



# **CENTRAL LAND COUNCIL**

**Submission to the Water Resources Division,  
Northern Territory Department of Lands, Planning and  
Environment**

**Draft Alice Springs Water Allocation Plan 2026-2036**

**Draft Alice Springs Background Report 2026-2036**

**Draft Alice Springs Implementation Actions 2026-2036**

**31 March 2026**

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## Recommendations

**Recommendation 1:** Appoint a Water Advisory Committee with relevant scientific and cultural knowledge and expertise to assess this Draft Plan as a priority, before finalising the plan. The Water Advisory Committee must be set up to inform and guide the implementation of the Plan and ongoing monitoring for the life of the plan.

**Recommendation 2:** Majority of the Water Advisory Committee should be made up of Arrernte people (both men and women) nominated by TOs through an initial meeting facilitated by the CLC, to act as Cultural Advisors.

**Recommendation 3:** the Arrernte Cultural Advisors on the Water Advisory Committee advise on an action plan for how to work with the CLC, AAPA, other TOs and Rangers to start work as soon as possible to identify and determine the water requirements for cultural values and sacred sites and put effective monitoring and protections in place.

**Recommendation 4:** Reinsert a section in the plan that acknowledges Arrernte people and that Arrernte people have cared for water and been sustained by water in the area for thousands of years. This was in the old plan and has been removed.

**Recommendation 5:** Meet with relevant rights holders and stakeholders to receive feedback on ways to increase accessibility and awareness of the opportunities to participate in a Water Advisory Committee and develop materials to support public involvement in water planning more broadly.

**Recommendation 6:** The public comment period be reopened for another month for the broader public, as CLC and other community members have called for. A public meeting should be held with a clear purpose, broad invitations and documented feedback.

**Recommendation 7:** Change the Draft Plan's objective 2 and Implementation Actions to clearly include that Aboriginal cultural values are to be *protected*, not just documented, monitored and 'accounted for'. All sacred sites require protection in accordance with the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT).

**Recommendation 8:** Implement immediate protections for all groundwater dependent ecosystems across the shallow groundwater basins in the next version of the plan.

**Recommendation 9:** Reinstate the Management Zones for Wannardi and Inner Farm Basins in the Plan.

**Recommendation 10:** Place protection zones around sensitive water features, groundwater dependent ecosystems and public water supply areas, with specific triggers, limits on change, restrictions about land use and monitoring requirements specific to each site.

**Recommendation 11:** Undertake the actions (listed in this submission and Appendix A) to fill knowledge gaps in relation to the Plan and update the Implementation Actions accordingly. These actions align with the Division's own recommendations from previous reports that have not been delivered and are not currently addressed by the Implementation Actions in the draft Plan.

**Recommendation 12:** The Division should abandon the new structure for water plans, and instead ensure the Alice Springs Water Allocation Plan, and all future water plans:

- a) meet best practice standards as per the NWI;
- b) include the background and implementation action documents including monitoring requirements and risk assessment; and
- c) include information for protecting Aboriginal cultural values based on consultation with Traditional Owners.

**Recommendation 13:** Recommence the Water Smart program in Alice Springs, working with Arrernte Cultural Advisors to ensure there is also education for the broader community about Arrernte cultural values and water knowledge.

## **About the Central Land Council**

The Central Land Council (**CLC**) is a Commonwealth Statutory Authority established under the *Aboriginal Land Rights (Northern Territory) Act (Cth) 1976*. The CLC has statutory responsibilities for approximately 780,000 square kilometres of land in the southern half of the Northern Territory (**NT**). Our functions include:

- a) ascertaining and expressing the wishes and opinion of Aboriginal people living in the area of the CLC as to the management of Aboriginal land in the area;
- b) protecting the interests of traditional Aboriginal owners of Aboriginal land;
- c) assisting Aboriginal people to take measures likely to assist in the protection of sacred sites on land (whether or not Aboriginal land); and
- d) consulting with traditional Aboriginal owners of Aboriginal land about any proposals relating to the use of that land.

CLC also administers a range of programs for the benefit of its constituents in relation to environmental management, community development, governance, economic participation, cultural heritage, and customary practices.

CLC is also a native title representative body under the *Native Title Act 1993 (Cth)*. We prepare native title applications, respond to development proposals with the potential to impact on native title rights and interests ('future acts'), negotiate indigenous land use agreements and support many corporations representing native title holders known as prescribed bodies corporate.

## Introduction

CLC provides this submission to the NT Water Resources Division (**the Division**) in the Department of Lands, Planning and Environment (**the Department**) on the **Draft Alice Springs Water Allocation Documents**:

- a) Draft Alice Springs Water Allocation Plan (**Draft Plan**)
- b) Draft Alice Springs Background Report (**Draft Background Report**)
- c) Draft Alice Springs Implementation Actions (**Draft Implementation Actions**)

This Draft Plan is about water management on the unceded lands of the Central, Eastern, Western and Southern Arrernte people.<sup>1</sup> CLC acknowledges and pays respects to Arrernte people who have cared for and been sustained by water here for thousands of years and thank the senior Arrernte people who provided their feedback on this plan.

CLC organised an information meeting for Traditional Owners and Native Title Holders from the Alice Springs water planning area<sup>2</sup> to give feedback to Division staff about the Draft Plan on Thursday 12 March. CLC organised an additional follow up with Traditional Owners on Thursday 19 March and consulted separately with senior Traditional Owners who could not attend these meetings.

This submission provides the feedback and recommendations received and includes our Council members' priorities for NT water planning.

CLC also engaged expert hydrogeologists at HydroGeoEnviro to analyse the Draft Water Allocation Documents and groundwater data and modelling. We include this expert advice (**HydroGeo Advice**) as part of our submission, included in **Appendix A**.

One of our Council's main priorities is Aboriginal water rights and water justice. Our Council members have significant concerns about the NT Government's water planning processes and have felt disempowered and frustrated by the lack of action to improve water planning so that it includes Traditional Owners' advice and protects their rights and interests in water.

Our members want the NT Government to work with Traditional Owners not as a tick box, but as partners. They want to see water plans that protect cultural values, like sacred trees and water places that depend on groundwater. They want to see water planning based on good evidence and best practice. They have responsibility to take care of water for culture and for future generations: water is life.

In 2024, the [Productivity Commission's Inquiry Report into Water Reform](#) found that the NT Government is failing to meet national standards for water planning in many key areas, including:

1. Failing to ensure Aboriginal peoples' involvement in water planning, and failing to make water plans that include Aboriginal peoples' views and advice;

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<sup>1</sup> In this submission we use the term Arrernte people to include all of these groups, acknowledging there are variations in spelling among the groups.

<sup>2</sup> In this submission the term 'Traditional Owners' includes both Traditional Owners under the Land Rights Act and Native Title Holders under the Native Title Act.

2. Developing weaker water plans that are not binding on decision-makers, and do not have enough protections for the environment; and
3. Failing to ensure good community and stakeholder engagement.

In CLC's view, the process for drafting the Alice Springs Water Plan is a clear example of these concerns. The draft fails to meet best practice standards set by the National Water Initiative and commitments to Closing the Gap Priority Reforms, particularly relating to genuine partnerships and shared decision-making. This submission goes through each issue in turn and provides our recommendations to improve the process and plan, in line with best practice and Closing the Gap commitments.

## **1. The plan was drafted without consulting with Traditional Owners, or best practice community and stakeholder engagement**

Traditional Owners made it clear to CLC that they are disappointed and frustrated that the Division drafted this plan without talking to them first. This is unacceptable because:

- a) This is Arrernte country and it is appropriate to speak to the people that belong to this country first, along with the other voices in the community;
- b) There are many culturally important water places and sacred sites across the area, such as dreaming sites that include sacred sites on and in the river or immediately next to the Todd River and Charles Rivers. These dreaming and sacred sites depend on water and need to be protected and Traditional Owners have already explained this multiple times;
- c) Traditional Owners have been calling to have a seat at the table for water planning in the region for many years;
- d) Arrernte people have expert knowledge about looking after sacred sites and water places that must be included in the plan;
- e) Failing to consult with Traditional Owners shows disregard for Aboriginal cultural, authority heritage and advice in water planning, and fails to meet commitments under the Closing the Gap agreement.

### **1.1 The plan was drafted without a Water Advisory Committee**

Traditional Owners advised that one way to involve Aboriginal people would have been through a Water Advisory Committee.

It is unacceptable that the NT Government has drafted this plan without a Water Advisory Committee (**Committee**). This is best practice and used to be normal practice in the NT.

CLC acknowledges the Division called for nominations to the Alice Springs Committee in mid-2024, and that no nominations were received. However, we do not think that a lack of responses to a call for nominations nearly 2 years ago is a reasonable excuse to draft this plan without a Committee.

This is because:

- a) Water Advisory Committees are critical for best practice, transparent public and stakeholder engagement. The NT Government has acknowledged this and committed to

improving public and stakeholder engagement through signing up to the National Water Initiative.<sup>3</sup>

- b) The Division's own Review Report from 2021 said setting up a Committee to advise on the plan and develop the next plan was 'essential' to improve plan governance and ensure stakeholder engagement;<sup>4</sup>
- c) The Traditional Owner meeting and seminar on the 12 March 2026 showed that there is significant public concern and interest in water management;
- d) Many people have said they did not know about the call for nominations; and
- e) Territorians have repeatedly called for greater community participation and transparency in water planning (see for example responses on the Strategic Water Plan Directions Paper and Draft Territory Water Plan).<sup>5</sup>

The lack of responses does not show a lack of public interest or that a Committee is not needed. It shows a failure by the Division to ensure public awareness and support community engagement in the water planning process. The lack of responses should have triggered the Division to find out why people did not respond and address the issue. The Division had over 18 months to do this prior to drafting the new plan, but chose not to, and we recommend this is addressed as a priority now.

CLC welcomes the opportunity to engage with the Division on the re-establishment of a water advisory committee, including identifying opportunities for collaboration to ensure the call for nominations is widely communicated and the process is accessible to CLC constituents and the broader public.

**Recommendation 1:** Appoint a Water Advisory Committee with relevant scientific and cultural knowledge and expertise to assess this Draft Plan as a priority, before finalising the plan. The Water Advisory Committee must be set up to inform and guide the implementation of the Plan and ongoing monitoring for the life of the plan.

**Recommendation 2:** Majority of the Water Advisory Committee should be made up of Arrernte people (both men and women) nominated by TOs through an initial meeting facilitated by the CLC, to act as Cultural Advisors.

**Recommendation 3:** the Arrernte Cultural Advisors on the Water Advisory Committee advise on an action plan for how to work with the CLC, AAPA, other TOs and Rangers to start work as soon as possible to identify and determine the water requirements for cultural values and sacred sites and put effective monitoring and protections in place.

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<sup>3</sup> National Water Initiative (NWI), 2004, p3

<sup>4</sup> NT Water Resources Division, *Alice Springs Water Allocation Plan 2016-2026 - Review Report*, Water Resources Division Report 6/2021 p.19.

<sup>5</sup> Department of Environment, Parks and Water Security, *Northern Territory Strategic Water Plan Directions Paper: Consultation Summary Report*, May 2022, p8 & *Draft Territory Water Plan: Consultation Summary Report* June 2023, p5.

**Recommendation 4:** Reinsert a section in the plan that acknowledges Arrernte people and that Arrernte people have cared for water and been sustained by water in the area for thousands of years. This was in the old plan and has been removed.

**Recommendation 5:** Meet with relevant rights holders and stakeholders to receive feedback on ways to increase accessibility and awareness of the opportunities to participate in a Water Advisory Committee and develop materials to support public involvement in water planning more broadly.

## **1.2 Public consultation on the draft was unclear and inadequate**

There were mixed messages about the Division's public consultation and what kind of meetings were held. CLC recommended that the Division extend the comment period and hold a public meeting to facilitate meaningful public engagement and ensure accountability, particularly given:

- a) the plan was not drafted with public input through a Water Advisory Committee;
- b) there are significant changes in this plan from the previous plan that will take time and require explanation for the public to digest;
- c) as above, there is clear public interest in this plan and Territorians have called for improved public engagement and transparency; and
- d) flooding during the comment period impacted people's capacity to come into town to attend meetings.

In our view it is not enough to meet with specific stakeholders in closed, targeted meetings. This does not enable the general public who are affected by the plan to participate, nor does it allow for the Division to transparently share what was said and how the feedback will be taken into account.

Division staff held a seminar as part of the *Bill Lowe Rangeland Series* on 12 March however they told CLC this was not a public meeting for feedback; we are not aware that a record of the meeting and community feedback was formally captured. It is unclear whether the Division considered this to be a consultation and how public feedback will be incorporated, if at all. This mixed messaging does not help with rebuilding trust in the NT Government's processes and falls far short of best practice standards for clear and transparent consultation.

**Recommendation 6:** The public comment period be reopened for another month as CLC and other community members have called for. A public meeting should be held with a clear purpose, broad invitations and documented feedback.

## **2. The draft fails to protect Aboriginal cultural values that rely on water and could put sacred sites at risk**

*'Cultural values are not an object. They are a living spirit, connected to the country itself. It's where our wellbeing comes from. In the Western world they can't see it, they can't believe it. If the water comes out, you lose those places, and all everything around it dies because it is all connected.'* - Traditional Owners statement, 19 March.

*'The Government looks at the landscape, but what's underneath it, we know those stories and what is important, it's all connected.'* – Benedict Stevens, Mparntwe Traditional Owner, 23 March.

## 2.1 Cultural values have not been identified for monitoring or protection

Traditional Owners are frustrated and worried that the Draft Plan has not done any work with them to identify, monitor and protect cultural values that depend on water, like sacred trees and water places, despite this being an agreed priority action for a long time.

In 2016 when the old Alice Springs Water Allocation Plan (the **old plan**) was published, it said the NT Government needed to work with Traditional Owners to identify cultural sites and make sure they are monitored and protected.

In the 2021 Review Report, the NT Government acknowledged this hadn't happened, but said it was 'essential' before the next plan.<sup>6</sup> The Division also met with Traditional Owners in 2021 and everyone agreed it was a priority action.<sup>7</sup>

The Division has had 10 years to start this work, and it has been 5 years since they said they would the second time, but nothing has happened, and cultural sites that rely on groundwater and need protection are still not identified or protected in the new Draft Plan.

The Draft Plan commits to this again in the *Implementation Actions* document (Action 3.2), but the timeline indicated is 2030-2033, which is too risky. It will be too late if we have a few hot years and too much water is taken out before there are adequate protections in place. We know that there is increasing climatic uncertainty. Central Australia is modelled to face extreme heat and unpredictable drought and extreme rainfall events.<sup>8</sup> The NT Government must account for this with precautionary planning and cannot continue to delay taking necessary action.

*'This is why we have no confidence in Government, there is no action. We need to put the proper protection in place.'* - Traditional Owners statement, 19 March.

These Implementation Actions are also not strong enough. They only commit to ensuring that Aboriginal cultural values are identified, and monitored, not that they are protected. The Draft Plan's objective for protecting cultural values also needs to be strengthened as a priority.

Traditional Owners also said this is not just for Aboriginal people, it's about protecting this country and water for everyone who lives here:

*'This place is important for everyone. Those old people were looking after country not just for themselves, but for everyone, making sure it was there for everyone, and the future.'* – Traditional Owners statement, 19 March.

See **Recommendation 3** regarding working with Arrernte Cultural Advisors and AAPA to commence work identifying, monitoring and protecting cultural values. This is a priority.

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<sup>6</sup> Review Report 2021, p. 20-22

<sup>7</sup> Central Land Council, Cultural Values report prepared for the Department, 2021

<sup>8</sup> Australian Climate Service, Australia's National Climate Risk Assessment, 2025

**Recommendation 7:** Change the Draft Plan’s objective 2 and Implementation Actions to clearly include that Aboriginal cultural values are to be *protected*, not just documented, monitored and ‘accounted for’. All sacred sites require protection in accordance with the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT).

### **2.1.1 The protection for River Red Gums in the Town Corridor is not enough**

The Draft Plan includes a protection for groundwater dependent ecosystems that requires licence holders to make sure their water use will not cause groundwater levels to drop over 8 meters below ground level in the Todd River corridor.<sup>9</sup> This is broadly supported, however has concerning limitations:

- a) The ‘Town River Corridor’ is not defined. At the 12 March meeting, Division staff said they would clarify this. CLC wants to make sure that it covers all culturally important places and ask that the NT Government check with Traditional Owners to make sure.
- b) It should be clarified in the Plan that this limit to change is intended to protect all culturally and environmentally important trees as identified by Traditional Owners, not just River Red Gums as stated in the draft.<sup>10</sup>
- c) It is unclear how this will be put into practice, when there are many unlicensed bores operating in the Town Basin. CLC recommend there should be monitoring bores near culturally important places, as identified by Traditional Owners, so that unlicensed bore use can be carefully monitored as well as licenced users.
- d) This protection should also cover the Inner Farm and Wannardi Basin areas, so that cultural values are protected across the plan area.
- e) We note the Implementation Action 3.1.3 to ‘Consider the implementation of regulatory tools to protect groundwater dependent ecosystems in the Town Basin’ is vague and inadequate.

At the meeting on the 12 March, Division staff said they would address these concerns and expand the coverage of this protection to make sure all culturally significant species are protected across all shallow groundwater areas. We look forward to seeing this addressed through working with the Water Advisory Group and Arrernte Cultural advisors.

### **2.2 Cultural values in the Inner Farm and Wannardi areas are vulnerable**

The Draft Plan has also reduced protections for cultural values because the Division has completely removed two management zones that were in the previous plan: the Inner Farm basin just South of the Gap, and the Wannardi basin, near Honeymoon Gap and the Ilparpa area. These are areas with shallow groundwater and Traditional Owners have identified cultural values and sacred sites in these areas that require protection.

The old plan restricted further water extraction in these areas and ensured the water level would not drop below eight meters to protect groundwater dependent ecosystems.<sup>11</sup> This offered some

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<sup>9</sup> Draft Plan, p. 11

<sup>10</sup> Draft Plan, p. 11

<sup>11</sup> *Alice Springs Water Allocation Plan 2016-2026 (Old plan)*, p. 21.

protection for these cultural values. Now these zones have been removed, there is effectively no protection against more use that could damage these sites. At the 12 March meeting the NT Government said that it was not their intent to leave these areas without protection, and suggested they could implement tools like restricted water extraction zones in these places. We urge the Division to address this as a priority.

Not only does this leave cultural values vulnerable, but according to independent expert hydrogeological advice the removal of these zones from the Draft Plan is also inappropriate and concerning from a groundwater management perspective more broadly. The Division's 2021 Review concluded more work is needed to better refine the estimated sustainable yield of the Wannardi basin and its interconnectivity with the underlying Bitter Springs Group.<sup>12</sup> The 2025 Water Assessment Report reaffirmed the ongoing uncertainty of this resource, stating: 'It is unclear to what degree the Wannardi alluvium remains in hydraulic connection with the underlying Palaeozoic aquifers of the Roe Creek borefield.'<sup>13</sup>

There is no recommendation or indication in any of the associated documents that these basins should or would be removed, and indeed this appears to go against the Division's own recommendations to undertake more research and maintain protections in these areas. It is concerning that instead of undertaking the work required, the Division has removed these Basins entirely from the Draft Plan.

**Recommendation 8:** Implement immediate protections for all groundwater dependent ecosystems across the shallow groundwater basins in the next version of the plan.

**Recommendation 9:** Reinstate the Management Zones for Wannardi and Inner Farm Basins in the Plan.

### **3. There are significant evidence gaps and inconsistencies that are not adequately addressed**

#### **3.1 Gaps in evidence and monitoring**

Expert and independent hydrogeological review of the Draft Plan and associated documents commissioned by the CLC indicates:

- a) there are significant gaps in the science that underpins the Draft Plan, and
- b) these remain unaddressed by the Draft Implementation Actions.

CLC also points out various inconsistencies between planning documents and the Division's own recommendations throughout this submission. In our view this demonstrates poor, rushed planning and we urge the Division to address these gaps and inconsistencies as soon as possible to ensure water planning is based on best evidence and practice.

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<sup>12</sup> Review Report 2021, p. 11

<sup>13</sup> Water Resources Division, May 2025, Alice Springs **Water Assessment Report**, Report No. 06/2025, p. 66

HydroGeoEnviro's advice at **Appendix A** includes the full list of recommendations and actions required. Their expert advice is that no additional allocation or licensing should be permitted until these numerous issues are resolved given the substantial risks present.

To highlight a few key matters:

1. There is still significant uncertainty about how the groundwater system works, how the aquifers in the system are connected to each other, and how they will respond to increased water extraction over time.
  - a) The vertical connectivity between aquifers and the surface is not adequately described, particularly where alluvial (e.g. Outer Farm Basin) units overlie deeper aquifer units (e.g. Mereenie Aquifer system). There is evidence that suggests intermittent connectivity however this has not been adequately investigated and is a significant uncertainty that needs to be resolved with aquifer testing.
  - b) Dual/nested monitoring bores need to be installed in more locations so vertical connectivity, hydraulic gradients and recharge/discharge can be better quantified, demonstrated and subsequently modelled.
  - c) The Rocky Hill and Roe Creek areas do not have any alluvial groundwater monitoring bores. This lack of monitoring of the alluvial aquifer is a significant gap in these areas, particularly as drinking water supply areas are home to high value groundwater dependent ecosystems.
2. The water balance approach used to set the estimated sustainable yield in the Town Basin has not been reviewed (only previous studies are referenced in the background report) and is an overly simplistic approach for an area of high cultural and community value and where high-water use is mining groundwater storage. This requires a numerical groundwater approach with predictive uncertainty analysis.
3. The allocation in the Town Basin should not be increased in the new plan without further comprehensive groundwater dependent ecosystem studies on the dependent vegetation (e.g. root extension rates, water quality thresholds, plant ecophysiology studies) and any pools and wetlands. Additional groundwater monitoring bores are likely required near cultural assets, monitoring groundwater, surface water and vegetation condition.
4. The Draft Plan relies on generalised assumptions about the environmental water requirements of groundwater dependent ecosystems. At this high to overallocated level of water extraction the environmental water requirements and drawdown criteria need to be developed and ground-truthed to determine 'reduce' and 'stop pumping' management triggers which should be required for all culturally relevant areas. Precautionary buffers must be applied where uncertainty remains.
5. The proximity and likely hydraulic connections of the Wanngardji Basin aquifer to the Roe Creek Borefield warrants the re-inclusion of the Wanngardji Basin Management Zone in

the Plan. A bore and water use census should also be undertaken to better understand how water use may impact upon the public water supply.

6. There is no mention of Stygofauna or Troglifauna in the Draft Plan, background report or implementation action document. Sampling should be conducted and focus on hydro-cultural sites within the plan area e.g. springs, pools/wetlands/waterholes or creek beds.
7. There are critical gaps in the water quality monitoring program for known groundwater contamination risks from sources such as the sewerage treatment ponds, the airport, petrol stations, the regional waste management facility and horticultural operations (through use of herbicides and pesticides). The Division must develop conceptual contamination models for sites with identified risks and install new monitoring bores to delineate pathways, especially near high-risk areas at the airport, landfill, and sewerage treatment ponds. Water quality source protection plans and land use exclusion areas for public and drinking water supply bores (i.e. areas where certain land uses are unacceptable) need to be developed and/or updated.

Given uncertainty around how far the Mereenie system extends beyond the groundwater management zones and the planning area, Traditional Owners raised concerns about whether there is potential for water extraction that could result in impacts on the resource or downstream. It is critical to clarify the extent of these risks, and whether there could be water use in the same system but just outside of the boundaries and therefore not covered by the plan's jurisdiction.

### **3.2 The Division has not delivered on its own previous recommendations**

Independent expert hydrogeological review found that the Division's recommendations from the 2021 Review Report have largely not been delivered. The Review Report states that the recommendations in Table 7-1 *'address changes to environmental, cultural, social and economic factors. These should happen before plan renewal in order to improve the next plan except where otherwise stated. Responsibility for these tasks and their sequencing should be outlined in an implementation plan prepared by the department by 30 June 2021.'*

CLC supports the actions in Table 7-1, which acknowledged various matters that needed to be addressed. However:

- a) Almost all were not delivered (see assessment of each recommended action and current status at **Appendix A**); and
- b) it appears the Implementation plan referred to above was never published by the Department.

### **3.3 The Draft Implementation Actions are insufficient and require amendment**

Independent expert hydrogeologists also assessed the Division's recommendations from their 2025 Water Assessment Report against the Draft Implementation Actions to evaluate which of the recommendations have been included, and where the gaps are.

Overall, only some of the Draft Implementation Actions *partially* address the work required. The Draft Implementation Actions largely fail to address all the gaps identified, are weak in scope and vague regarding commitment. We require a firm commitment to clear and specific actions to address the shortcomings identified. Table 4 in **Appendix A** includes the full review.

**Based on the gaps identified in existing evidence and the draft Implementation Actions, CLC submits that the following actions are required.** These actions align with the Division's own recommendations from previous reports that have not been delivered:

1. Create a hydro-cultural dataset to identify gaps and support licence impact assessments. Additional groundwater monitoring bores are likely required near cultural assets, ideally each site should monitor groundwater, surface water and vegetation condition.
2. Conduct comprehensive Groundwater Dependent Ecosystem studies on the dependent vegetation (e.g. root extension rates, water quality thresholds, i.e. plant ecophysiology studies and on ground monitoring).
3. Conduct ongoing and regular remote sensing analysis to examine changes in vegetation condition across the plan area. On-ground monitoring is likely also required as remote sensing may struggle in areas of sparse trees.
4. Investigate aquifer connectivity with targeted studies and updated conceptual and numerical models.
5. Expand monitoring to improve recharge/discharge estimates.
6. Expand alluvial groundwater monitoring in the Rocky Hill and Roe Creek zones.
7. Conduct a stygofauna sampling program focusing on likely stygofauna habitats and hydro-cultural sites within the plan area e.g. springs, waterholes or creek beds.
8. Monitor culturally significant sites with paired surface-groundwater data.
9. Reassess environmental water allocations and develop robust Environmental Water Requirements and triggers.
10. Establish water source protection zones with site specific controls. Water quality source protection plans and land use exclusion areas for public and drinking water supply bores (i.e. areas where certain land uses are unacceptable) need to be developed/updated.
11. Expand water quality monitoring (Per- and polyfluoroalkyl substances (PFAS), coliforms, metals, acid sulfate risks) and conduct a bore/water use census.
12. Assess contamination pathways at high-risk sites with new bores.
13. Reduce licence volumes where long-term use is far below allocation.

**Recommendation 10:** Place protection zones around sensitive water features, groundwater dependent ecosystems and public water supply areas, with specific triggers, limits on change, restrictions about land use and monitoring requirements specific to each site.

**Recommendation 11:** Undertake the actions (listed above and in Appendix A) to fill knowledge gaps in relation to the Plan and update the Implementation Actions accordingly. These actions align with the Division’s own recommendations from previous reports that have not been delivered and are not currently addressed by the Implementation Actions in the draft Plan.

#### **4. The Draft Plan is weaker and limits information and accountability for water planning decisions**

As mentioned above, the Productivity Commission has identified that water plans and water planning is weaker in the NT compared to other states and territories.<sup>14</sup>

CLC strongly objects to the weakened structure the Division has adopted for the Draft Plan, which splits Water Allocation Plans into three different documents. These three documents have different levels of power under water legislation:

1. The Water Allocation Plan, declared by the Minister under section 22B(1) of the *Water Act 1992* (the **Water Act**);
2. Background report; and
3. Implementation Actions.

This structure means that the Water Controller only needs to consider the Draft Plan and can completely disregard the other documents when making a decision about a water licence.<sup>15</sup> The Water Controller does not have to consider important information like risks to country and monitoring requirements, which are things they had to consider before. This weakens water allocation plans and means there is more risk of water licence decisions that have negative impacts on cultural values, the environment, people who rely on the water, and the water itself.

CLC understands that the Division started used this structure since 2023 to make it harder to legally challenge water licencing decisions. It is very concerning that the Division is deliberately trying to limit accountability and weaken standard democratic protections against poor decision-making to protect its own interests.

The Division has made misleading claims that the purpose of these changes is to make the plan shorter and easier to read, and that the Draft Background Report and Draft Implementation Actions are ‘core documents’.<sup>16</sup> CLC has continued to state our concern about this approach since the Division started weakening water plans in 2023.

Water plans need detailed information for good decision-making so the Water Controller can make good decisions about water licences, including:

- a) Aboriginal cultural values that depend on water, their water requirements and how they will be protected;
- b) implementation activities and background information;
- c) monitoring requirements and risk assessments.

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<sup>14</sup> Productivity Commission *Inquiry Report 2024*, p.137-138

<sup>15</sup> *Water Act* s 90(1)(ab).

<sup>16</sup> Draft Plan, p. 4.

The Division included all of these elements in the previous *Alice Springs Water Allocation Plan 2016-2026 (Previous Plan)*. They are essential to best-practice water planning under the National Water Initiative and are standard in other states and territories.<sup>17</sup>

**Recommendation 12:** The Division should abandon the new structure for water plans, and instead ensure the Alice Springs Water Allocation Plan, and all future water plans:

- d) meet best practice standards as per the NWI;
- e) include the background and implementation action documents including monitoring requirements and risk assessment; and
- f) include information for protecting Aboriginal cultural values based on consultation with Traditional Owners.

## 5. Other concerns

### 5.1 Aboriginal Water Reserve

CLC notified the Division that the Aboriginal Water Reserve allocations are inconsistent with the NT Government's Strategic Aboriginal Water Reserve Framework, and previous processes. The Division confirmed they would review this and we look forward to further discussions with the Division to ensure consistent and equitable management and allocation of the Aboriginal Water Reserve.

CLC has undertaken a review to confirm all eligible parcels have been included in the Draft Plan, despite not being consulted in advance by the Division or being provided with necessary NT Government data to conduct a thorough review. As a result of our limited review, we are not aware of any eligible parcels of land not included in the Draft Plan.

As per our statutory functions, once the final allocation is determined CLC will consult with Traditional Owners and act in accordance with their instructions regarding use of the Aboriginal Water Reserve.

### 5.2 Buffel is destroying country and threatening sacred sites and the town

Traditional Owners raised the importance of managing country holistically and addressing the threats of buffel grass as a priority given the significant impacts and risks from buffel grass on country, including risks to the town from hotter uncontrolled fires. Traditional Owners pointed out the unjust situation where pastoral stations are spreading buffel grass and then are also using water for their stations without a water licence, impacting country in both ways.

Water use by cattle stations is a concern raised regularly by Council. We acknowledge Division staff's recommendation that Traditional Owners report any concerns about station use, but submit this is not enough and recommend further action is taken to ensure station water consumption and impacts are effectively monitored. CLC call for steps to be taken to ensure cattle stations water use is monitored and managed to protect country and drinking water supplies.

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<sup>17</sup> NWI 2004

### 5.3 Water waste is a big problem and two-way education is important

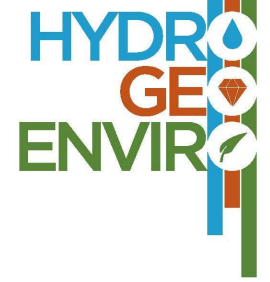
Traditional Owners also raised the importance of education around water waste and water use in the town, noting that Alice Springs has very high water use per person and there used to be a water smart program in Alice Springs. As this is a desert town with declining water supplies that depends on groundwater, this program should be started up again as a priority.

Traditional Owners were also concerned that there is a lack of understanding about Aboriginal water knowledge and stories for the area, and why water is important to protect for cultural reasons as well.

*'You don't know what we know... you've got two ways of learning, there's the western side and cultural way.'* – Benedict Stevens, Mparntwe Traditional Owner, 23 March.

**Recommendation 13:** Recommence the Water Smart program in Alice Springs, working with Arrernte Cultural Advisors to ensure there is also education for the broader community about Arrernte cultural values and water knowledge.

## **Appendix A: Independent Expert Hydrogeological Advice**



## HYDROGEOLOGICAL REVIEW OF THE DRAFT ALICE SPRINGS WATER ALLOCATION PLAN 2026-2036.

**PREPARED FOR** | Central Land Council

**PREPARED BY** | Hydro Geo Enviro Pty Ltd

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**Revision History**

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## Introduction

The draft Alice Springs Water Allocation Plan (DAS WAP) 2026-2036 is open for public consultation. As part of this process the Central Land Council (CLC) have engaged Hydro Geo Enviro (HGE) to provide a review outlining any hydro-cultural<sup>1</sup>. concerns related to the draft plan. The following documents have been reviewed:

- Northern Territory Government (2026a). Draft Alice Springs background report 2026-2036. Department of Lands, Planning and Environment, Northern Territory, Australia
- Northern Territory Government (2026b). Draft Alice Springs water allocation plan 2026-2036. Department of Lands, Planning and Environment, Northern Territory, Australia
- Northern Territory Government (2026c). Draft Alice Springs implementation actions 2026-2036. Department of Lands, Planning and Environment, Northern Territory, Australia
- Northern Territory Government (2021a) Alice Springs Water Allocation Plan 2012-2026 - Technical Review, Water Resources Division Report 7/2021, Department of Environment,
- Northern Territory Government (2021b) Alice Springs Water Allocation Plan 2016-2026 – Review Report, Water Resources Division Report 6/2021, Department of Environment, Parks and Water Security, Palmerston, Northern Territory.
- Water Assessment Branch (2025). Alice Springs water resource assessment. Technical Report 06/2025. Water Resources Division, Department of Lands, Planning and Environment, Northern Territory.

This document provides a technical and cultural water focussed review of the DAS WAP focusing on hydrogeological risks, gaps in scientific evidence, monitoring deficiencies, and the protection of groundwater dependent cultural values. The review begins with a general summary of our concerns related to the DAS WAP plan. We highlight the areas where previous recommended actions have not been completed and the risks associated with the hydrogeological uncertainties that exist. A list of recommended actions and priority work to be completed is provided. Lastly, selected extracts from the individual reports are commented on to support our concerns and recommendations. Note that where page numbers are referred to, they are the pdf file's page numbers not the page numbers in each report's footers.

While compiling this review we have encountered other reports that also warrant review but were outside of this scope. The groundwater model for the Mereenie Aquifer report by Knapton (2022) is of particular interest and relevance. However, we feel that the commentary provided is sufficient for the CLC to express their technical water concerns and provide appropriate feedback to the NT Government. Future work may need to involve reviewing these and other sources of information.

## General Summary

The DAS WAP divides the plan area into three water management zones: the Town Basin Aquifer, the Outer Farm Aquifer and the Mereenie Aquifer System. The hydrogeological characteristics and key water supply roles of these zones are provided below in Table 1.

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<sup>1</sup> The term 'hydro-cultural' refers to the intersection of water resources and cultural values. It encompasses the ways in which water features (including aquifers) are integral to the cultural practices, beliefs, and traditions of a community, and considers the impact of water management on cultural sites and practices.

Table 1: Three management zones in the Draft Alice Spring Water Allocation Plan 2026-2036.

	Town Basin Aquifer	Outer Farm Aquifer	Mereenie Aquifer System
<b>Type</b>	Shallow alluvial aquifer beneath the Todd River and town area.	Shallow alluvial aquifer similar to the Town Basin but located in the rural fringe.	Deep sandstone aquifer system (Mereenie Sandstone, Pacoota Sandstone, Goyder Formation, Shannon Formation).
<b>Recharge</b>	Episodic, driven by river flows.	Episodic, driven by river flows.	Very limited modern recharge; water is largely palaeo-water.
<b>Role</b>	Supports small-scale irrigation, stock and domestic use, and groundwater-dependent ecosystems (especially river red gums).	Supports rural stock and domestic use and small-scale irrigation.	Primary source of Alice Springs' public water supply.

The previous AS WAP (2016-2026) had 12 management zones which have been condensed to three in the DAS WAP, focussing on resources with high quality, high yield and high demand. Surface water and the low-yielding, lower quality Inner Farm and Wannardi Basins, managed in the current plan have been removed from the DAS WAP and will be regulated under the Water Act 1992 and NT water allocation framework, using the Arid Zone Rule which allocates water based on the total in storage not on the renewable/recharge flux of the aquifer. If water use exceeds recharge then it is effectively mining groundwater storage. Mining of groundwater also carries with it significant risks and requires a very high degree of understanding which doesn't exist in our scientific opinion.

In our opinion, based on our experience, there is insufficient understanding of the hydrogeology and the heterogeneity that exists within and across the aquifers of the region. This coupled with the high-level hydro-cultural values (*which are often unidentified by Western Science and therefore not monitored*) within the plan area increases the risk of impacts to cultural sites and the environment generally. The vertical connectivity between aquifers and the surface (including surface water features) is not well characterised in many areas, particularly where alluvial (e.g. Outer Farm) units overlie deeper aquifer units (e.g. Mereenie Aquifer system). Dual/nested monitoring bores need to be installed in more locations so vertical connectivity, hydraulic gradients and recharge/discharge can be better quantified, demonstrated and subsequently modelled. There is evidence that suggests intermittent connectivity between alluvial aquifers and the Amadeus Basin exists. However, this has not been adequately investigated and is an important conceptual uncertainty that needs to be resolved preferably with aquifer testing to back up conceptualisation.

Suggested approximate priority dual/nested monitoring bores areas are marked with red on Figure 1 below. From Table 2 it appears the Rocky Hill and Roe Creek zones do not have any alluvial groundwater monitoring bores. This lack of monitoring of the alluvial aquifer is a significant gap in these areas as well as around high value GDEs. It is unclear from our review of the selected documents where the dual/nested monitoring bores that exist in the groundwater monitoring network are located.

Table 2: Groundwater monitoring bore location details for the Alice Springs plan area (Water Assessment Report 2025 Pg 47)

Zone	Aquifer monitored	Bores	Loggers
Town Basin	Alluvium	11	5
Inner Farm	Alluvium/Bitter Springs Fm	6	2
Outer Farm	Alluvium/Bitter Springs Fm/Arumbera	21	5
Rocky Hill	Mereenie/Pacoota/Hermannsburg	37	5
Roe Creek	Mereenie/Pacoota/Shannon/Goyder	20	6
Wanngardi	Wanngardi alluvium	11	1
<b>Total</b>		<b>106</b>	<b>24</b>

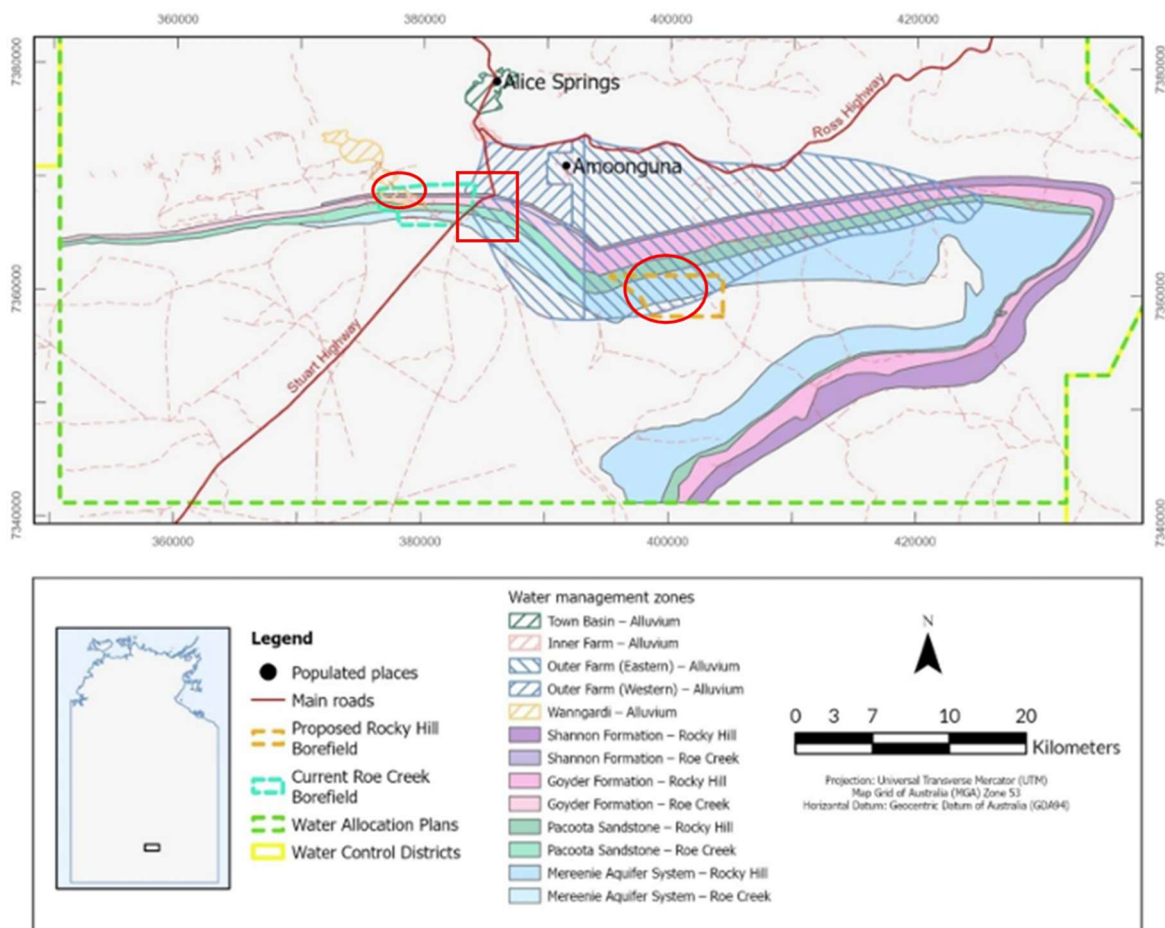


Figure 1: Location of Alice Springs water plan management zones (Water Assessment Report 2025 Pg 46). Suggested approximate priority dual/nested monitoring bores areas are marked with red shapes.

The DAS WAP ESY has been increased from 20,964 ML (NTG 2021a) in the previous plan to 24,670 ML/. The DAS WAP has included 5,800 ML towards an Aboriginal Water Reserve (AWR) however it is unclear how an increase in total water is estimated to be available given the ongoing depletion of aquifers in the WAP area over decades with clear monitoring gaps identified (Water Assessment Branch 2025). An example is the Town Basin Aquifer had an ESY of 1,000 ML in the previous plan,

the Technical Review (NTG 2021a) identified significant over-allocations in the Town Basin and recommended that when the plan was renewed the ESY should be reviewed and to reduce allocations within the ESY. NTG (2021a) also states the NT government should consider whether licenses should be increased beyond ESY in wet periods. It is unclear why the DAS WAP allocation for the Town Basin has been more than trebled to 3,100 ML, the water balance approach used to set the ESY has not been reviewed as only previous studies are referenced in the background report. Other unseen reports may have more technical information as previously noted but based on what has been reviewed herein we have significant concerns. A water balance approach is overly simplistic for an area of high values and high-water use mining groundwater storage. This requires a numerical groundwater approach with predictive uncertainty analysis.

Hydrographs for the Town Basin monitoring bores, despite notable recent recharge events in 2001, 2011 and 2017, show water levels have been undergoing a general declining trend since their recorded peak in 1976 (Water Assessment Branch 2025). The Town Basin aquifer supports the river red gums (identified Groundwater Dependant Vegetation (GDV)) and given their cultural importance the current approach is not precautionary in our opinion. Also has any field monitoring of the condition of these and other areas of vegetation been completed? Hydraulic connectivity and condition of river pools? It seems like no, as no studies have been cited in these contexts. Our scientific opinion is that the system is over allocated based on ubiquitous declining levels and unknown levels of environmental/cultural impact.

The Town Basin has 3 existing licences and 175 unlicensed bores (NTG 2026a) which means extraction estimates come with a degree of uncertainty. It is our opinion that the Town Basin ESY should not be increased in the new plan without further comprehensive Groundwater Dependant Ecosystem (GDE) studies on the dependant vegetation (e.g. root extension rates, water quality thresholds, plant ecophysiology studies) and any pools/wetlands. Additional groundwater monitoring bores are likely required near cultural assets, ideally each site should monitor groundwater, surface water and vegetation condition at these levels of allocation which are greater than recharge.

Regarding the Wannardi Basin the Technical Review (NTG 2021a) states that the estimate of rural stock and domestic use exceeds the estimated sustainable yield (ESY) and therefore it can be expected that total use greatly exceeded the ESY for the Wannardi Basin. NTG (2021a) further concluded that more work is needed to better refine the ESY for Wannardi Basin and interconnectivity with the underlying Bitter Springs Group. The Wannardi Basin borders the boundary of the Roe Creek Borefield and therefore better understanding of how it may also impact upon the public water supply borefield is required. The proximity and likely hydraulic connections of the Wannardi Basin aquifer warrant its inclusion in the latest DAS WAP. A bore and water use census would be an appropriate part of the response.

Lumping the Mereenie Aquifer System management zones together could result in larger localised abstraction volumes, potentially causing increased localised impacts. It is unclear how much water is currently unallocated in the system, further notes on allocation availability are provided herein. It is recommended that groundwater management areas align with natural hydrogeological flow patterns and compartments (flowlines etc) and are sized such that concentration of licences/impacts in an aquifer do not occur. Cumulative impacts need to be assessed in this context and in general lumping of groundwater management areas (particularly when one or more are near full allocation) present high risk of unacceptable impact. A water balance approach is insufficient to do this.

The DAS WAP has a below ground water level threshold of 8m in the Town River Corridor to protect river red gums. This is supported as a general rule however how it will be implemented in practice is unclear (further comments are included herein related to this). The rate of drawdown can also be important as a trees ability to extend its roots will vary and this needs to be in line with drawdown rates. These drawdown criteria should be developed for the river red gums and coolibah trees, and any other significant GDVs identified. Criteria need to be developed for pools/wetlands also. At this high to overallocated level of abstraction there needs to be a better surface and groundwater monitoring network, detailed groundwater/surface water modelling with uncertainty analysis, coupled with vegetation/pool monitoring and plant ecophysical studies. These studies should inform management actions.

As mentioned above the vertical connectivity between aquifers and the surface is not well characterised and dual/nested monitoring bores (e.g. deep and shallow bore at the same site) need to be installed in these locations so vertical connectivity and recharge/discharge can be better estimated and subsequently modelled. Cultural water sites are poorly monitored and from our review it doesn't appear any are part of the monitoring requirements; implementation actions related to this are scheduled to be delivered between 2030-2033 but the system is overallocated under the current plan (2016-2026) and allocation is proposed to be increased. CLC should consider documenting the cultural values in the plan area that are at risk.

There is no mention of stygofauna or troglifauna in the DAS WAP, background report or implementation action document. Sampling should be conducted and focus on hydro-cultural sites within the plan area e.g. springs, pools/wetlands/waterholes or creek beds.

Groundwater Dependent Vegetation Probability of Occurrence Maps (Box et. al 2025) were compiled for the plan area during the review period. This GDE study has produced useful maps to infer where GDEs occur in the plan area and included field validation and probability maps of 50 and 70% of GDE likelihood. These maps should be referred to by any proponents during licence application impact assessments as a first pass prior to field validation at a local scale and monitoring installed where required.

Recent advances in remote sensing technology should be drawn upon to determine limits of acceptable change across all water dependent ecosystems. There should be a regular on going analysis of changes in vegetation condition across the plan area using remote sensing data (e.g. MAVI), particularly in culturally sensitive areas, such as where the river red gums occur along river corridors.

Groundwater contamination from sources such as the sewerage treatment ponds or the airport, petrol stations etc is an identified risk. Developing conceptual contamination models for sites with identified risks, and installing new monitoring bores to delineate pathways, especially near the airport, landfill, and sewerage treatment areas should be a priority. Water quality source protection plans and land use exclusion areas for public and drinking water supply bores (i.e. areas where certain land uses are unacceptable) need to be developed/updated.

No additional allocation or licensing should be permitted until these numerous issues are resolved in our scientific opinion. There is already a substantial risk and more water use will increase this risk.

## NTG 2021 Report Recommendations (NTG 2021a&b)

The recommendations made in 2021 reports have primarily not been delivered as detailed in Table 3. There is an overarching concern of the lack of integration of water dependent cultural features within the DAS WAP; this gap has been clearly recognised in past reviews and assessments but not addressed in the recent draft plan. To our knowledge an implementation plan was never published by the Department in 2021, as proposed in the NTG 2021b report, following extract from Pg. 20 – “*The following recommendations in Table 7-1 are made to address changes to environmental cultural, social and economic factors. These should happen before plan renewal in order to improve the next plan except where otherwise stated. Responsibility for these tasks and their sequencing should be outlined in an implementation plan prepared by the department by 30 June 2021.*”

Table 3: Recommendations from 2021 assessments

Topic	2021 Recommended Action/s	Interpreted (current) status and HGE comments
Updates to water management framework	Before plan renewal develop: • a proposal for a water dependent ecosystem protection area • limits to change that should apply to ecosystem values within protection area • a baseline for the state of water dependent ecosystems including information on location, values and condition.	<p><u>Not Delivered</u></p> <p>HGE comments – Substantially more work required particularly where water dependent ecosystems overlap with cultural values.</p>
	Before plan renewal develop: • a proposal for a water dependent cultural values protection area • limits to change that should apply within protection area • a baseline for the state of water dependent cultural values including information on location, values (potentially de-identified) and condition.	<p>The DAS WAP contains a framework to try and protect the river red gums, i.e. “<i>limits extraction through a licence when the groundwater level exceeds eight meters below ground level in the Todd River corridor.</i>”</p>
	Before plan renewal develop: • a proposal for a public water supply protection area • guidance on acceptable risk to water quality for land uses within the public water supply protection area in liaison with Department of Infrastructure, Planning and Logistics and Power and Water Corporation.	<p><u>Not Delivered</u></p> <p>HGE Comments – There is no mention of established public water supply protection in any of the DAS WAP documentation (NTG 2026a-c &amp; Water Assessment Branch 2025). The <i>Alice Springs Aquifer Protection Zones</i> (Read 2000) is outdated and should be updated to align with the DAS WAP.</p>
	Based on capture zone modelling and risk of contamination seek to inform and implement effective source protection approaches in the: • NT Planning Scheme • Alice Springs Airport draft masterplan • Alice Springs Aquifer Protection Zones report (Read, NR2000/013) • Petroleum – Reserved Block Policy 2019.	<p><u>Unclear whether delivered</u></p> <p>HGE Comments – We are unclear on this but initially it appears the Alice Springs Aquifer Protection Zones document (2000) requires updating.</p>

Topic	2021 Recommended Action/s	Interpreted (current) status and HGE comments
Water Advisory Committee and plan governance	A water advisory committee should be established to advise on implementing the plan, including developing the next plan. It should meet at a minimum six monthly frequency.	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – From the DAS WAP Pg 12- <i>Where the Minister considers it appropriate, a water advisory committee for the plan may be established to advise on the effectiveness of the plan in maximising economic and social benefits within ecological restraints. Appropriate considerations should be given to water resource management, including the actual volume of water taken under licences and any associated risks to the water resource.</i></p>
	An Aboriginal reference group should be established to advise on implementing the plan, including developing the next plan.	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – The DAS WAP does not contain any reference to an ARG or plans to establish one.</p>
	The new water advisory committee should be tasked to propose management arrangements for how stakeholders who effect the outcomes of the water allocation plan participate in plan implementation.	<p><u>Not Established, therefore Not Delivered</u></p>
	DEPWS should initiate pilot projects to bring stakeholders together to identify and implement strategies to improve the condition of an important wetland and an important waterway site chosen from sites such as Ilparpa Claypans, Heavitree Gap (Ntaripe), Coolibah Swamp (Ankerre Ankerre) or Telegraph Station (Atherreyurre).	<p><u>Not Delivered (or incomplete)</u></p>
Communications and Engagement	A water forum should be held to launch the review and call for expressions of interest for the new committee.	<p><u>Not Delivered (or incomplete)</u></p>
	Develop an overarching “water story” (including environment, culture & water efficiency) as the basis of communication and engagement on water resources. Consider opportunities to use a range of different media e.g. art) to broaden engagement.	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – The DAS WAP does not contain any reference to an ARG, water stories or plans to establish them.</p>
	Produce a Story Map for the Alice Springs Water Allocation Plan.	

Topic	2021 Recommended Action/s	Interpreted (current) status and HGE comments
	Produce a communication and engagement strategy involving all stakeholders in water resource management in the region.	See previous page.
Water Resources	Prepare a water assessment report before the next plan which: <ul style="list-style-type: none"> <li>• reviews all water balance elements for the Wannardi Basin</li> <li>• refines water balances for all other basins using median data and climate change scenarios</li> <li>• updates Amadeus Basin balances using an updated numerical model</li> <li>• includes solute transport modelling for contamination vulnerability</li> <li>• includes capture zone modelling for source protection</li> </ul>	<p><u>Partially Delivered</u></p> <p>Via Water Assessment Branch Report 2025</p> <p><u>HGE Comments</u> - Solute transport modelling related to salinity and solute transport related to irrigated horticulture was completed. To the best of our knowledge this solute modelling did not include potential contamination associated with operations such as the airport or petrol stations (e.g. PFAS, hydrocarbons). Capture zone modelling does not appear to have been completed.</p>
	Assess water resource availability in the Amadeus Basin within the district but outside the plan area	<p><u>Unclear if delivered</u></p> <p><u>HGE Comments</u> - We have not seen any reference to public assessments regarding water availability outside of the plan area.</p>
	Report on causes of changes to channel morphology, flow volume/timing, and loss of semi-permanent waterholes	<p><u>Unclear if delivered</u></p> <p><u>HGE Comments</u> - We have not seen any reference to reports of this nature.</p>
Environmental Values	Prepare a report on environmental water requirements including: <ul style="list-style-type: none"> <li>• map of water dependent ecosystems (Year 1)</li> <li>• description of values and threats</li> <li>• limits to change</li> <li>• delineation of protection areas</li> <li>• baseline condition</li> <li>• monitoring requirements</li> </ul>	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – The “Groundwater Dependent Vegetation Probability of Occurrence: Alice Springs Water Allocation Plan Area” (Box &amp; Brim-Box, 2025) was completed by the department. The report develops probability models and maps of groundwater dependent vegetation (GDV) across the plan area. It does include EWRs as listed.</p>
	Maintain surface water flows in accordance with Part 5 of the Act	<p><u>HGE Comment</u> – The DAS WAP appears compliant with this part of the act.</p>

Topic	2021 Recommended Action/s	Interpreted (current) status and HGE comments
	<p>Undertake ecosystem condition monitoring in at-risk high-value areas</p> <hr/> <p>Support cross-sector approaches to protect and restore high-value ecosystems through: • communicating historical wetland information • identifying threatening processes • developing pilot projects at sites such as Ilparpa Claypans, Heavitree Gap, Coolibah Swamp, Telegraph Station</p> <hr/> <p>Involve the Aboriginal Reference Group (ARG) and rangers in developing environmental values information and monitoring</p>	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – Still in very preliminary stages, note proper identification and monitoring still to be instated in the future, see below bullet points from - Implementation Actions Report (NTG 2026)</p> <ul style="list-style-type: none"> <li>• <i>Identify and document key Aboriginal cultural sites and species</i></li> <li>• <i>Identify and document the water requirements of key Aboriginal cultural sites and species</i></li> <li>• <i>Key cultural water sites are included in monitoring program.</i></li> </ul>
<b>Cultural Values</b>	<p>Form an ARG within the governance structure of the plan</p>	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – From the DAS WAP Pg 12- <i>Where the Minister considers it appropriate, a water advisory committee for the plan may be established to advise on the effectiveness of the plan in maximising economic and social benefits within ecological restraints. Appropriate considerations should be given to water resource management, including the actual volume of water taken under licences and any associated risks to the water resource.</i></p> <p>The DAS WAP does not contain any reference to an ARG or plans to establish one.</p>

Topic	2021 Recommended Action/s	Interpreted (current) status and HGE comments
	Prepare a report on cultural water requirements including: • location of values (as appropriate) • threats • limits to change • delineation of protection areas • baseline condition • monitoring requirements	<u>Not Delivered</u>
	Monitor cultural values in high-value areas identified through the review and agreed by the ARG	<p><u>HGE Comments (as above)</u> – Still in very preliminary stages, note proper identification and monitoring still to be instated in the future, see below bullet points from - Implementation Actions Report (NTG 2026)</p> <ul style="list-style-type: none"> <li>• <i>Identify and document key Aboriginal cultural sites and species</i></li> <li>• <i>Identify and document the water requirements of key Aboriginal cultural sites and species</i></li> <li>• <i>Key cultural water sites are included in monitoring program.</i></li> </ul>
	Document historical cultural water places and changes (e.g., loss of waterholes, coolibah swamps)	
	Investigate health of coolibah trees at Traeger Park and determine if degradation is linked to extraction; develop mitigation options if needed	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – There is no mention of Traeger Park in any of the DAS WAP documentation (NTG 2026a-c &amp; Water Assessment Branch 2025). This is despite numerous concerns raised by Traditional Owners on the health/impacts related to these sacred Coolibah trees at Traeger Park (NTG 2021a&amp;b).</p>
	Identify opportunities to restore cultural water values at sites such as Ilparpa Claypans, Heavitree Gap, Coolibah Swamp, Telegraph Station	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> – From Pg 107 Water Assessment Branch (2025) “While the degree of hydraulic connection between these sediments and the Inner Farm is uncertain, overflows from the treatment ponds and contaminant leaching from disposed refuse are likely to pose a direct risk to the groundwater systems here, particularly following periods of significant rainfall and recharge. Overflows from the treatment ponds flow into Ilparpa Swamp, which is a shallow drainage depression extending along the base of Blatherskite Range.</p> <p>NB: Impact potential has been reiterated in 2025</p>

Topic	2021 Recommended Action/s	Interpreted (current) status and HGE comments
	Explore opportunities for Aboriginal rangers to be involved in monitoring and remedial works	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> - Key cultural water sites are not included in the current monitoring program.</p>
	Ensure cultural water requirements are considered during assessments under Part 5 of the Act	
	Consider impacts of drainage works and land-use changes on flows to cultural sites; identify opportunities for design/landscaping to restore values	
	Provide information on outstation water quality	<u>Unclear whether addressed</u>
<b>Social &amp; Economic Considerations</b>	Gather information on environmental and cultural values and limits to change in the Amadeus Basin outside the plan area to clarify licensing processes	<p><u>Not Delivered</u></p> <p><u>HGE Comments</u> - Key cultural water sites are not included in the current monitoring program holistically, neither inside or outside the plan area.</p>
	Consider extending the water allocation plan across the entire Water Control District at plan renewal	<u>Area Not Extended</u>

## Water Resources Division Recommendations (*Water Assessment Branch 2025*)

The Water Assessment Branch (2025) recommendations are included in Table 4. Whether these recommendations have been included within the DAS WAP implementation actions (NTG 2026c) has been evaluated. HGE supports all the recommended actions in Table 4.

The DAS WAP implementation actions (NTG 2026c) are somewhat weakened in comparison to the Water Branch Assessment recommendations (2025), for example regarding water quality there is an implementation action to conduct a comprehensive review and update of the groundwater quality monitoring program but only in relation to stock and domestic purposes. This results in areas of the plan area being omitted from this action, particularly areas that are used for public drinking water supply (e.g. Mereenie Aquifer System).

The implementation actions also contain the phase 'consider the implementation' several times, this is considered non-committal language and therefore not precautionary. Given the situation firm commitment to actions and a rapid response to address these shortcomings is warranted.

Table 4: Water Assessment Branch (2025) recommendations

2025 Recommended Action	Addressed in Implementation Actions (NTG 2026c)
<b>Medium Term – 5 years</b>	
<p>GW monitoring network reevaluated to assess</p> <ul style="list-style-type: none"> <li>the suitability of current monitoring bores including age of bore infrastructure and quality/similarity of monitoring data provided.</li> <li>Additional monitoring bores south and west of the Roe Creek borefield to better delineate drawdown cone/connectivity with overlying units.</li> <li>Additional monitoring recommended to assess the anomalous rising groundwater levels at Outer Farm and the airport.</li> </ul>	<p>Partially addressed in Action 3.3.1: <i>A comprehensive review and update of the groundwater quality monitoring program.</i></p>
<p>GW quality survey across the plan area for:</p> <ul style="list-style-type: none"> <li>physiochemical parameters, nutrients, metals, PFAS, and pesticides.</li> <li>focus on selected sites that effectively represent the water quality distribution in different aquifers to identify potential sources of contamination.</li> <li>SW should also be surveyed at the next possible occasion, and the data reviewed to inform future monitoring.</li> </ul>	<p>Not directly addressed</p>
<p>Investigate potential contamination from the Alice Springs airport through:</p> <ul style="list-style-type: none"> <li>installation of suitable bores to the south and west of the airport, in the Outer Farm sediments and underlying Mereenie Sandstone.</li> <li>Sampling for PFAS and hydrocarbons in addition to standard monitoring suite (metals, salts, nutrients).</li> </ul>	<p>Partially addressed in Action 3.1.: <i>Further investigate the groundwater flow mechanisms to determine the connection to the alluvial basins for recharge potential and contamination risks.</i></p>
<p>Investigate potential contamination associated with the sewerage treatment ponds. Power and Water have a number of shallow bores south of the ponds which could be sampled to map salinity migration.</p>	
<p>Undertake groundwater quality sampling south of Heavitree Gap to understand how extractions at the Roe Creek borefield are affecting salt loads in the Mereenie Aquifer System</p>	<p>Not directly addressed</p>
<p>The extent of the Inner Farm aquifer and connection with nearby alluvial sediments requires further investigation, a risk of saline or otherwise contaminated water entering the Inner Farm alluvial aquifers and moving west towards the community of Ilparpa.</p>	<p>Partially addressed in Action 3.1.1 <i>Further investigate the groundwater flow mechanisms to determine the connection to the alluvial basins for recharge potential and contamination risks.</i></p>
<p>Investigate connectivity between alluvial basins, Wannardi and the Outer Farm Basin, and the Mereenie Aquifer System to confirm groundwater flow paths and throughflow potential.</p>	<p>Not directly addressed</p>
<b>Long Term – 10 years</b>	
<p>Further analysis of:</p> <ul style="list-style-type: none"> <li>implications of relocating the water supply borefield from the present Roe Creek borefield to the Rocky Hill site.</li> <li>Note that the drawdown cone from the current borefield is already impacting the proposed Rocky Hill site.</li> </ul>	<p>Not directly addressed</p>
<p>Investigate the rising groundwater levels in Outer Farm bores</p>	<p>Not directly addressed</p>
<p>Investigate other groundwater resources in the plan area, including aquifers in the Jay Creek Limestone, Mereenie Sandstone in the vicinity of Owen Springs Reserve, the Todd River Dolostone, Chandler Limestone and Giles Creek Dolostone units. These may provide alternative, good quality water for horticultural, ecotourism and homestead use.</p>	<p>Not directly addressed</p>
<p>Further investigate the riparian zone of the corridors provided by the Todd River and Roe Creek, and their tributaries. Future planning could consider limiting infrastructure developments that interfere with flow and sediment dynamics within these corridors in order to maintain biological movement and connectivity.</p>	<p>Partially addressed in Action 3.3.2: <i>Consider implementation of regulatory tools measures and communication materials to maintain the drainage corridors alongside the ephemeral Todd River and Roe Creek systems.</i></p>

## HGE Recommended Actions

A succinct list of recommended studies and actions to better fill knowledge gaps in relation to the DAS WAP are presented below. But in essence all of the studies listed in the medium-term Water Assessment recommendations (e.g. Table 4) should be carried out asap. The actions in Table 3 should also be implemented and include addressing cultural knowledge gaps, identifying sites, monitoring and moving towards cultural and environmental water requirements. These recommendations are expanded on further below in relation to technical specifics and expectations that follow.

1. Create a hydro-cultural dataset to identify gaps and support licence impact assessments. Additional groundwater monitoring bores are likely required near cultural assets, ideally each site should monitor groundwater, surface water and vegetation condition.
2. Conduct comprehensive Groundwater Dependant Ecosystem (GDE) studies on the dependant vegetation (e.g. root extension rates, water quality thresholds, i.e. plant ecophysiology studies and on ground monitoring).
3. Conduct ongoing and regular remote sensing analysis to examine changes in vegetation condition across the plan area. On ground monitoring is likely also required as remote sensing may struggle in areas of sparse trees.
4. Investigate aquifer connectivity with targeted studies and updated conceptual and numerical models.
5. Expand monitoring to improve recharge/discharge estimates.
6. Expand alluvial groundwater monitoring in the Rocky Hill and Roe Creek zones.
7. Conduct stygofaunal sampling program focusing on likely stygo habitats and hydro-cultural sites within the plan area e.g. springs, waterholes or creek beds.
8. Monitor culturally significant sites with paired surface-groundwater data.
9. Reassess environmental water allocations and develop robust EWRs and triggers.
10. Establish water-source protection zones in line with the DAS WAP; with site-specific controls. Water quality source protection plans and land use exclusion areas for public and drinking water supply bores (i.e. areas where certain land uses are unacceptable) need to be developed/updated.
11. Expand water-quality monitoring (Per- and polyfluoroalkyl substances (PFAS), coliforms, metals, acid-sulfate risks) and conduct a bore/water use census.
12. Assess contamination pathways at high-risk sites with new bores.
13. Reduce licence volumes where long-term use is far below allocation.

### Better Investigate Aquifer Connectivity

Undertake targeted studies to quantify vertical and lateral hydraulic connectivity between the alluvial aquifers (Town Basin, Outer Farm, Inner Farm, Wannardi), Bitter Springs Formation and deeper Amadeus Basin units. This should include installation of dual/nested monitoring bores, aquifer testing, tracer investigations, and incorporation of results into updated numerical groundwater models. Models should undergo sensitivity testing, predictive uncertainty analysis and management measures should address potential worst-case predictions with reduce pumping and stop pumping management triggers developed.

### Improve Recharge/Discharge Estimation

Increase monitoring coverage to refine recharge/discharge assessments, particularly in the Amadeus Basin. Collect long-term groundwater level data from this expanded monitoring network and better evaluate recharge during episodic flow events. High resolution groundwater level data (minimum monthly or preferably daily via dataloggers) is required to do this preferably with geochemical tracers to quantify recharge discharge relationships.

### Surface Water and Groundwater Co-Monitoring

Establish paired monitoring sites at culturally significant potentially groundwater-dependent location (e.g. waterholes, springs, wetlands) and incorporate water level, water quality and vegetation monitoring. Cultural water places are diverse, significant, and individualised—meaning site-level understanding is essential and even what are relatively common plant species may have irreplaceable cultural value (birthing trees etc). Proponents seeking new water licences should be required to demonstrate a lack of risk to local sites using analysis based on measured data.

### Develop a Hydro-Cultural Baseline Dataset

The CLC should consider creating a comprehensive dataset identifying cultural sites with values linked to water features. This dataset can be an internal dataset to identify monitoring gaps and can also be used as a reference if new/existing proponents apply/reapply for more water on country.

### Reassess Environmental Water Allocations

Based on the expanded monitoring network a review of environmental allocations from the ESY to ensure protection of GDEs, cultural sites, wetlands, waterholes, and riparian vegetation should be conducted. EWRs need to be developed for all of these features not just an assumption that the 8m depth to groundwater level criterion for the river red gums and allowing a simple % of water for the environment will prevent impacts. This is a simplistic and outdated approach to water management. The proposed ecophysiology investigation, wider existing environmental impact assessment and development of EWRs are critical to help develop reduce pumping and stop pumping management triggers which should be required for all culturally relevant areas. Apply precautionary buffers where uncertainty remains.

### Establish Water Source Protection Zones

Designate protection zones around sensitive hydro-cultural features, GDEs and public water supply aquifers/bore fields, with specific extraction triggers, decline thresholds, land use restrictions and monitoring requirements specific to each site. There is currently a high degree of risk that a significant contamination event could threaten public drinking water supply and the environment.

### Expand Water Quality Monitoring Suite

Include PFAS, bacteria coliforms (e.g., E. coli), metals as per drinking and recreational water guidelines, and acid-sulfate indicators in monitoring programs. Prioritise high-risk areas such as Ilparpa Swamp, sewerage ponds, and industrial precincts such as the airport where PFAS has almost certainly be used in the past. Given the large number of identified PFAS contamination issues near airports around Australia due to the use of firefighting foam, this is seen as a critical knowledge gap.

### Investigate Contaminant Risk Areas

Develop conceptual contamination models for sites with identified risks, and install new monitoring bores to delineate pathways, especially near the airport, landfill, and sewerage treatment areas.

### Reduce Licencing Extraction Amounts Where Applicable

The amount previously licenced in the plan area was significantly greater than the amount abstracted in the plan area (from 2019-2024), with the amount licenced totalling 8,510 ML and the actual amount used 2,400 ML (NTG 2025). It is unclear why proponents are given access to larger allocations than they are using and this creates a risk that abstraction could increase by over 3-fold without any requirement to contact the NTG or other stakeholders. Note the exception to would be reserving future public drinking water supplies by Power and Water Corporation. To reduce the risks of over-abstraction and to allow better water availability for other users, a framework where licence amounts are reduced following a number of consecutive years where abstraction is significantly below allocation is suggested. A bore/water use census is urgently needed.

## Specific Document Extract Comments

### Draft Alice Springs Water Allocation Plan 2026-2036

Pg 5 - In Alice Springs, whilst the total resource volume under management is vast, it is located in the arid zone with little modern recharge. The plan authorises a proportionately small and slow groundwater drawdown to occur over centuries through extraction to meet the towns' water supply needs due to necessity, where no other cost-effective supply exists.

Comment – This statement shows that extraction outweighs recharge and therefore it is not sustainable over the long-term; in Indigenous time 200 years is a short period relative to the time span of living on country. The effects of depressurising the confined areas of the Mereenie Aquifer system have not been explored. Whether this aquifer discharges (or used to discharge prior to abstraction) into upper aquifers is not well understood.

Pg 11 – “Extensive work over recent years to map the extent of groundwater dependent ecosystems across the plan area has been completed to inform the management. The river red gums are protected through the plan, which limits extraction through a licence when the groundwater level exceeds eight meters below ground level in the Todd River corridor.”

Comment – These needs further refining in regards to how this groundwater level is managed and measured, for example is the 8 m below ground water level measured in the abstraction bore, will every licenced abstraction bore have an accompanying monitoring bore or will the level be monitored via the NT Government monitoring network and how will unlicenced users impact on groundwater levels. There is also no assessment of the current condition of these vegetation GDEs.

### Draft Alice Springs Background Report 2026-2036

Pg 6 – “The plan integrates improved scientific knowledge that suggests the resource may be larger than previously estimated and is being integrated to numerical modelling and management of the resources. The Mereenie Aquifer System is well understood with vast storage volume, the limited modern recharge means taking water for the next 100 years will result in with a predictable drawdown over decades to centuries or about 2% reduction in the total storage volume.

And

“The ESY authorises groundwater drawdown to occur through extraction to meet the urban water supply needs for Alice Springs, where no other cost-effective supply exists.””

Comment – As stated above, extraction exceeds recharge, making the system unsustainable over an Indigenous timeframe. The effects of slowly depressurising the confined Mereenie Aquifer and its related hydraulic connections with other aquifers remain unclear.

Pg 6 – “The plan manages the primary groundwater resources, rather than all groundwater, in the plan area.”

Comment – The primary groundwater resource aquifers may be connected (and recharge/discharge) to other less/non-productive aquifers that provide important environmental water flows and support hydro-cultural values in this arid zone. How the abstraction within the allocation plan area impacts aquifers not included in the plan should be investigated further.

Pg 10 – “The department employs risk and adaptive management approaches to address uncertainty, reducing the likelihood that errors in ESY estimates will compromise the resource, environment, or water users. These approaches include ongoing data collection and analyses, scientific investigation to improve confidence and reduce uncertainty over time, and adjustments to ensure settings remain appropriate and in line with articulated objectives, risk appetite and the latest information and conditions over the life of the plan.”

Comment – The ESY estimates for the Mereenie Aquifer System draw on recent groundwater modelling work by Knapton (2022). In our opinion, based on our experience, the groundwater model should undergo a sensitivity and uncertainty analysis. Reviewing the Knapton (2022) work was outside the scope of this review, however it appears this level of analysis was not applied to the model. The evidence for this is in the specific yield (Sy) value for the Mereenie Aquifer System, whereby a Sy value of 0.1 has been applied homogeneously across the entire Mereenie Aquifer System. The sensitivity of this parameter, and other hydraulic parameters in the model requires assessment. The following extract and underlines from Pg 26 of the background report supports these types of analysis, particularly given the range of values from core testing - *Specific yield (Sy) derived from core testing ranges from 0.05 to 0.66 in Roe Creek samples and 0.05 to 0.23 in Rocky Hill samples, with an overall mean of 0.16. These results support the application of a conservative Sy value of 0.10 in regional groundwater models (Knapton, 2022).* Even if conservative a regional scale the area is likely highly heterogeneous, hence that Sy value may not be conservative at a local scale.

Pg 15 – “Hydraulic connectivity between the shallow alluvial aquifers and the deeper Amadeus Basin aquifers is weak and highly localised, occurring only where major fractures intersect or where palaeochannels locally breach the confining strata.”

Comment – These are the areas that need significantly more investigation and monitoring to enable potential impacts from abstraction to be predicted. Highly localised connectivity between shallow alluvial aquifers and the deeper Amadeus Basin could present highly localised impacts to important hydro-cultural features connected to shallower alluvial aquifer such as waterholes and springs. Geological faults are mapped on Pg 29 and 45 of the

Water Assessment Report (Water Assessment Branch 2025). These faults and more localised faults yet to be identified need further investigation.

Pg 29 – “The plan identifies groundwater dependent ecosystems (GDE) as priority assets, particularly where the landscape concentrates water into wetlands (Ilparpa Swamp, Conlon’s Lagoon) and shaded river corridors.”

Comment – Additional monitoring is required at Ilparpa Swamp (where sewerage treatment ponds overflow) to measure contamination risks; this impact has not been addressed via the monitoring components of the DAS WAP. No additional monitoring sites are specified in the draft implementation actions (NTG 2026c).

Pg 34 – “High GDE model accuracy: 89% overall (true positive rate ~80%, specificity ~94%) with high confidence in likelihood of GDE.”

Comment – The GDE mapping appears to have been conducted well with remote sensing, statistical modelling, field verification and a logistical regression framework applied. However, a true positive rate of 80% means potentially 20% of GDE sites will be misidentified. The following extract from Pg. 30 demonstrates that each individual site holds cultural significance and water is commonly associated with cultural places - *Each water place, whether a permanent soak, an ephemeral claypan, or a rock hole in the hills, has a specific name, history, and set of cultural protocols that define how it should be cared for.* Important cultural sites should be assessed at a local scale for impact risk to GDEs. How has the condition of these GDEs changed through time? Are they not impacted, slightly impacted and badly impacted?

Pg 34 – “Low confidence and knowledge gaps = Data knowledge and issues related to defined Aboriginal cultural sites identified, and their water requirements met.”

Comment – Following on from the comment above; there is low confidence in meeting the water requirements for individual cultural sites.

Page 35 – “The water resource zones managed by the plan differ from the previous plan due to the removal of some and consolidation of others into three management zones. Surface water in the catchment as well as groundwater basins Inner Farm and Wannardi, are of lower-quality, yield and less competitive resources, which have been removed from the Plan and will be managed through policy rather than within the plan.”

Comment – Resources managed under the plan are subject to additional monitoring, research and regulatory rules. The Inner Farm Basin lies within the area where the Alice Springs sewerage treatment ponds are and requires additional monitoring for contamination. The Todd River main corridor runs through the Inner Farm Basin and there is evidence of connectivity with the underlying Bitter Springs Formation (Water Assessment Report 2020 Pg. 61). Abstraction in the Inner Farm and Wannardi groundwater basins has the potential to impact upon aquifers in the DAS WAP and warrants their inclusion. These aquifers should be managed as a whole system.

Page 35 – “The remaining resources within the Amadeus Basin have been consolidated due to their hydraulic connection and similar characteristics. This improves management clarity, monitoring

efficiency, and stakeholder engagement to manage the three most significant resources in the plan area.”

Comment – We disagree with the underlined text. This consolidation potentially puts other less significant resources that support hydro-cultural values at greater risk. And as mentioned above this overlooks adjacent or overlying aquifers which are potentially connected and can impact or be impacted upon.

Pg 35 – “The Mereenie Aquifer System could continue meeting Alice Springs’ long-term water needs, despite the recognition that it was a finite groundwater resource with limited modern recharge.”

Comment – The Western and Indigenous ideas surrounding time differ significantly (Milonas 2023). If continued depletion is the management philosophy a large body of additional data and analysis are required to demonstrate that impacts are Acceptable to all parties.

Page 35 – “The plan manages the most significant or primary aquifers in the plan area, rather than all geologically defined resources of the previous plan.... The remaining resources within the Amadeus Basin have been consolidated due to their hydraulic conductivity and similar characteristics.”

Comment – As stated above - This puts other less significant resources that support hydro-cultural values at greater risk.

Pg 36 – “The distribution of licences across the plan area and aquifers, demonstrates very little competition, which has remained consistent over the last 10 years.”

Comment – It cannot be assumed that this is the trajectory for the next 10 years. Petroleum exploration is currently being pursued in the NT and it would be more precautionary to assume greater development and pressure on resources. The NT has previously over-allocated several aquifers (Town and Wannardi, NTG 2021a). Fortunately, abstraction volumes have not equalled licenced amounts in many aquifers. Over-allocation has been overcome in the DAS WAP by increasing the allocation in the Town Basin and removing the Wannardi from the plan. The Technical Review (2021a Pg 63) stated “*The Wannardi Basin is over-allocated; existing groundwater bores frequently fail, and there is significant groundwater dependent vegetation in the area.*” This is a concern given the Wannardi Basin appears to overlie the north-west corner of the Roe Creek Borefield boundary (See Pg 46 of Water Assessment Report 2025 for a map). In addition, Tickell (2011) commented that the Wannardi Basin in the White Gums area could not sustain an expansion of current water extraction from the Basin and inferred any new subdivisions in this area will need to access reticulated water supplies to ensure reliable supplies (Tickell, 2011).

Pg 36 – “The ephemeral nature of surface water in the arid zone means that any use is opportunistic rather than a reliable source for sustained use, and as such is not further assessed.”

Comment – Unlicensed surface water use, while opportunistic, can have impacts on surface expressions and pools along rivers. Removing surface water during flooding events (particularly during small to medium events) could be removing environmental water from cultural sites, or from areas connected to cultural sites, during dry periods.

Pg 37 – “Non-consumptive environmental provisions are set aside prior to the calculation of the ESY. However, section 22B (6) of the Water Act 1992 requires that the plan include an allocation to the

environment from the ESY. Although the majority of the water balance remains unallocated to maintain environmental water requirements, to ensure the plan is compliant with the Act, a small allocation to the environment is also provided from the ESY.”

Comment – a “a small allocation to the environment” by no means guarantees there will not be impacts. The ESY, environmental allocations and amount unlicensed/unallocated within each aquifer are not currently clear. For example –

- The background report (NTG 2026a pg 33) states that 17,895 ML was currently licenced.
- The DAS WAP ESY has been set at 24 670 ML per year
- From these figures it means 6,775 ML is currently unlicensed, (*however removal of the Wannardi and Inner Basins from the current plan upsets these calculations*)
- The DAS WAP ESY has 5,800 ML as AWR, based on these calculations, of the 6,775 ML unlicensed around 975 ML could be applied for outside of AWR via licencing in WAP aquifers.
- There is also 470ML in the DAS WAP ESY allocated to the environment and 1250 ML for rural stock and domestic which this isn’t required to be licenced.
- How much water is available for allocation across each zone is unclear from our review.

#### Draft Alice Springs Implementation Actions 2026-2036

Pg 4 – “The primary risks to groundwater resources are changes in groundwater recharge and water availability, reduced discharges to surface water sites (rivers and springs), deterioration of water quality, and greater climate variability. Groundwater levels are influenced by the amount of rainfall and recharge, the amount of water that is used and where the water is extracted.”

Comment – The underlines highlight the potential localised impacts if water extraction occurs close to or propagates towards cultural sites. The implementation plan monitoring does not address monitoring at important cultural sites such as waterholes and wetlands. Groundwater contamination from sources such as the landfill, sewerage treatment ponds or the airport is another primary risk.

Pg 6 “The monitoring network has been consolidated, removing sites that were surplus to requirements whilst maintaining adequate coverage across the plan area.”

Comment –The monitoring network needs expanding, particularly in areas where shallow and deep aquifer could be connected, at hydro-cultural sites and in areas where potential contamination exists e.g. sewerage ponds and airport. A bore condition assessment/census should be undertaken across the area as suggest by the Water Assessment Report (2025) – *“As many of the current monitoring bores in the greater Alice Springs region were drilled more than 50 years ago, there is a need to reassess the current network in terms of its suitability for ongoing monitoring, particularly if water quality sampling is desired.”* This type of work is not explicitly stated in the implementation actions, neither is the commitment to additional monitoring sites.

Pg 6 – “The monitoring program is reviewed annually and includes:

- flow gauging monitoring at 8 surface water sites

- water level monitoring at 25 groundwater sites
- water quality monitoring at 6 groundwater and 4 surface water sites.”

Comment – Which aquifers are these groundwater monitoring bores screened over? Is there adequate coverage across all the aquifers to determine vertical hydraulic gradients? There should be several sites where groundwater monitoring bores are screened over different aquifers. For example, in areas where the Outer Farm overlies the Mereenie systems, there should be a monitoring network to assess vertical connectivity, this would provide data to better estimate vertical fluxes upon. Surface water expressions such as springs, waterholes and ephemeral creeks should have surface monitoring coupled with groundwater monitoring bores in all underlying aquifers to estimate potential discharge/recharge to/from underlying aquifers/creeks. In our opinion, based on our experience, the current monitoring network does not manage risks to the resource as low as practicably possible.

### Alice Springs Water Allocation Plan 2012-2026 - Technical Review

Pg 37 – “The occurrence and condition of stygofauna is not evaluated. Feedback during the review expressed concern about the lack of knowledge of stygofauna in the plan area.”

Comment – No further work on stygofauna or troglifauna appears to have been incorporated into the DAS WAP. There has been significant advancement in the scientific knowledge of these animals over the last decade, and many new species have been discovered in Australia. For example a major biological survey in the Pilbara has increased the number of stygofauna known from the region by almost 700% and revealed the region is a global hotspot for these life forms and that they have a significant role to play in water quality (Scanlon et al. <https://library.dbca.wa.gov.au/static/Journals/080052/080052-21.035.pdf>). The DAS WAP implementation actions should include a comprehensive stygofauna or troglifauna sampling program. The alluvial aquifer and karstic-limestone aquifers are likely highly suitable habitats.

Pg 37 – “Changes in the condition of groundwater fed semi-permanent waterholes is not evaluated, as there is not a well-defined baseline for comparison. Feedback during the review expressed concern about sedimentation of waterholes reducing the amount and frequency of water persisting in waterholes.”

Comment – A baseline network should have been built upon or established. As noted herein, a baseline hydro-cultural dataset is lacking and incomplete cultural site identification has been recognised as one of the key risks in the plan by the Department of Lands, Planning and Environment. Implementation actions include identification and monitoring of key cultural sites and species, however timeframes are between 2030-2033 and given the lack of a baseline dataset was recognised a decade ago, the implementation actions are not timely or proactive.

Pg 38 – “Additional performance indicators are needed to evaluate plan performance with respect to the waterways, groundwater dependent vegetation away from river corridors, wetlands, springs and flood-outs to the extent that these are influenced by the water allocation plan.”

Comment – Regarding springs, during our review we have not seen any monitoring included in the plan for any of the springs in the WAP area or surrounds.

Pg 33 – “Traditional Owners have not been involved in water allocation planning to the level they would like.”

Comment – This is still the case and the lack of identification of cultural sites and values is an area with inherent risk.

Pg 40 – “In the Town Basin entitlements exceed the ESY but use throughout the review period has been less than the ESY. In Wannardi, as the estimate of rural stock and domestic use exceeds the ESY it can be expected that use also exceeded the ESY. It is also noted that some bores draw water from underlying Bitter Springs Formation in the Wannardi Basin. Water taken from the Bitter Springs Formation, and how this source relates to the ESY for the Wannardi Basin should be better described in the next plan.”

Comment – How the underlying Bitter Springs Formation relates to the ESY of the Inner Farm Alluvium should also be better described. Removing the Wannardi Formation from the 2026 draft plan and disregarding its connectivity with adjacent aquifers is not precautionary, in our opinion. We have previously commented on this herein.

Pg 41– “It is noted the plan relies on the assumption that there are no discharges to groundwater dependent ecosystems from Amadeus Basin aquifers.”

Comment – This is an assumption that needs to be demonstrated by an appropriate groundwater monitoring network. In our opinion, based on our experience, the current network or DAS WAP does not demonstrate this critical assumption.

Pg 59 – “The work emphasises GDEs and inundation dependent ecosystems (IDEs) are not confined to river red gum areas but include ecosystems with trees including ghost gums, bloodwoods, coolibah and hakea. Preliminary work for this review indicates the same findings apply in the Alice Springs plan area. The plan suggests “there are no springs or natural ecosystems dependent on groundwater from the Amadeus Basin within the district”. The occurrence of GDEs and sacred sites attached to GDEs would have a significant implications to aquifer drawdown strategies in the Mereenie aquifer and hence this assumption warrants investigation.”

Comment – See previous comment on the critical importance of validating the assumption that no GDEs rely on the Amadeus Basin within the WAP area. Also IDEs are typically defined as inflow dependant ecosystems not inundation dependant ecosystems.

### [Alice Springs Water Allocation Plan 2016-2026 – Review Report](#)

Pg 20 – “The following recommendations in Table 7-1 are made to address changes to environmental cultural, social and economic factors. These should happen before plan renewal in order to improve the next plan except where otherwise stated. Responsibility for these tasks and their sequencing should be outlined in an implementation plan prepared by the department by 30 June 2021.

Comment - To the best of our knowledge an implementation plan was never published by the Department 2021.

## Alice Springs Water Resource Assessment

Pg 13 – “High salinity levels have been recorded in the Town Basin, along with the presence of bacteria at certain locations. Groundwater monitoring data is generally limited, with most records dating back to pre 2000.”

Comment – There should be a more comprehensive water quality monitoring network. As note above herein. Bacterial sampling should be a regular part of monitoring to help identify potential contaminant pathways so they can be adaptively managed and/or prevented.

Pg 36 – “Over the past 60 years, groundwater levels have fallen by up to 60 m, which has caused a drawdown cone and localised reversal of the natural hydraulic gradient towards the borefield. The change in groundwater flow patterns is evidence that the Amadeus Basin sediments are in strong hydraulic connection with each other.”

Comment – A change in local flow patterns has occurred, there is an evident drawdown cone and strong connectivity has been established. There needs to be more understanding (and monitoring) of how the Mereenie Aquifer System connects to overlying alluvial aquifers to assess risks from potential contamination and/or discharge/recharge contributions. This type of study is recommended as part of the long-term work plan in the assessment report (2025 Pg 14).

Pg 42 – “A comparison of recharge rate estimates derived from the water table fluctuation method and chloride mass balance methods is presented in Table 6. The results are based on very limited datasets and are offered for comparative purposes only.”

Comment – Recharge has been estimated via two methods; the chloride mass balance and the water table fluctuation method. Both methods have inherent uncertainties in this context, and are not suited for confined systems (e.g. Mereenie System) while the second needs a dataset of adequate sample size and coverage and can only work in areas of free drainage rainfall recharge without large amounts of runoff or surface water groundwater interactions. Table 6 demonstrates the poor coverage over the Amadeus Basin, with no reliable bores available for recharge calculations.

Pg 44 – “During dry periods in arid and semi-arid Australia, permanent and semi-permanent waterholes may represent the only aquatic habitat for biota that require permanent water to survive (Morton et al. 1995). There are some organisms with desiccation-resistant life stages that may be able to survive in ephemeral habitats on the floodplain of the River Murray (Boulton & Lloyd, 1992; Jenkins & Boulton, 2003). Rahman et al. (2025) report on desiccation-resistant eggs of ostracods (seed shrimps) in Western Australian which are dispersed by wind, water, or animals over extended dry periods to ensure the persistence of ostracod populations in temporary waterbodies.”

Comment – The desiccation-resistant life-stages and ecological water requirements of the flora and fauna associated with wetlands and surface water features (e.g. waterholes) requires greater understanding for optimal management. For example which macroinvertebrates are present and how long do they need to have aquatic habitat to complete their life cycles?

Pg 44 – “In the plan area, surface water flows also provide opportunities for groundwater recharge to the alluvial sediments of the Town Basin, Inner Farm, Outer Farm and Wannardi Basins. During periods of significant, sustained flows, the Todd River and its main tributary Roe Creek, are thought

to connect the alluvial basin sediments with the greater Amadeus Basin sediments hydraulically, although the degree of this connection has not been investigated to date.”

Comment – This connectivity, particularly during flood events, needs better understanding. Recharge estimates could then be better refined. Continual long-term drawdown due to abstraction in the Mereenie Aquifer System could alter these hydraulics significantly, as has been seen in the hydraulically gradient reversal surrounding the Roe Creek Borefield due to abstraction.

Pg 44 – “The department does not maintain groundwater models for the alluvial aquifers or the wider Amadeus basin sediments in the vicinity of the Roe Creek borefield.”

Comment – The DAS WAP repeatably references adaptive management however groundwater models in WAP aquifers are not maintained. Groundwater models should be reiterative and regularly calibrated with measured data to assess prediction with reality and apply adaptive management proactively and where required.

Pg 45 – “Indications from the modelling scenarios run suggested a reinjection rate of 600 ML per year would be feasible, assuming hydraulic conductivities of between 20 and 50 m per day. The project commenced with a number of reinjection trials following extensive feasibility studies but is currently not operational.”

Comment – It is unclear from our review the status of the reinjection trials and whether feasibility has been proven. We can provide further comments on this if requested, we have previous experience in managed aquifer recharge projects.

Pg 47 – “Currently there is a lack of long-term monitoring data available in areas outside of the water management zones, particularly to the south and west of the Roe Creek borefield. Additional groundwater monitoring should also be considered around the higher water quality pollution risk areas, such as Ilparpa Swamp and the Alice Springs airport.”

Comment – Agreed, as noted herein, the monitoring needs expanding.

Pg 52 – “Throughflow from the Wangardi Basin to the Mereenie Aquifer System has been inferred from connectivity between the sediments, and the response in hydrographs in the vicinity of Laura Creek.”

Comment – There should be more work evaluating how throughflow could change under current and proposed water use to assess the impact of throughflow volumes decreasing into the Mereenie Aquifer System. Question such as, how will this impact upon water supply and the environment? need to be addressed. Note that the Wangardi Basin was over allocated during the previous plan period 2016-2026.

Pg 61 – “The water level in RN003685 (Figure 35) has remained below 8 mBGL for the duration of the plan period, although it is possible this bore is open to the underlying Bitter Springs Formation as well as the alluvium. Water levels have undergone seasonal fluctuations in response to recharge at this bore in a manner similar to bores screened in the alluvium, so it is likely there is hydraulic connection between the formations here.”

Comment – See previous comments on monitoring and evaluating the vertical connectivity between the aquifers. There is evidence of many connections that haven't been properly accounted for in water balance calculation or groundwater modelling.

Pg 65 – “This area merits further investigation to understand why aquifer levels are rising and appear unaffected by extraction at the Roe Creek borefield.”

Comment – Agreed, this is very important, essentially the system is behaving contrary to the understanding in this area. This demonstrates the lack of understanding of heterogeneity within the Basin, particularly at localised scales.

Pg 66 – “It is unclear to what degree the Wanngardji alluvium remains in hydraulic connection with the underlying Palaeozoic aquifers of the Roe Creek borefield, particularly the Mereenie Sandstone, as water levels are quite deep and regularly impacted by extraction.”

Comment – See previous comments and note the acknowledgement of a connection between the Wanngardji alluvium and the Roe Creek borefield. This needs better quantification.

Pg 77 – “The nature of hydraulic connection between aquifers in the Pertnjara Group sediments and underlying Palaeozoic aquifers is likely to be variable and dependent on the proximity to the edge of the Amadeus Basin, regional dip of sediments and development of secondary porosity pathways. Potential connection with the underlying Mereenie Sandstone unit is important to confirm recharge and groundwater throughflow into the Mereenie Aquifer System, however to date there have been no inter-aquifer connectivity tests undertaken to test the strength of the possible connection. Long term monitoring records are limited in regions away from the main zone's, although time series data from bore RN011748 close to the Hugh River shows historical recharge response to rainfall (section 2.8). Regional scale monitoring and pumping tests should be considered in areas outside of the current zone boundaries, particularly to the southeast of the current Roe Creek borefield, to provide some indication of how Pertnjara Group aquifers may be being impacted by extractions at the borefield.”

Comment – Agreed, these types of aquifer tests are required to better define hydraulic connections between aquifers. They are included in our recommendations section.

Pg 83 – “The presence of coliform bacteria indicates possible contamination from human or animal waste and highlights the need for improved sanitary protection.”

Comment – Water quality monitoring should regularly include bacterial monitoring.

Pg 82 – “The pH levels were mostly within the acceptable aesthetic range (6.5 to 8.5); however, deviations were observed at both extremes. Acidic conditions were recorded at RN002643, where the pH dropped to 4.8 on 7 October 2014. Other low values (6.2 to 6.42) were observed during dry seasons at multiple bores. Conversely, slightly alkaline conditions (pH >8.5) occurred at several sites during wet seasons, with values up to 8.8. The extremely low pH at RN002643 coincided with elevated aluminium concentrations (1,180 µg/L), indicating a potential link between acidic environments and increased metal solubility, which may enhance toxicity risks.”

Comment – This indicates potential for acid sulfate soil oxidation type reactions. An acid sulphate investigation should be undertaken to determine this risk of acidification from drawdown and oxygenation of previously saturated sediments.

Pg 107 – “The current Alice Springs landfill site and sewerage treatment ponds are located to the immediate west of the Inner Farm basin and may pose a potential risk to water quality in the underlying alluvial aquifers there. While the current extent of Inner Farm alluvial sediments has only been mapped as far as Blatherskite Park, immediately west of the Stuart Highway/railway corridor, shallow silty sand, gravel and clay aquifers (likely Quaternary) overlying weathered Aileron Province granite are present. While the degree of hydraulic connection between these sediments and the Inner Farm is uncertain, overflows from the treatment ponds and contaminant leaching from disposed refuse are likely to pose a direct risk to the groundwater systems here, particularly following periods of significant rainfall and recharge. Overflows from the treatment ponds flow into Ilparpa Swamp, which is a shallow drainage depression extending along the base of Blatherskite Range.”

Comment – This has been commented on previously herein, however this extract demonstrates the risk to aquifers. A contamination assessment and monitoring network needs establishing. It is noted the implementation actions include - *Undertake the Mparntwe/Alice Springs Aquifer Protection Study in the protection of the Roe Creek borefield from potential contaminants. With the Project proposal submitted, funded and delivered.* This study does not appear to address contamination from the airport or sewerage ponds as it is focussed on the Roe Creek borefield.

Pg 107 – *In relation to the Inner Farm/Ilparpa Swamp region – “although no water quality data is available post 2018.”*

Comment – The previous extract stated that overflows from the treatment ponds flow into Ilparpa Swamp and that the ponds are a potential risk to the alluvial aquifers in this area. Why monitoring ceased in 2018 is unclear, particularly given that contamination has been identified as a risk. Treatment ponds should be appropriately lined and have enough freeboard to withstand probable maximum flood (PMF) events. It should be assessed whether sewerage treatment facility requires upgrading given the risk to contamination of groundwater, surface waters and hydro-cultural features.

Pg 108 – “The Alice Springs airport presents another potential source of contamination, not only from potential fuel spillages, but historical PFAS (per- and polyfluorinated alkyl substances) use in firefighting foams. Located directly over the Outer Farm alluvium, palaeovalley sediments and the Mereenie Sandstone, there is a need to undertake further groundwater level monitoring, aquifer testing and water quality sampling, which should be facilitated through the installation of a number of purpose built monitoring bores. Nested monitoring bores should be constructed in the shallow alluvium (water table) if saturated, deeper palaeovalley sediments, and underlying Mereenie Sandstone unit to understand the degree of hydraulic connection and potential contaminant flow pathways that may be evident eastwards towards the Roe Creek borefield.”

Comment – Agreed, also PFAS should be included in the water quality sampling suite and a conceptual groundwater contamination model be developed to determine propagation pathways and contamination risks. The underlined text is very important and from this review it is unclear where nested monitoring bores occur within the plan area.

Pg 131 “Away from the alluvial basin areas, the nature of hydraulic connection between surface water flows and the underlying groundwater systems is less certain. ... Because of this, direct

recharge to underlying Palaeozoic units may occur through the Todd River and Roe Creek floodout areas, shown in Figure 92.”

Comment – Nested monitoring bores should be included in these potential recharge/floodout areas to better quantify connections and calibrate the groundwater model.

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