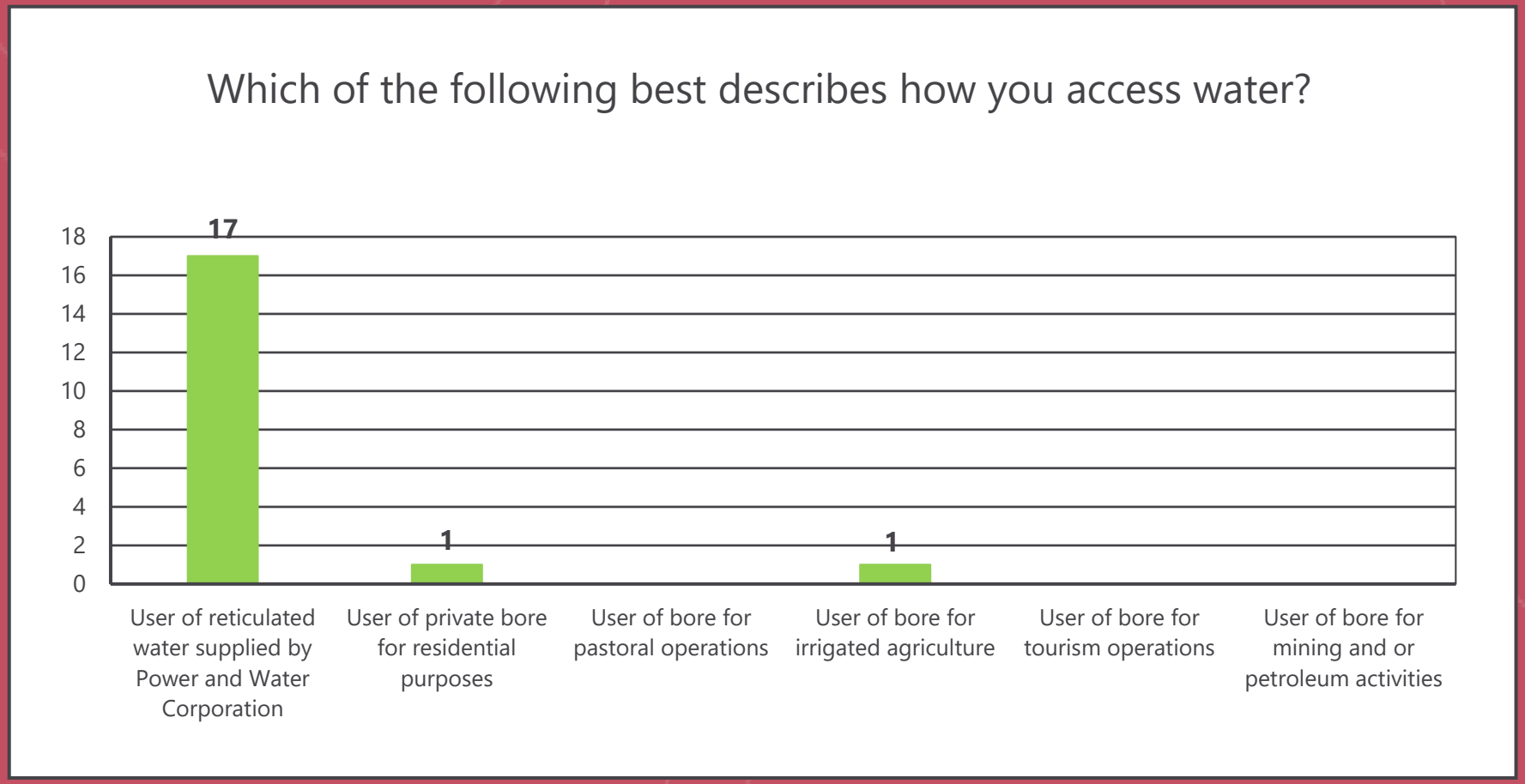
Next steps?

8. 11.30 AM – Results of the have your say survey

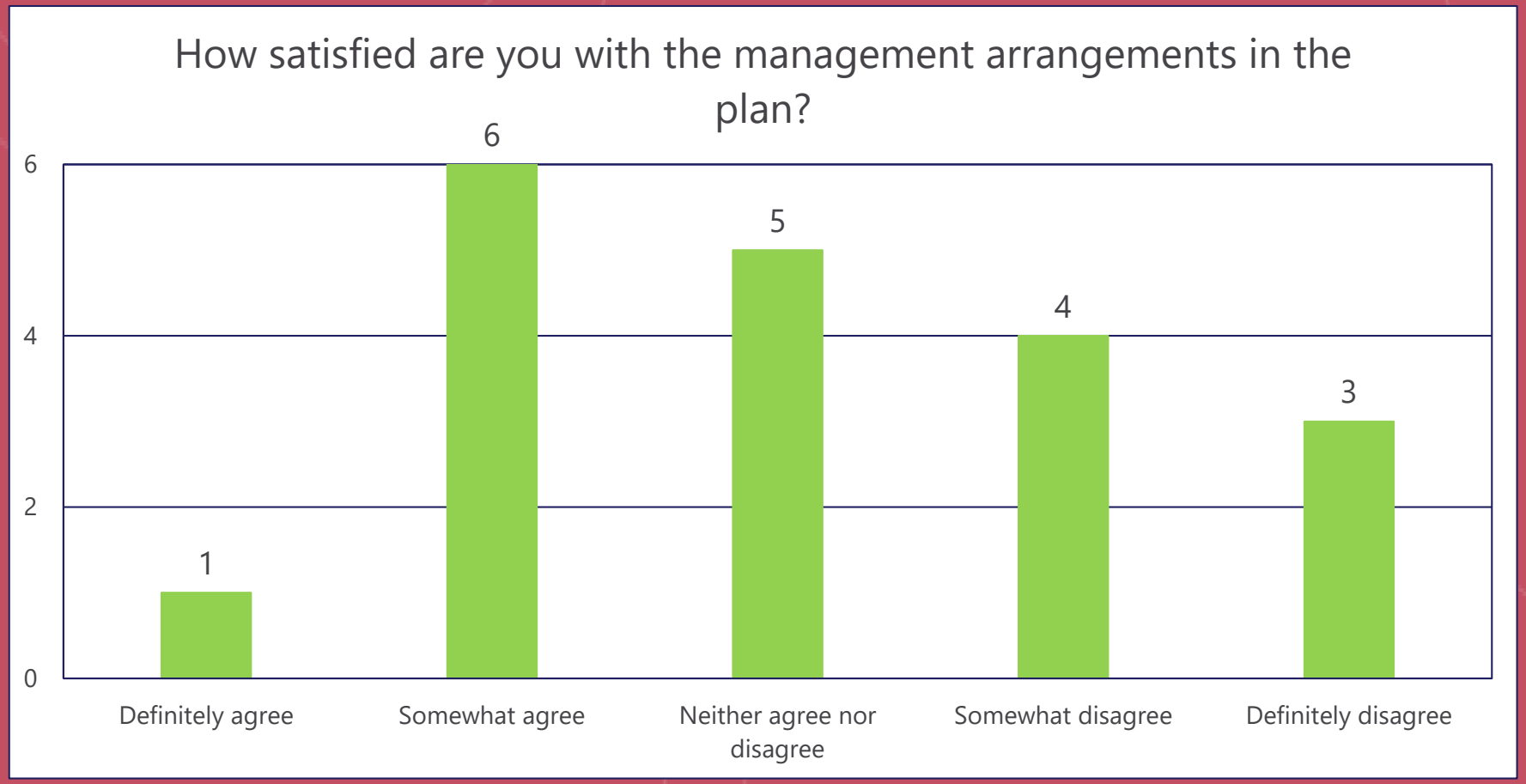
Total participants: 21

- 84% were Alice Springs residents
- 16% non-government
- 1% were aboriginal people with connections to the area
- 89% users of reticulated water supplied by Power & Water Corporation
- Others users were private bore for residential purposes and irrigated agriculture

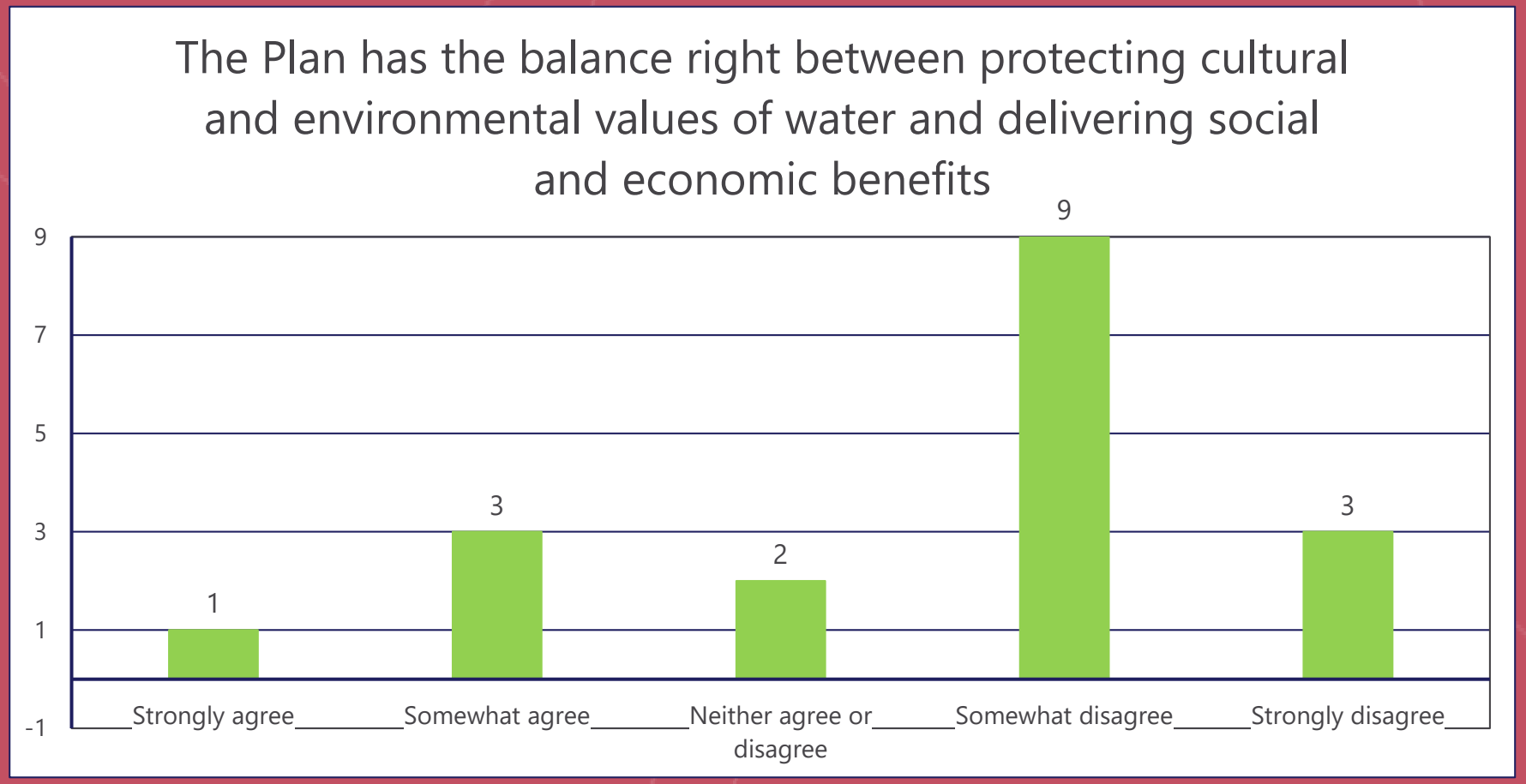
8. 11.30 AM – Results of the have your say survey



8. 11.30 AM – Results of the have your say survey



8. 11.30 AM – Results of the have your say survey



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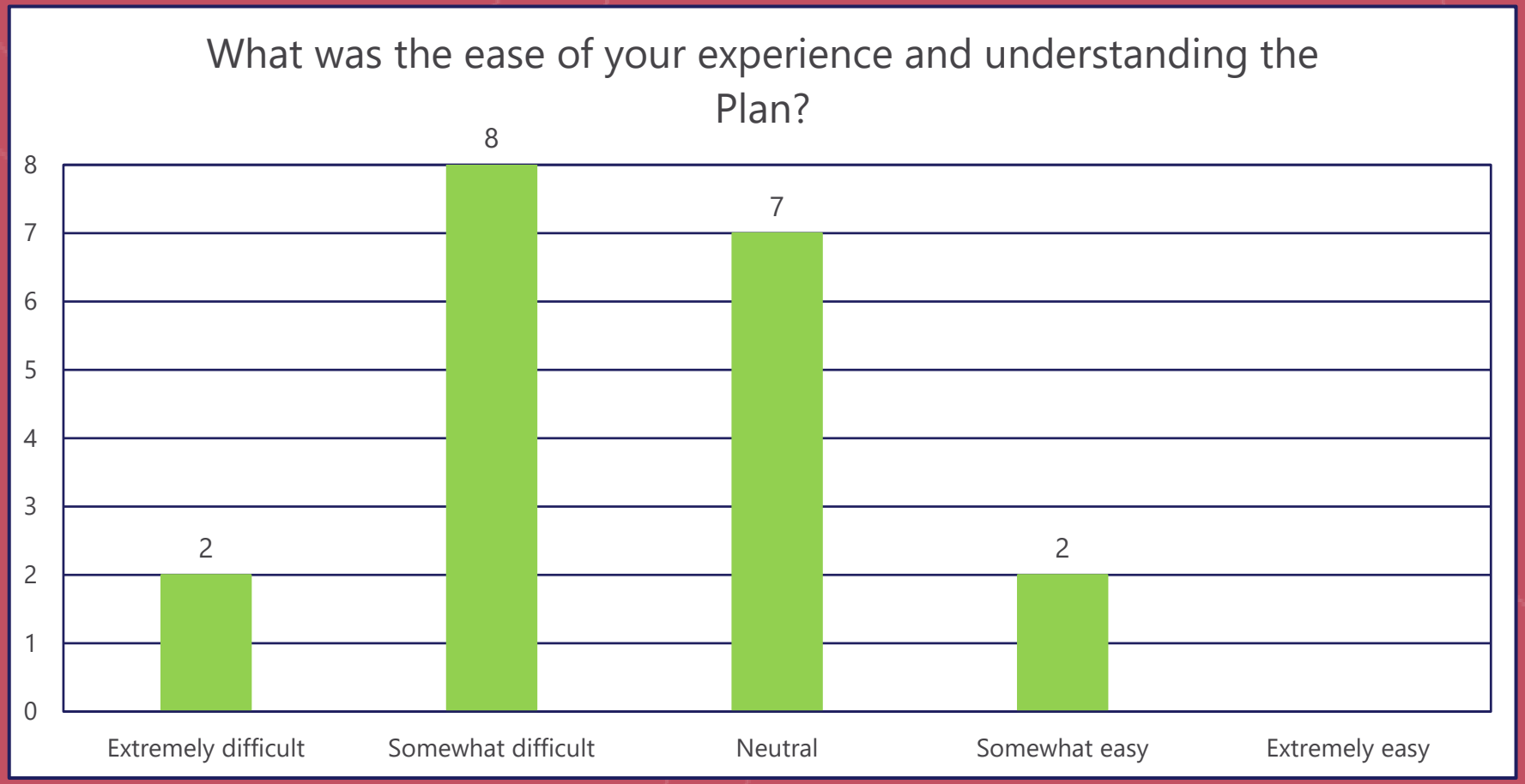

9. 12.30 Economic, social and environmental drivers

Section 3 and 5-15 – "Future Demand" in the current plan

- *Information in the plan*
- *New information*
- *What this means for the water plan*
- *Discussion*
- *Priorities*

Economic considerations

Current situation

- The current plan does not describe how it fits into the context of economic strategies and priorities (although these have been considered)
- Overall economic activity stable or slight decline in the period.
- Agriculture and mining is a comparatively small part of the economy
    - (Alice Springs Town Council: agriculture around 1.6% of GRP, mining around 0.7% of GRP and tourism 7.6% of GRP)

New information – reports considered

- Regional Development Northern Australia economic output data
- Our Economic Future - Northern Territory Economic Development Framework, NTG 2017
- Territory Economic Reconstruction Commission Final Report 2020
- NT Farmers Plant Industries economic impact analysis
- Aboriginal Land Economic Development Agency website
- NT Landcorp “Land for Tomorrow” at Deep Well
- NTG Annual Review 10 year infrastructure Plan 2019-2028
- Hydraulic Fractuaring enquiry and protected areas policy
- NTG mining, petroleum water licence databases

Territory Economic Reconstruction Commission Final Report 2020

- Key aspects of the TERC report which are relevant to water include:

  - Focusing on ”enablers” to development such as defining economic water resources
  - Improvements to water resources legislation to maximise efficient use of water
  - Establishment of a comprehensive Territory wide water demand management strategy to reduce water waste in the Territory,
  - Provide opportunities for water re-use
  - Include aboriginal people in economic development opportunities
  - Climate change is considered.

Issues identified

Issue	Response
A reformatted Chapter 1 “Plan context” would include information on the regional economy and economic drivers.	
There is declining activity especially due to COVID-19 and strategies to turn this around, most notably the Territory Economic Reconstruction Commission Final Report 2020 (TERC).	
Strategic Aboriginal Water Reserve was established since the plan was written and is identified in key economic development strategies	
Gas production and exploration is occurring. A description of mining and petroleum leases in the plan area would be included in a new plan.	
The economic argument for why public water supplies are prioritised could be more strongly made.	
NT Landcorp has identified “Land for Tomorrow” at Deep Well	

Any other economic issue?

Issue	Response

Social considerations

Current situation

- Regional population is stable - description in the plan is still valid.
- Description of social values in the plan is limited – new plans have a “regional context” section
- Several reports since Feb 2016 add to information on social and cultural considerations

New information – reports considered

- Alice Springs Airport Draft Masterplan
- Alice Springs Regional Land Use Plan 2016
- Petroleum - Reserved Block Policy
- NTG Annual Review 10 year infrastructure Plan 2019-2028
- Alice Springs Arts and Cultural Policy 2016-2021

- **OTHERS??**

Issues identified

Issue	Response
The Alice Springs Regional Land Use Plan 2016 published	
Different protection zones for Roe Creek/ future Rocky Hill borefields in: • Alice Springs Regional Land Use Plan 2016, • Alice Springs Airport draft masterplan, • Alice Springs Aquifer Protection Zones report (Read, NR2000/013), • Petroleum – Reserved Block Policy 2019	Recommend a boundary based on modelling (when available) and define land uses in NT Planning Scheme
Potential Land use conflicts: Wanngardi –no more water is available for unlicensed use Airport: industry and horticulture Petroleum reserved blocks: follow cadastre not catchments	
Budget for flood mitigation structures on the Todd	

Going forward

1. Recent water allocations plans contain a new section called “Plan context” in Chapter 1 which includes an expanded consideration of the social and cultural context.
2. Review the drinking water source protection area based on groundwater modelling and latest information
3. Consistency between all policies that define rules for land use in the drinking water source protection area .
4. Reaffirm for Wanngardi that subdivision that increases groundwater use is inappropriate

Environmental considerations

Current situation

1. The current plan does not describe how it fits into the context of other environmental policies and plans
2. This would be described more in a “Regional context” section in a new plan
3. A quick scan of other environmental policies is provided

New information – reports considered

- Climate Change
  - NTG Climate Change Response: Towards 2050
  - Alice Springs Town Council Climate Action Plan 2018-2021
  - NTG Annual Review 10 year infrastructure Plan 2019-2028
- Alice Springs Town Council webpage
  - Significant trees
- The Town Basin Report
- The Lhere Mparntwe Management Strategy 2019

Issues identified

Issue	Response
Significant change on **climate change policy** • Dedicated section in a new allocation plans • ESY should consider climate change scenarios • Current plan is broadly compatible with ecosystem and community resilience as GDEs and environmental values protected • Water efficiency and re-use are key planks in climate change response	
Significant trees are emphasised in other policies –relies on the plan's success in protecting GDEs	

Issues identified

Issue	Response
Town Basin report Recommends refining the 8m depth to groundwater condition, plus vegetation condition monitoring on licence conditions	
Lhere Mparntwe Management Strategy recommends checking the effectiveness of existing controls on extraction in the Town Basin on water table, tree health and salinity levels	
Existing groundwater contamination More information could be provided on existing contamination risks in the Town Basin – users' risk	

Any other policies and plans we should consider?

Issue	Response

11. 1.40 PM – Changes in legislation and policy

- *Information in the plan*
- *New information*
- *What this means for the water plan*
- *Discussion*
- *Priorities*

12. 2.40 PM – Synthesis and next steps

- *Members' priorities*
- *Issues raised and advice for drafting the review*

All members to highlight their main priorities. The Committee to consider the issues raised during the day and gives advice to the Department for drafting the review.

Alice Springs Plan Review Water Advisory Committee

Time: 8.15 Tea and coffee on arrival for 8.30 AM to 4.30 PM meeting

Date: 14 December 2020

Location: Arid Zone Research Institute, South Stuart Hwy, Alice Springs

Acknowledgement of Country:

We respectfully acknowledge the past and present Traditional Custodians of this land on which we are meeting, the Arrernte people. It is a privilege to be standing on Arrernte country.

Attendees:

Committee: John Huigen (Chair), Cr Eli Melky, Cr Jimmy Cocking, Mr Rod Cramer, Ms Robyn Grey-Gardner, Mr Glenn Marshall, Mr Adam Davis, Mr Greg Owens, Miss Barbara Shaw, Mr Martin Campbell

Observers: TBA

DEPWS: Tim Bond, Adrian Tomlinson, Michelle Foate

Apologies: TBA

Required outcomes:

1. Consideration of officer reports on the various plan elements and advise from the Committee on what these mean for the water allocation plan review
2. Advice is received from the Committee on feedback from the "Have your Say Survey
3. Advice is received from the Committee on socio economic considerations related to the plan
4. Advise to the department on preparing the draft Alice Springs Water Allocation Plan review report.

AGENDA

	Time	Item	Who	Notes
1.	8.30	**Acknowledgement of Country**		
2.	8.35	**Opening** • Declarations of interest • Correspondence	Chair	*Including apologies and introducing observers and guests*

	Time	Item	Who	Notes
		• Business arising		
3.	8.45	**Work plan for the day**	Adrian Tomlinson	*Discussion on the process for today's workshop and desired outcomes*
4.	8.55	**Water resources** • Information in plan (Adrian) 2 min • What's changed (Adrian) 8 min • What this means for the water plan (Adrian) 5 min • Discussion (All) 15 min • Priorities (All) 5 min	Adrian Tomlinson	*This relates to Section 3.1 in the current plan*
5.	9.30	**Water entitlements and use** • Information in the plan (Michelle) 2 min • Water use & entitlements over the life of the plan (Michelle) 6 min • What this means for the water plan (Michelle) 5 min • Discussion (All) 18 min • Priorities (All) 5 min	Michelle Foate	*Chapter 16, Section 4.1 and the "allocations and licensing" sections in chapters 5-15 refer*
	10.05	**Morning Tea**		
6.	10:20	**Environmental values** • Information in the plan (Jayne) 4 min • New information and plan performance (Jayne) 6 min • What this means for the water plan (Jayne) 5 min • Discussion (All) 15 min • Priorities (All) 5 min	Jayne Brimbox	*This relates to Section 3.2 in the current plan*
7.	10.55	**Aboriginal cultural values** • Information in the plan (Martin) 2 min • Traditional Owner report (Martin) 8 min • What this means for the water plan (Martin) 5 min • Discussion (Martin) 15 min • Priorities (Martin) 5 min	Martin Campbell	*This relates to Section 3.2 in the current plan*

	Time	Item	Who	Notes
8.	11.30	**Results of the have your say survey**	Michelle Foate	
	12.00	**Lunch**	All	
9.	12.30	**Social Drivers** • Information in the plan (Adrian) 2 min • New information (Adrian) 4 min • What this means for the water plan (Adrian) 2 min • Discussion (All) 20 min • Priorities (All) 5 min	All	*Relates to the first part of Chapter 3 in the current plan*
10.	1.05	**Economic drivers** • Information in the plan (Adrian) 2 min • New information (Adrian) 4 min • What this means for the water plan (Adrian) 2 min • Discussion (All) 20 min • Priorities (All) 5 min	All	*Relates to the first part of chapter 3 in the current plan and "Future Demand" sections in chapters 5-15*
11.	1.40	**Changes in legislation and policy** • Information in the plan (Tim) 2 min • New information (Tim) 10 min • What this means for the water plan (Tim) 3 min • Discussion (All) 15 min • Priorities (All) 5 min	Tim Bond	
	2.15	**Afternoon tea**		
12.	2.30	**Synthesis and next steps** • Important	Chair	*All members to highlight their main priorities. The Committee to consider the issues raised during the day and gives advice to the Department for drafting the review*
13.	4.00 - 4.15	**Close**	Chair	Next steps Next meeting