

REPORT ON COMMUNITY ENGAGEMENT KATHERINE TINDALL LIMESTONE AQUIFER WATER ALLOCATION PLAN 2019

Department of Environment and Natural Resources

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Recognition of Traditional Ownership

The Department of Environment and Natural Resources proudly acknowledges the Northern Territory's Aboriginal communities and their rich culture, and pays respect to the Elders past, present and future.

We acknowledge Aboriginal peoples as the Traditional Owners and custodians of the lands and waters on which we all rely.

We recognise the intrinsic connection of Traditional Owners to Country and value their contribution to managing the lands, waters and landscapes. We support the need for genuine and lasting partnerships with Traditional Owners to understand their culture and connections to Country in the way we plan and manage for the water of the Katherine Tindall Limestone Aquifer.

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Summary

- The draft Katherine Tindall Limestone Aquifer Water Allocation Plan 2019-2029 (DENR 019) was released for public consultation over a six-week period from 3 June to 15 July 2019.
- Public consultation was undertaken in accordance with the Communications and Engagement Plan supporting the release of the draft Katherine Water Allocation Plan 2019-2029 for public comment (May 2019).
- A total of thirteen formal submissions were received during the public consultation period.
- Common themes emerging from the public consultation included:
 1. Comments on the process for determination of estimated sustainable yield.
 2. Ensuring there is commitment to determine a more realistic and appropriate estimated sustainable yield.
 3. Support of the commitment to implementation of the plan, including allocating appropriate funding and resources.
 4. Comments on the timeframe for the plan (plan length).
- Outcomes from the public consultation were discussed with the Katherine Water Advisory Committee on 23 July 2019. In addition to the four common themes emerging from the public consultation period, the committee discussed trade arrangements under the water allocation plan.
- The Katherine Water Advisory Committee endorsed this Report on Community Engagement Katherine Tindall Limestone Aquifer Water Allocation Plan 2019 on 23 July 2019.

1 Introduction

The Katherine Tindall Limestone Aquifer Water Allocation Plan 2019-2029 (DENR 2019b) was developed during 2018 and 2019.

Stakeholders with interests or expertise in water or land in the Katherine region were engaged through the Katherine Water Advisory Committee (WAC). The Katherine WAC is a statutory body with a membership appointed by the Minister, and has a diverse membership that covers a diversity of interests including horticulture, recreational fishing, Aboriginal interests, environment, tourism, community interests, public water supply, council, and other uses. Schedule 1 details the Katherine WAC membership and the interest groups of members.

Key stakeholders including industry representative bodies, water extraction licence holders, special interest groups, Northern Territory Government agencies and the general public were invited to comment on the draft Katherine plan (DENR 2019) when it was released on 3 June 2019 for six weeks until 15 July 2019.

The purpose of this report is to provide an overview of the consultation activities undertaken, and describe how feedback received was considered and incorporated into the Katherine Tindall Limestone Water Allocation Plan. The stakeholder and community consultation report will be provided to the Minister for Environment and Natural Resources and made publicly available.

2 Consultation process

2.1 Katherine Water Advisory Committee

Expressions of interest were invited for the Katherine Water Advisory Committee in October 2016. The Katherine WAC was established in November 2016, and the first meeting of the WAC was held on 23 February 2017.

The Katherine WAC was established to provide advice and recommendations on the implementation strategy for the Water Allocation Plan for the Tindall Limestone Aquifer, Katherine (2016-2019) (NTG 2016), as well as provide ongoing opportunities for community engagement in water resource management in the Katherine region. The Katherine WAC was also established to provide advice and recommendations to the Department of Environment and Natural Resources on the development of a new plan for the management of the Katherine Tindall Limestone Aquifer water resource, in preparation for the expiry of the Water Allocation Plan Tindall Limestone Aquifer, Katherine 2016 – 2019 (NTG 2016) in August 2019.

A total of 16 nominations for the Katherine WAC membership were received, with 12 members appointed in November 2016. An additional member was appointed in December 2016, taking the total membership to 13. Schedule 1 details the Katherine WAC membership.

The purpose of the Katherine WAC according to its Terms of Reference (Schedule 2) is listed below.

The committee will:

- Bring a diversity of skills, perspectives and opinions to bear on water management in the Tindall Limestone Aquifer, Katherine, and in the Katherine River catchment more broadly as is relevant to management of the Tindall Limestone Aquifer, Katherine.
- Actively and openly participate in the development of the implementation strategy for the water allocation plan for the Tindall Limestone Aquifer, Katherine.
- Actively and openly participate in the development of a new water allocation plan for the Tindall Limestone Aquifer, Katherine that will replace the current declared plan when it expires in 2019.
- Identify, discuss and make recommendations to the Department of Environment and Natural Resources on matters regarding the assessment, management and use of water from the Tindall Limestone Aquifer, Katherine.
- Share information about the water allocation planning process and plan implementation with the community and seek their values and interests, ensuring these are communicated back to the Department of Environment and Natural Resources.
- Participate in the delivery of water management strategies for the Tindall Limestone Aquifer, Katherine that are consistent with the requirements of the Water Act and, as far as practicable, the National Water Initiative.
- Consider any other matters referred to it by the Minister or the Department of Environment and Natural Resources.

- The role of the committee is to identify issues, critically evaluate information and to offer suggestions for implementation of the Plan that support the potential beneficial uses and maximise opportunities for ecological sustainable development in the region.

Eleven meetings of the Katherine WAC have been held:

- Meeting 1: 23 February 2017, Conference Room, 32 Giles Street, Katherine
- Meeting 2: 29 March 2017, Patterson Room, Katherine Research Station
- Meeting 3: 23 May 2017, Patterson Room, Katherine Research Station
- Meeting 4: 22 May 2018, Patterson Room, Katherine Research Station
- Meeting 5: 13 June 2018, Conference Room, Katherine School of the Air
- Meeting 6: 15 August 2018, Patterson Room, Katherine Research Station
- Meeting 7: 11 September 2018, Patterson Room, Katherine Research Station
- Meeting 8: 11 December 20218, Patterson Room, Katherine Research Station
- Meeting 9: 21 February 2019, Patterson Room, Katherine Research Station
- Meeting 10: 10 May 2019, Patterson Room, Katherine Research Station
- Meeting 11: 23 July 2019, Patterson Room, Katherine Research Station.

Meeting records are available from www.denr.nt.gov.au/katherinewaterplan.

Meetings 6 to 11 focused particularly on the development of the new Katherine water allocation plan.

The committee was provided with a draft of this report at meeting 11 on 23 July 2019 for consideration. Additional recommendations were provided by the committee at the meeting that are documented in this final version of the report on community engagement.

2.2 Public consultation

The draft Katherine Water Allocation Plan (DENR 2019) was released for public comment on 3 June 2019 for six weeks in accordance with the Communications and Engagement Plan supporting the release of the draft Katherine Water Allocation Plan 2019-2029 for public comment (May 2019). The public consultation period closed on 15 July 2019.

Activities associated with the release of the draft plan included:

- Media releases (3 June 2019).
- Public notice in Katherine Times (19 June 2019).
- Facebook posts (3 June 2019 and 9 July 2019).
- Calls for submission via advertisement on DENR 'open for consultation page' (www.denr.nt.gov.au/open-for-consultation) and the Katherine Water Allocation Plan webpage (www.denr.nt.gov.au/katherinewaterplan) (3 June 2019).
- Email to Katherine WAC members (3 June 2019).

- Email to Katherine Tindall Limestone Aquifer water extraction licence holders in the plan area (6 June 2019).
- Letters from the Minister for Environment and Natural Resources to Members of the Legislative Assembly (Hon Selena Uibo MLA, Member for Arnhem; Mr Scott McConnell MLA, Member for Stuart; Mr Gary Higgins MLA, Member for Daly; Ms Sandra Nelson MLA, Member for Katherine) (1 July 2019).
- Memorandum from the Minister for Environment and Natural Resources to the Minister for Primary Industry and Resources (1 July 2019).
- Hard copies of draft plans were provided to the Katherine Library, the Katherine Council office, Northern Land Council regional office in Katherine, Jawoyn head office, Victoria Daly Shire Council office, and MLA offices in Katherine (21 June 2019).
- Meeting with the Department of Primary Industry and Resources at Berrimah Farm on 14 May 2019.
- Meeting with the NT Farmers Water Subcommittee at Coolalinga on 25 May 2019.
- Attendance at Barunga Festival (8 June 2019) at a shared stand with the Northern Land Council.
- Traditional owner engagement activities across Katherine and Ooloo water allocation plan areas 9 July – 15 July 2019.
- Briefing to full Northern Land Council – full council (at Nitmiluk on 27 June 2019).
- Radio interviews on Country Hour (4 June 2019) and ABC local radio (21 June 2019).
- Face-to-face meeting at the request of land owner representative (24 June 2019).
- Teleconference meeting with CEO and President of the Amateur Fishing Association of the Northern Territory on 9 July 2019 in Katherine and Darwin.
- Additional stakeholders identified in Table 1 were emailed and invited to comment on the draft plan (7 June 2019).

Outcomes of the public consultation are provided in Section 3.

Table 1. Additional stakeholders emailed and invited to comment on the draft Katherine plan

Stakeholders	Directly affected	Indirectly affected
Industry groups and associations	<ul style="list-style-type: none"> • NT Farmers Association • NT Cattlemen’s Association 	<ul style="list-style-type: none"> • Minerals Council of Australia • Regional Development Australia NT • Australian Water Association (AWA) • Australian Petroleum Production and Exploration Association (APPEA) members
Pastoral properties (rural stock and domestic users)	<ul style="list-style-type: none"> • Manbulloo • Scott Creek • Stapleton • Katherine Downs • Dixie • Florina 	
Aboriginal	<ul style="list-style-type: none"> • Jawoyn Association Aboriginal Corporation • Wardaman Aboriginal Corporation • Northern Land Council 	<ul style="list-style-type: none"> • Aboriginal Areas Protection Authority
Environmental		<ul style="list-style-type: none"> • Environmental Defenders Office • Environment Centre NT
Interest groups	<ul style="list-style-type: none"> • AFANT • Regional Development Australia NT 	<ul style="list-style-type: none"> • International Association of Hydrogeologists • Local Government Association of the NT • Drillers Qualification Advisory Committee
Research organisations		<ul style="list-style-type: none"> • Charles Darwin University (RIEL, NESP)
Local and regional councils	<ul style="list-style-type: none"> • Victoria Daly Regional Council • Katherine Town Council 	
NT Government Agencies	<ul style="list-style-type: none"> • Department of Primary Industries and Resources • Department of Trade, Business and Innovation • Power and Water Corporation • Department of Infrastructure, Planning and Logistics • Department of Tourism and Culture • Parks and Wildlife Commission 	<ul style="list-style-type: none"> • Environment Protection Authority • Department of the Chief Minister
Commonwealth agencies	<ul style="list-style-type: none"> • Department of Defence (RAAF Base Tindal) 	
Members of the Legislative Assembly	<ul style="list-style-type: none"> • Member for Daly • Member for Katherine • Member for Arnhem • Member for Stuart 	

2.3 Peer review

As part of the consultation process, the Northern Australia Environmental Resources Hub and the National Environmental Science Program (NESP) were engaged to provide a peer review of the environmental components of the draft plan.

The Northern Australia Environmental Resources Hub's scope of the work was to provide a report to the Department including:

- A review of the approach and outcomes associated with the protection of Katherine River flows through the annual announced allocation process.
- The provision of any information the NESP project may have that can support the approach or any recommended adjustment to the approach in the draft water allocation plan.
- Identify any gaps and opportunities for refinements in future reviews of the Katherine Water Allocation Plan.
- Advice on how to establish a more appropriate estimated sustainable yield for the system during implementation of the plan.
- Any key tasks the team identifies to inform the development of an implementation plan should also be included in the summary report.

Given the expertise of the review team, the review focused primarily on the environmental water requirements and the plan's coverage of ecological issues. In some cases, the review commented on the coverage of other objectives and content of the plan.

Findings of the review are provided in Section 3.

3 Consultation findings

The consultation findings associated with the draft Katherine Tindall Limestone Aquifer Water Allocation Plan 2019-2029 (DENR 2019) have been summarised in this section.

Section 3.1 provides a summary of Katherine Water Advisory Committee meetings, with specific emphasis on the meetings associated with drafting the plan.

Section 3.2 focuses on the feedback received as part of the six-week public consultation period from 3 June to 15 July 2019.

3.1 Katherine Water Advisory Committee

3.1.1 Committee meetings

The Katherine WAC met on ten occasions between February 2017 and May 2019. A quorum was achieved for each meeting. Over the course of the meetings 80 actions were identified by the Katherine WAC. In addition, nine formal recommendations and resolutions were made.

Three Katherine WAC meetings were held between February 2017 and May 2017, with activity in the following areas:

- Knowledge development – hydrogeology and monitoring information.
- Objectives and strategies, and development of familiarity of the Water Allocation Plan - Tindall Limestone Aquifer (Katherine) 2016.
- Issue-based information and discussions e.g. PFAS.
- Allocation and water management discussions e.g. rural stock and domestic use.
- Policy inputs such as to the Strategic Aboriginal Water Reserve.
- Key issue identification and discussions such as input into the hydraulic fracturing enquiry.

There was a gap in activity from May 2017 to May 2018 due to resourcing constraints; however, progress in policy and resource condition developments occurred during the time, including:

- Review of water licensing processes and arrangements.
- PFAS developments.
- Water regulatory reform processes commencing.

The Katherine WAC met in May 2018 with a renewed focus on:

- Evaluation of the 2016-2019 Water Allocation Plan, prior to the expiry in August 2019.
- Preparation of a new plan, and guidance on options for an optimal approach to preparing the new plan, including the type of plan to be developed.

3.1.2 Informing the draft Katherine water allocation plan

Meetings 6-10 of the Katherine WAC, held between 16 August 2018 and 10 May 2019 focused primarily on the development of the Katherine Water Allocation Plan.

Meeting 11 of the Katherine WAC was held on 23 July 2019. The committee considered findings from the public consultation and provided recommendations for finalising the water allocation plan. The committee recommendations are provided throughout this report.

The following recommendations and resolutions were made by the Katherine WAC directly associated with the development of the Katherine plan:

- Recommendation: *“The Committee unanimously agrees to a compressed/rapid WAP process – declared for 10 years (by August 2019) with the facility for review during the 10 year period, and strongly endorses the long-term structural change towards an integrated plan.”* The integrated plan referred to in this recommendation is a whole of Daly Basin surface and groundwater plan.
- Decision: Katherine WAC members agreed to update the draft vision statement with an updated sentence in relation to Aboriginal culture, and include a sentence about the holistic integrated system. This has informed the vision included in the water allocation plan.
- Decision: *“Members agreed to have the water year described as 1 October to 30 September.”* This water year description allows for the full wet season (recharge period) and subsequent dry season (discharge period) being considered as a single year for modelling analysis.
- Decision: *“Katherine WAC agreed to continue with looking at the Katherine River to set environmental flow targets and to maintain a stepped approach of protected discharge to surface waters.”* This has resulted in setting flow targets for Katherine River at Wilden gauging station rather than only looking further downstream in the Daly River as was undertaken in the previous water allocation plan.
- Resolution: *“Katherine WAC recommends that no net increase in licensed entitlements occurs in the Katherine (Tindall Limestone Aquifer) Water Allocation Plan area until a new Estimated Sustainable Yield is determined based on new data and information. If water is returned/recouped then it cannot be reallocated for consumptive use.”* This resolution has been reflected in the plan.

The following recommendations were made by the Katherine WAC in direct response to the information presented as part of the draft Report on Community Engagement Katherine Tindall Limestone Aquifer Water Allocation Plan 2019. These recommendations have been considered by the Department in finalising the water allocation plan.

The Katherine Water Advisory Committee endorsed this Report on Community Engagement Katherine Tindall Limestone Aquifer Water Allocation Plan 2019 at its last meeting on 23 July 2019.

Estimated sustainable yield determination

- The Katherine Water Advisory Committee did not reach consensus regarding the estimated sustainable yield.
- The majority of members present recommend reducing the ESY proportionally to a total of 27.56 GL, according to the following:
'the ESY for the Katherine Water Allocation Plan 2019 be set at 27.56 GL, a figure that is proportionate to the annual recharge to maximum extraction limit ratio from the previous plan, using the more reliable median recharge estimate, and updated water accounting.'
- The committee recognises that 27.65 GL is unlikely to be the correct estimated sustainable yield going forward, and the figure is likely to change again for the next plan.

Commitment to determination of estimated sustainable yield

- The Katherine Water Advisory Committee is supportive of the commitment by the Department to undertake required activities to inform the estimated sustainable yield determination as a matter of priority.
- The committee is supportive of the proposed establishment of a scientific and technical group to work on determining the non-consumptive water requirements for the system.

Commitment to implementation of the plan

- The Katherine Water Advisory Committee is supportive of the implementation plan development as described in Department's response.
- There is strong agreement that adequate resources should be made available to ensure implementation of plan occurs, and that supporting groups such as the scientific and technical group are established and are ongoing.

Timeframe for the plan

- The Katherine Water Advisory Committee supported a proposal to declare the water allocation plan for up to five years (to 2024).
- The Committee recommends that the review of the plan should commence by 2022 (three years) which would include the updated non-consumptive water requirements and recommendation on an updated estimated sustainable yield.

Trade

- Given the uncertainty associated with the estimated sustainable yield, there was concern that trading may increase the use of water from the resource above sustainable levels.
- The Katherine Water Advisory Committee recommends that trade should be restricted to existing water licence holders already subject to the Katherine water allocation plan for the life of the plan.

The recommendations, decisions and resolution identified by the Katherine Water Advisory Committee have guided the development of the draft Katherine water plan.

3.2 Public consultation

The draft Katherine water plan was available for public comment between 3 June and 15 July 2019, in accordance with the activities detailed under the consultation process described in Section 2. The following section details the findings from this consultation.

3.2.1 Public consultation responses

During the public consultation period, the following responses were received:

- **Formal responses:** Thirteen formal written responses were submitted to the Water Resources Division during the public consultation period. Submissions were received from individuals, Darwin Game Fishing Club, Regional Development Australia NT, Australian Marine Conservation Society / Environment Centre NT, Cross Pacific Investments, La Trobe University / Charles Darwin University, AFANT, NT Farmers, Power and Water Corporation, Northern Land Council, AAPA and the Department of Tourism, Sport and Culture (Parks, Wildlife and Heritage Division). All formal submissions have been summarised and consolidated in Schedule 3.
- **Print media:** There were two letters to the editor, one editorial and one public notice appearing in the Katherine Times from members of the public during the consultation period.
- **Radio:** There were two radio interviews with AFANT representatives, and an additional two interviews by Departmental officers.
- **Meetings and face-to-face briefings:** At least thirteen meetings and face-to-face briefings were held as part of the consultation. These varied from attendance at festivals and informal discussions with individuals, through to formal briefings to executive groups, in accordance with the consultation process described in Section 2.
- **Peer review:** A Review of the Draft Katherine Tindall Limestone Water Allocation Plan (Pusey et al. 2019) was received for consideration in finalising the plan.

3.2.2 Peer review findings

A peer review of the draft plan was provided by members of the Northern Australia Environmental Resources Hub. The review focused primarily on the environmental water requirements and the coverage of ecological objectives.

The following provides a summary of the major findings from the review, along with recommendations for addressing the major findings from the Department:

- ‘The plan does not include any detail on what are the water quality objectives in the plan. This is an important omission as problems with reduced water quality are known to occur in the catchment and water quality parameters may be effective in monitoring the outcomes of management policies and action.’

Department response: Agree that there is opportunity for improved consideration of water quality objectives. This will be a focus of the work associated with non-consumptive water requirements as part of plan implementation.

- 'While the statement that results from Northern Australia Environmental Research Hub are not yet available for use is partially correct, there is a substantial body of ecological information provided by prior TRaCK and NERP research within the river that is available but appears not to have been considered or included in the plan.'

Department response: While additional ecological information could be included as part of finalisation of the plan, it would not result in any changes to flow recommendations as there is a lack of quantification of environmental flow requirements.

- 'Although climate change is substantially beyond the scope of the plan, no mention is made of the potential for climate change to impact on the ecology of northern Australian rivers.'

Department response: Reference can be made to the potential for climate change to impact on the ecology within the plan area; however, as indicated, this is outside of the scope of the current plan.

- 'It is acknowledged that the system is over allocated and that while the estimated sustainable yield remains unchanged, no new licences to take will be issued. If the system is over allocated, does this not put the plan outside of the Act?'

Department response: No. The plan is considered to comply with the Water Act 1992.

- Interference with a waterway refers 'only to impacts of high flows (i.e. floods) and seemingly refers to downstream impacts only. This section needs to refer to impacts on connectivity such as changes in ability to access small streams for spawning. Moreover, it needs to highlight impacts associated with loss of flow from perennial streams during low flow periods.'

Department response: Section to be updated to recognise the potential impacts associated with other changes to ecosystem function.

- 'It is acknowledged here that the plan contains many safeguards to ensure that the environmental values of the area covered by the plan are protected, particularly scaling offtake capacity with prior recharge and the imposition of varying levels of surety associated with licences. This is a highly commendable approach to ensuring the environment is protected.'

Department response: Noted.

- 'The plan considers each year in isolation. There is no real assessment of the importance or potential impact of antecedence events or cumulative impacts occurring over several successive years of similar hydro-climatic conditions.'

Department response: Multi-year planning, including the potential impact from conditions over successive years should be considered as part of the determination of non-consumptive water requirements during plan implementation.

- The plan states that emergency powers to limit water take may be invoked in accordance with the Water Act, but does not explicitly state what those powers may achieve or when they might be invoked.

Department response: Additional information and/or examples of what the emergency powers would entail can be provided in the plan, but as the powers apply to individual bores they are unlikely to be relevant on the scale of the plan. This can be clarified in the plan.

- The current plan does not consider low flow thresholds at which take would cease or circumstances in which this might occur. 'The plan needs some consideration of what process is in place if flows at any one time fall below critical levels (i.e. complete cessation of water abstraction?).'

Department response: A low flow threshold determination will be included as part of the determination of non-consumptive water requirements. This information will then be used to refine the annual announced allocation arrangements in a reviewed plan.

- 'Our main concern is centred around timing of extraction. Under any scenario it appears that the licensee could elect to extract a large proportion of their allocation in a very short time.' Water allocation is made on an annual basis and it is therefore up to the user to decide when (i.e. in which month) it may be used. Timing of extraction has been shown to potentially increase risk that fish populations are impacted significantly. What mechanisms are in place to prevent or limit this behaviour?

Department response: Recommendations for seasonal extractions will be explored as part of investigations into non-consumptive water requirements. In the interim, water extraction licences currently include clauses that ensure licence holders do not extract more than 30% of their water allocation in a single month.

- 'The proposed rules under a dry or extremely dry scenario allow for sufficient take to reduce river flows to very low levels (i.e. >95 percentile exceedance). There is little discussion of how the system would respond.'

Department response: In the absence of defined non-consumptive water regimes for locations in the plan area, it is not possible to determine how the system would respond. There is opportunity to improve the general considerations of low flows, as highlighted in the submission.

- 'All comments about extraction levels are based on changes in discharge with respect to exceedance levels. While this is potentially all that can be done (or at least most expedient way to do it), there is no consideration of what this means at a hydraulic level – what would be the change in habitat structure? Changes in connectivity? Changes in conditions suitable for the growth of algae – would it proliferate for example? What are the potential impacts on riparian vegetation?'

Department response: Noted. Broadening and quantifying the consideration of impacts on more than just discharge will be a focus of the work associated with determining the non-consumptive water requirements. There are opportunities to consider work that is being undertaken as part of the NESP project, such as the mapping of the Wilden reach of the Katherine River.

- 'The plan is based entirely on considerations of gross changes in hydrology (e.g. partitioning into different classes of wet, normal etc). While such recognition is valuable, it fails to consider which such changes in hydrologic quantities mean for factors such as habitat structure and availability, connectivity between different reaches, water quality, proliferation in aquatic macrophytes or alga (both nuisance and beneficial) etc.'

Department response: Noted. Consideration of other factors as highlighted will be a focus of the work associated with determining the non-consumptive water requirements.

- 'We note that the assumption that maintenance of different proportion of the natural flow regime is intended to protect the environment; however, we also note that this assumption is reasonable but very much an untested hypothesis.'

Department response: Noted. Assumptions will need to be tested in order to increase confidence in recommendations and will need to be incorporated into future environmental monitoring.

- Additional short-term, medium-term and long-term gaps and opportunities have been identified which will form part of the considerations to inform plan implementation.

Department response: Noted.

3.2.3 Formal response outcomes

A summary of the thirteen formal submissions on the draft Katherine water plan are provided in Schedule 3, along with proposed responses to each issue raised.

Four themes were prominent in the submissions:

- Process for determination of estimated sustainable yield.
- Ensuring there is commitment to determine a more realistic and appropriate estimated sustainable yield
- Commitment to implementation of the plan, including appropriate funding and resources.
- Timeframe for the plan (plan length).

The following section provides a summary of these themes, and a response from the Department for finalisation of the plan.

3.2.3.1 Estimated sustainable yield determination

The estimated sustainable yield determination received a number of comments through formal submissions, along with print media, and on radio and social media.

One respondent noted that the term 'estimated sustainable yield' should not be used in the plan given the uncertainty in the figure.

Alternative terms for consideration were provided:

"The use of the term 'sustainable yield' throughout the draft Plan is not appropriate. The true 'sustainable' yield is not yet known as the necessary ecological and cultural studies have not been completed, despite being highlighted as an action in the previous Katherine Water Allocation Plan. Use of 'maximum diversion limit' or 'agreed maximum diversion limit' or another similar term would be preferable."

A number of submissions noted that the precautionary principle was not being adhered to in establishing the estimated sustainable yield as part of the plan. They indicated that a preferential approach would be to align with the *NT Water Allocation Planning Framework* (NTG 2000) whereby 80% of the resource is reserved for non-consumptive water requirements, and up to 20% of the resource therefore available for consumptive purposes.

'A major endeavour is required to quantify the sustainable yield while achieving the objective to 'meet the environmental water requirement of water dependent ecosystems'. In the absence of a scientifically based sustainable yield, the plan should progress toward the 80/20 rule in accord with NT Government policy.'

'The draft plan sets 38,391 ML/year as the ESY. However, this has been set as a simple and seemingly arbitrary figure carried forward from the previous plan, and is equal to the announced allocation from the previous plan. Therefore, it does not represent consideration of environmental or cultural needs of the system, and is not following the principles of the National Water Initiative – i.e. to consider and allocate for environmental and cultural values prior to any consumptive water allocation.'

The respondent contends that this proposed ESY is not precautionary, as defined by the NT Water Allocation Planning Framework and was also not an agreed outcome by all stakeholders through the Water Advisory Committee. The respondent also contends that the proposed ESY may have unintended negative consequences both to river health and water security in the future.'

In addition to the recommendation to set the estimated sustainable yield at 80% of the resource, one respondent provided an alternative, compromised approach:

'[Respondent] proposes that the ESY for the Katherine Water Allocation Plan 2019 be set at 27.56 GL, a figure that is proportionate to the annual recharge to maximum extraction limit ratio from the previous plan, using the more reliable median recharge estimate, and updated water accounting.'

Given the recalculated recharge figures for the Water Allocation Plan (WAP) area and the understanding that median recharge figures are the most reliable predictor of future water availability; a reduced ESY is essential to apply at least a minor level of precaution and to properly signal the likely over allocation in the system (based upon the best available information). A failure to reduce the ESY would send the wrong message to stakeholders and would increase the risks of environmental damage that the plan is mandated to prevent.'

The approach proposed by the respondent above would align with the proportional split of water between non-consumptive and consumptive used as per the existing water allocation

plan. The proportion is calculated based on the average recharge of 74 GL as identified in the existing plan in 2009, and a 38.4 GL extraction limit. This equates to 52% of the resource allocated for consumptive use and 48% allocated for non-consumptive use.

Another respondent suggested maintaining the average extraction limit from the existing plan should be adopted, rather than the maximum extraction limit:

'The estimated as 22.2 GL under the existing plan. This is the long-term annual extraction limit - equating to 30% of the average annual recharge of 74 GL. In the 2019-29 Plan the ESY is 38.4 GL, which was the old maximum extraction limit and the average annual recharge is now 53 GL. The long-term average extraction limit should be used as the ESY not the maximum extraction limit.'

Department response:

The comments received through public consultation regarding the estimated sustainable yield determination are similar to discussions that have taken place within water advisory committee meetings.

In the absence of new information, the proposed estimated sustainable yield in the draft plan was adopted from previous water allocation plans and the approaches underpinning those determinations. The *NT Water Allocation Planning Framework* is an NT Government policy which provides contingent allocation rules, which are particularly relevant in areas where there is limited knowledge as to environmental and cultural water requirements. The policy is less relevant in areas where water extraction licences have been issued.

For the Katherine water allocation plan, the important consideration in relation to estimated sustainable yield is that the system is considered over allocated and there should be no new water entitlements issued until the sustainable yield is refined.

The arrangements detailed in the draft water allocation plan provided for the protection of between 87% and 70% of Katherine River flow, as predicted on 1 November at Wilden gauging station.

To assist in clarification of the intent of the plan, the following wording is proposed:

'A commonly understood definition of estimated sustainable yield is:

'the amount of water that can be taken from the water resource to support declared beneficial uses without compromising key cultural and environmental values, or ecosystem functions or the productive base of the resource or declared water quality standards, criteria or objectives.'

There is currently uncertainty in the estimated sustainable yield for the Katherine Tindall Limestone Aquifer. In the interim, the estimated sustainable yield has been set at 38,391 ML in accordance with determinations established under previous Katherine water allocation plans.'

A strong message will be included in the final water allocation plan that the estimated sustainable yield is highly likely to decrease once more information is known through the implementation of the plan.

Katherine Water Advisory Committee recommendation (Meeting 11, 23 July 2019):

The Katherine Water Advisory Committee did not reach consensus regarding the estimated sustainable yield.

The majority of members present recommend reducing the ESY proportionally to a total of 27.56 GL, according to the following:

'the ESY for the Katherine Water Allocation Plan 2019 be set at 27.56 GL, a figure that is proportionate to the annual recharge to maximum extraction limit ratio from the previous plan, using the more reliable median recharge estimate, and updated water accounting.'

The committee recognises that this is unlikely to be the correct estimated sustainable yield going forward, and the figure is likely to change again for the next plan.

3.2.3.2 Commitment to determination of estimated sustainable yield

Comments received on the draft plan were very supportive of undertaking activities to review the estimated sustainable yield figure by undertaking activities to refine the non-consumptive water requirements for the system:

'A reassessment of the estimated sustainable yield within 3 years, and no new licences granted during this period.'

'Supportive of the proposal to prioritise estimated sustainable yield research and until that is complete no new water allocation licences should be issued.'

'Commitments to undertaking/completing the research (and other work) to inform a new ESY need to be made more explicit and upfront in the plan. This should include references to the 3-year timeline, as well as to any additional funding that may be required.'

'Supportive of the notion in the Plan, that at present there is little scientific evidence to establish the environmental or cultural water requirements for the Katherine River. Also supportive of the urgent need for research to address key gaps in our knowledge.'

The need for this work to be undertaken in the short-term is noted, and the requirement for resourcing, in particular appropriate commitment of budget is recognised.

Department response:

The comments regarding the determination of a new estimated sustainable yield are noted.

The Department is committed to undertaking required activities to inform the estimated sustainable yield determination as a matter of priority in implementing the water allocation plan.

A scientific and technical group will be established to work specifically on determining the non-consumptive water requirements under the plan. It is anticipated that this group will be established soon after (within approximately three months) the water allocation plan is declared.

Katherine Water Advisory Committee recommendation (Meeting 11, 23 July 2019):

The Katherine Water Advisory Committee is supportive of the commitment by the Department to undertake required activities to inform the estimated sustainable yield determination as a matter of priority/

The committee is supportive of the proposed establishment of a scientific and technical group to work on determining the non-consumptive water requirements for the system.

3.2.3.3 Commitment to implementation of the plan

One of the challenges associated with the development of the draft Katherine water plan was that a number of implementation activities identified in the previous plan were not completed. Comments received on the draft plan noted the importance of implementation activities being committed to and delivered.

'It should go without saying, but the implementation activities outlined in WAPs need to be acted on and reported publicly.'

'Development of a monitoring, evaluation, reporting and improvement (MERI) program as indicated in the implementation plan will assist transparency.'

'Resources need to be committed to monitoring and research to improve water management and the plan in the future.'

'The success of this plan or any water management will rely heavily on obtaining the required information to justify any future changes. Monitoring and research needs are clearly evident throughout the plan and include critical features such as establishing the environmental and cultural water requirements, establishing median annual groundwater discharge, validating the current flow model used for Announced Allocations, and monitoring the ecological health of the system. Commitment to resources should be made explicit in the Plan.'

'Strongly endorse ongoing surface and groundwater monitoring to continue over plan implementation. Regular interrogation of information to be undertaken and reported through water monitoring reporting.'

'Adequate resources will need to be made available to address the knowledge gaps and appropriate allocation of funds over coming years is encouraged.'

'The respondent supports a systematic ecological monitoring program being established as part of implementation of the plan.'

'The respondent supports the development and implementation of a detailed Monitoring, Evaluation, Reporting and Improvement (MERI) program.'

The importance of implementation is recognised, and a commitment is made in the draft plan to develop a detailed implementation plan with internal and external stakeholders. This implementation plan needs to identify responsibilities and commit funding to the activities identified.

Department response:

An implementation plan will be developed within six months of plan declaration, with a summary to be made available online.

The scientific and technical group will be critical to establishing the estimated sustainable yield, and implementation activities associated with determining non-consumptive water requirements for the system.

Katherine Water Advisory Committee recommendation (Meeting 11, 23 July 2019):

The Katherine Water Advisory Committee is supportive of the implementation plan development as described in Department's response.

There is strong agreement that adequate resources should be made available to ensure implementation of plan occurs, and that supporting groups are established and are ongoing.

3.2.3.4 Timeframe for the plan

Submissions on the draft Katherine plan identified concern that the final plan could be in place for up to ten years, with a review required within five years.

Respondents cautioned against setting the plan in place for ten years, given the uncertainties in setting critical components such as the estimated sustainable yield. Recommendations were received that the plan should be declared for four to five years, with a review within three years.

'The current duration of the plan should be reduced to five years to enable determination of an agreed ESY and non-consumptive use figure.'

'[Respondent] not supportive of the proposed 10-year term of this plan because it relies upon significant assumptions and acknowledged uncertainty being used to guide future management and decision-making.'

'A three year review period for the plan should be provided - not a five year review. The plan should not set out to be a ten year plan.'

'Given the insufficient data currently available, we recommend the plan be reviewed within three years.'

'The term of the plan should be reduced from 10 years to 4 years, with a review commencing in September 2022 (3 years).'

'Identifying the plan as '2019-2029' implies the current plan will be in place for the full ten year duration.'

Department response:

The Committee could recommend an alternative plan declaration period. Under the Water Act 1992, plans are required to be reviewed within five years. This is considered the minimum period for a new water allocation plan.

Katherine Water Advisory Committee recommendation (Meeting 11, 23 July 2019):

The Katherine Water Advisory Committee supported a proposal to declare the water allocation plan for up to five years (to 2024).

The Committee recommends that the review of the plan should commence by 2022 (three years) which would include the updated non-consumptive water requirements and recommendation on an updated estimated sustainable yield.

3.2.4 Additional proposed updates

In addition to the responses received as part of the draft plan consultation, the following will be updated as part of finalisation of the plan:

- Water extraction licence figures will be updated to reflect current licensing (accounting for licence renewals and return of unused water over recent months). The difference is also due to clarification of licence extraction locations. Figures included will be current as at 15 July 2019.
- More clarity on Strategic Aboriginal Water Reserve and how water is allocated to eligible land owners will be included.
- Clarification about the intent of 'no new licences' – refer to this as 'no new water entitlements' given new licences could be issued through trade without granting 'new water entitlements'.
- Some additional clarity on the transition in naming of groundwater management zones to reflect the naming transition from zone 1 and 2 to groundwater discharge protection areas will be provided.
- Stronger language will be provided where possible – currently a number of recommendations are passive and could be stronger.
- The summary of guidance boxes throughout and at the end of the plan make for easy reference and this will be maintained.
- Recognition that the model underpinning the plan requires some updating as part of plan implementation. This will assist in formulating a more representative estimated sustainable yield.
- In order to provide consistent interpretation of data between the existing plan and the new plan, there are opportunities to clarify the hydrologic modelling and water recharge as per Figure 1. This diagram will replace the summary statistics table from the draft plan (table 2 in the draft).

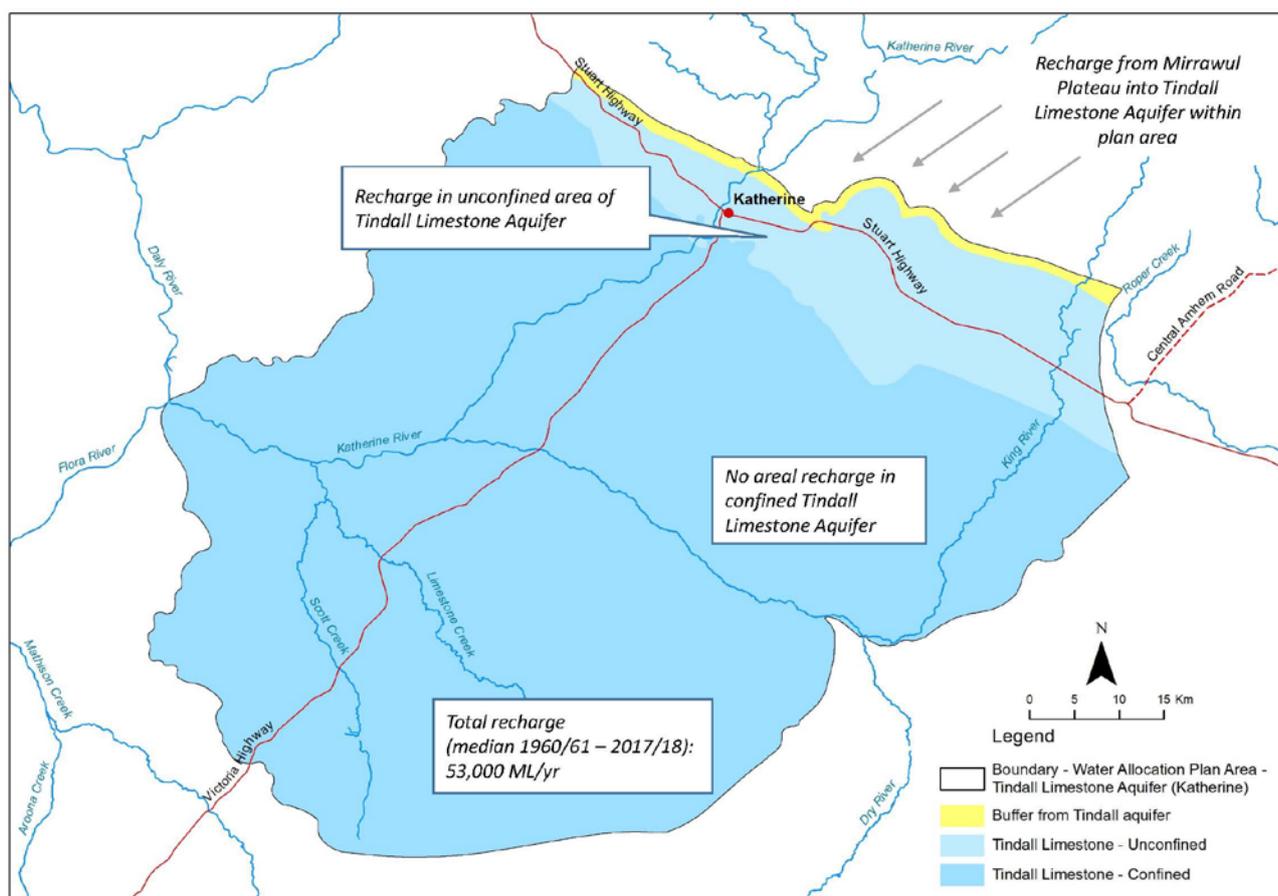


Figure 1. Katherine Tindall Limestone Aquifer recharge diagram.

There are also minor editorial changes that will be made to the plan during finalisation. The minor editorial changes do not change the intent of the plan and therefore have not been included in this report.

Schedule 1. Katherine Water Advisory Committee membership

Member	Interest or expertise	Membership status
Marie Piccone	Chair and horticulturalist	Appointed 20 November 2016.
Warren De With	AFANT representative	Appointed 21 December 2016.
Allister Andrews	Jawoyn Association representative	Appointed 21 December 2016. Delegated representation to proxies.
Alison King	Aquatic ecologist	Appointed 21 December 2016.
Michael Jerram	Tourism representative	Appointed 20 November 2016.
Rick Fletcher	Northern Land Council Kalano Community Association Incorporated	Appointed 20 November 2016.
Marie Allen (alternate Samantha Sing)	Wardaman IPA representative	Appointed 20 November 2016.
Peter Rix	TFS Corporation representative	Appointed 20 November 2016. Replaced by Tim Helder.
Peter Marks	Horticulturalist and community member	Appointed 20 November 2016.
Shane Papworth	Power and Water representative	Appointed 20 November 2016.
Neal Adamson	Department of Defence representative	Appointed 20 November 2016.
Steven Rose (represented by alternate Lis Clark)	Katherine Town Council representative	Appointed 20 November 2016.
Charmaine Roth	Community member (resigned)	Appointed 20 November 2016.

Schedule 2. Katherine Water Advisory Committee Terms of Reference

1. The Purpose of the Committee

The Katherine Water Advisory Committee has been formed by the Minister for Environment and Natural Resources to improve the effective implementation of the plan over its remaining lifetime. The Committee will discuss matters such as new research, water resource investigations, monitoring programs, water trading and 'use it or lose it' policies as well as general licence holder compliance issues. In addition, the Committee will provide a point of contact and exchange for stakeholder concerns and interests in the sustainable use and conservation of the Tindall Limestone Aquifer, Katherine.

The Committee will also provide advice and recommendations on the development of a new Plan for this water source, in preparation for its expiry in 2019.

2. Statutory Effect

Section 23 of the Water Act authorises the Minister to establish, and appoint the members of, a Water Advisory Committee.

3. Terms of Reference

The committee will:

- Bring a diversity of skills, perspectives and opinions to bear on water management in the Tindall Limestone Aquifer, Katherine, and in the Katherine River catchment more broadly as is relevant to management of the Tindall Limestone Aquifer, Katherine.
- Actively and openly participate in the development of the implementation strategy for the water allocation plan for the Tindall Limestone Aquifer, Katherine.
- Actively and openly participate in the development of a new water allocation plan for the Tindall Limestone Aquifer, Katherine that will replace the current declared plan when it expires in 2019.
- Identify, discuss and make recommendations to the Department of Environment and Natural Resources on matters regarding the assessment, management and use of water from the Tindall Limestone Aquifer, Katherine.
- Share information about the water allocation planning process and plan implementation with the community and seek their values and interests, ensuring these are communicated back to the Department of Environment and Natural Resources.
- Participate in the delivery of water management strategies for the Tindall Limestone Aquifer, Katherine that are consistent with the requirements of the Water Act and, as far as practicable, the National Water Initiative.
- Consider any other matters referred to it by the Minister or the Department of Environment and Natural Resources.

- The role of the committee is to identify issues, critically evaluate information and to offer suggestions for implementation of the Plan that support the potential beneficial uses and maximise opportunities for ecological sustainable development in the region.

4. Composition of the Committee

Members of the committee and chairperson are to be appointed by the Minister from nominations received during the Expressions of Interest process. In addition to the chairperson, the committee will have a minimum of ten members appointed by the Minister.

The members selected by the Minister will ensure that a diversity of representation is achieved and that all beneficial uses are represented as far as is practicable. Beneficial uses include Agriculture, Aquaculture, Public Water Supply, Environment, Cultural, Industry, Rural Stock and Domestic.

5. Nomination and appointment process

Nominations for the Katherine Water Advisory Committee will be sought through advertisements in the NT News, the Katherine Times and the NT Rural Weekly. Key stakeholders and organisations may also be invited to nominate a representative. Nominations will be by Expression of Interest.

Expressions of interest will demonstrate the contribution that the nominee can make to the committee, including but not limited to:

- Their interest in the implementation of the Tindall Limestone Aquifer, Katherine Water Allocation Plan and commitment to the sustainable growth of the Territory economy.
- Recognised experience and knowledge in appropriate areas pertaining to water use and planning, regional development, pastoral enterprise, irrigated agriculture, horticulture, mining, tourism, community interests, environmental protection, water engineering and water management, Aboriginal enterprise and Aboriginal cultural values.
- Demonstrated ability to work with a diverse group of people with a range of values, interests, backgrounds and expertise.
- Ability to be representative of a stakeholder group and disseminate information to constituents (if possible, nominees should provide a letter of support or other evidence demonstrating that they are representative of a stakeholder group).
- Outline any potential or perceived conflicts of interest.

6. Terms of Appointment

The membership of the committee will be for the period up until declaration of a new Water Allocation Plan for the Tindall Limestone Aquifer, Katherine, following its expiry in 2019.

Members who do not attend three consecutive meetings may have their membership reviewed.

Upon declaration of the new Plan, the committee may be retained to advise on its implementation. Review of the Terms of Reference for the committee may be undertaken at this stage.

7. Operating arrangements

- Members shall declare conflicts of interest and inform the chairperson immediately if a matter comes before the committee that may have a personal financial or other substantial personal interest. Should the committee request it, the member shall abstain from discussion about the affected matter.
- Meetings will be held as often as necessary to conduct the business of the committee. It is envisaged meetings will be held twice per year during implementation phase of the Plan and that more frequent meetings may be required during the development of the new Plan.
- Members may nominate to the chairperson an alternate to attend meetings in his/her place if he/she is unable to attend the whole or part of a meeting. The alternate has the same participating rights as the member for the duration of the meeting.
- A quorum in respect of the committee shall comprise half the membership including alternates.
- Sitting fees as per the remuneration for statutory bodies schedule payable to nongovernment appointees will apply.

8. Role of the Chairperson

- The chairperson is the primary media spokesperson for the committee.
- The chairperson will advise members of their roles and obligations as members of the committee and will conduct meetings to foster effective consideration of issues referred to or raised by the committee, and which represent the diversity of views in the committee.
- The chairperson will be responsible for settling meeting dates and agendas for meetings.
- The chairperson will ensure accurate reporting of the advice and recommendations of the committee is provided to the Department of Environment and Natural Resources.
- In the event that the chairperson is not able to attend a meeting he/she shall nominate an alternate chairperson, or if this is not possible, the committee shall elect a chairperson from those members present for that meeting.

9. Role of Department of Environment and Natural Resources

- The Water Resources Division of the Department of Environment and Natural Resources will provide secretariat support to the Committee and will organise meetings, prepare agendas and record minutes.
- The Water Resources Division will provide staff and resources to equip the committee with knowledge and information to assist the committee to develop its advice and recommendations. The role of Water Resources Division Staff in supporting the committee is to:
 - Provide a draft Implementation Strategy for consideration by the Committee including Identifying gaps in knowledge and information and ways of filling those gaps, including through enhanced monitoring systems, and through seeking expertise outside of government.
 - Provide relevant technical information and analysis and ensure that it is presented in forms accessible to all members of the committee.
 - Report on progress against Milestones of the Implementation Strategy.
 - Provide information and document a process to develop a new Plan to replace the current Plan upon its expiry in 2019.
 - Assist in framing advice and recommendations from the committee.

Schedule 3. Submission summary report – Draft Katherine Tindall Limestone Aquifer Water Allocation Plan 2019 – 2029 release for public consultation

This schedule provides an abridged summary of comments received on the draft Katherine Tindall Limestone Aquifer Water Allocation Plan 2019-2029 (DENR 2019) that was released for comment for a six week period from 3 June 2019 to 15 July 2019.

Thirteen formal written responses were submitted to the Water Resources Division during the public consultation period. Submissions were received from individuals, Darwin Game Fishing Club, Regional Development Australia NT, Australian Marine Conservation Society / Environment Centre NT, Cross Pacific Investments, La Trobe University / Charles Darwin University, AFANT, NT Farmers, Power and Water Corporation, Northern Land Council, AAPA, and Department of Tourism, Sport and Culture (Parks, Wildlife and Heritage Division).

The comments column of the schedule provides the feedback received, and the recommendation / response column indicates if or how the comment has led to a change in the plan. Comments are organised according to components of the plan, with general comments or comments referring to the whole plan and general policy feedback listed at the start of the schedule.

Formal submission summary report – draft Katherine water allocation plan

Comment		Department recommendation / response
1	General comments	
1a	Concern that there has not been any significant data since 2007 to base the updated model outputs detailed in the plan. There were many tasks that were to be completed as part of the previous plan that have not been referred to in the drafting of the current proposed plan.	It has been recognised, including in water advisory committee meetings, that there were a number of activities that did not occur during the life of the last plan.
1b	Flows in the Daly River have been the lowest in living memory. One of the prime objectives of the plans have not been met – “Protect low flows in the Katherine River, in order to maintain stream connectivity and contribute to the provision of minimum environmental flows in the Daly River”. If the licence holders take the allocated water, there will be a dire effect on the downstream waterways.	The annual announced allocation process provides a mechanism to manage extraction based on seasonal climatic variations.
1c	Most of the identified actions, objectives, outcomes and strategies are non-specific. To improve accountability and effectiveness of the Plan these should be specific, measurable and have implementation timeframes/ dates, with clear allocation of responsibility for implementation.	Objectives, outcomes and strategies will be refined as part of implementation of the plan whereby accountabilities and costings will be established. A progress report against implementation activities will be published.
1d	Many actions identified in the text and summaries are prefaced by 'should', rather than 'will', which raises questions as to the likelihood or commitment to implementation. Where possible a clearer commitment to actions would be desirable.	A water allocation plan cannot 'fetter' the Controller of Water Resources in decision-making. Where possible, clearer commitments to actions will be provided.
1e	Potential risks from potential future petroleum/ hydraulic fracturing (fracking) developments are seemingly not referenced.	Hydraulic fracturing developments are not proposed within the area of the Katherine plan as it is not prospective for onshore gas. The NTG has prepared a Code of Practice for the onshore petroleum industry to reduce the impact of these activities on water resources.
1f	Commonwealth water extraction (RAAF Tindal) is likely to be substantive. While it is understood that DENR currently has no statutory or legal capacity to manage Commonwealth Defence extraction, we suggest that it is important that the Plan should incorporate a true and accurate reflection of all water usage within the planning area, and as such Defence water extraction should be recognised and accounted for in the water balance accounting underpinning the Plan.	This information is being sought. When available, water use information will be included in water allocation plans and the water use account.
1g	For completeness it would have been preferable to include surface water flows from the upper catchment within the planning area and current draft plan. Respondent suggests this should be considered for the next revision of the Plan.	This is out of scope for this plan and will be considered in future plans which may take a broader catchment/integrated approach.

Comment		Department recommendation / response
1h	<p>Considerable concerns about plan and its significant potential impact on river and receiving marine environments as well as transparency and accountability concerns. The Daly River system is one of the most important ecological assets in the Northern Territory. It supports a vibrant recreational fishing and tourism industry and is critical to the health of the receiving marine environment in Anson Bay, Peron Islands and the Joseph Bonaparte Gulf. Both commercial and recreational fisheries must be protected from upstream impacts.</p>	<p>Noted. Achieving the objectives of this plan will contribute towards meeting this outcome.</p>
1i	<p>Support the inclusion of integrated accounting methods where surface and aquifer water are counted together as this is essential when calculating environmental requirements. We also support the updating of the rainfall model that predicts inflows to the Katherine River.</p>	<p>As for 1g.</p>
1j	<p>Respondent recommends the following for implementation and this feed into a 5 year review:</p> <ul style="list-style-type: none"> • Public reporting - this will go some way to address transparency and accountability concerns. • Identification of groundwater dependent ecosystems. • Identification of meaningful parameters to assess to evaluate the health of groundwater dependent ecosystems. • A monitoring program for environmental values. • Unused water to be returned to the non-consumptive pool rather than traded. • Climate change needs to be acknowledged in the plan's risk assessment. • A reassessment of the estimated sustainable yield within 3 years, and no new licences granted during this period. • Integrated accounting of surface and aquifer water together should be applied. 	<p>Comments considered under section 3.2.3</p>
1k	<p>A chronically out of date Water Act is resulting in a whole suite of minor and major perverse impacts on effective planning:</p> <ul style="list-style-type: none"> • Major impact is the overriding power of the Water Controller which makes a WAP a guiding tool rather than a planning tool, because a WAP cannot limit the decision-making power of this individual. • Minor impact is extremely unhelpful legal definitions, for example of 'ESY' or 'cultural', which bear no relationship to widely agreed public definitions and add unnecessary confusion to already complex documents. <p>Proposed action - comprehensively review the Water Act so that it is a current and benchmark tool for managing our precious water resources.</p>	<p>Outside the scope of this plan. Agreed that a water allocation plan cannot fetter the decision-making of the Controller of Water Resources. Comments to be provided into water regulatory reform process.</p> <p>A comprehensive review of the Act is unlikely to progress reforms in the timeframes needed.</p>

Comment		Department recommendation / response
1l	<p>No justification is given, either in the plans or in policy, of key decisions that can have considerable impact on planning outcomes. An example of this is the decision to use the statistical median in some instances, and the mean in others. Not explaining and formalising the process for making these determinations could result in very significant inconsistencies between plans over time, without good reason.</p> <p>Proposed action - develop a Water Act supported by a suite of policies which provide a stable and transparent platform for effective water planning.</p>	<p>Outside the scope of this plan. Comments to be provided into water regulatory reform process.</p>
1m	<p>The acronym for Strategic Aboriginal Water Reserve is SAWR. Why this has been abbreviated to SWR is unclear. Given that the purpose of this policy is to provide a benefit to a specific group of water users the word 'Aboriginal' seems to be key. Dropping this word from the acronym is confusing and potentially misleading.</p> <p>Proposed action - use consistent and clear language, avoid acronyms where possible, where acronyms are used they should be correct.</p>	<p>Noted. Expand the acronym throughout plan to 'Strategic Aboriginal Water Reserve' where possible.</p>
1n	<p>The risk assessments in the plans are highly subjective.</p> <p>Proposed action - risk mitigation is the most important function of planning, more time should be committed to ensuring that the risk assessment is comprehensive and has stakeholder/public endorsement and support.</p>	<p>The Department's risk assessment methodology has been used to frame the risk assessments in the plan and this is applied consistently across all water allocation plans under development.</p>
1o	<p>The clarity of WAPs as a communication tool for a range of audiences has been an issue consistently raised over the last 10 years. The table titled Katherine and Ooloo Water Allocation Plans - comparison appears to be a good starting point for a document, which would allow planning to be a more community orientated and inclusive process. Water Resources has a role in fostering water stewardship and the first step is making information about water management more accessible.</p> <p>Proposed action - development of a 'snapshot' of each WAP to make key components of the plan accessible to a wider audience.</p>	<p>Proposed action supported and a 'snapshot' to be developed and provided online. The Key Points in the front of water allocation plans under development is designed to also assist in this regard. The Department intends to produce comparison documents where possible in future water allocation plans.</p>
1p	<p>The performance of the NT economy will become more and more important into the future. Land use will simply need to be made more and more productive to cover NT's costs to operate. Livestock and more importantly agriculture/horticulture have a major part to contribute towards this. Respondent does not believe the plan considered these enough in a general sense.</p>	<p>The Water Act 1992 requires a plan to guide the sustainable management of the water resource. It is out of scope for a plan to advocate for economic development but it can inform the economic development actions of government and business. Similarly, decisions around improving water use efficiency which also is a driver of improved productivity are made by businesses.</p>

Comment		Department recommendation / response
1q	Although dryland farming will be more greatly tested and tried as the cost to develop irrigated options is very high and water generally not guaranteed, we must encourage irrigation options to support the dryland, as it will be needed to achieve the scales required.	Dryland farming in the Katherine region has been very successful in the past. All licensees have the opportunity to trade water where a water allocation plan is declared. New entrants can 'trade in' water from existing licensees, providing there is no net increase in licensed entitlements and trading guidelines established in the plan are met.
1r	Acknowledge and support the following elements and significant advancements in the draft plan: <ul style="list-style-type: none"> • Incorporating groundwater and surface water considerations into the Plan. • That no new licences will be issued for this plan. • Refinement and clarity of values and objectives of the Katherine Tindall system. • That groundwater and surface water quantity and quality monitoring will be undertaken throughout the course of the Plan. • Continuation of a protective buffer for groundwater input to the Katherine River (Groundwater Discharge Protection Zone). 	Nil.
1s	Considering the high likelihood that the system is currently significantly over allocated it is recommend that: <ul style="list-style-type: none"> • The proposed ESY and non-consumptive use pool be, at the very least, more heavily scrutinised, with the potential future risks to the environment (see below) and water security being clearly presented to all stakeholders. • The current duration of the plan should be reduced to five years to enable determination of an agreed ESY and non-consumptive use figure. • Options for addressing the over allocation be implemented as soon as possible. 	Comments considered under section 3.2.3.
1t	Calls to advocate for true representation and consultation by licence holders in the water allocation planning process - there needs to be a number of irrigators and or other licence holders on each committee to reflect the economic stakeholders in the water planning process for each WAC. At present the irrigators are the chair and a retired mango grower.	There will be opportunities to nominate for future water advisory committees. Appointments are at the Minister's discretion.
1u	Major differences in how the two draft plans (Katherine and Ooloo) present information. The way that the water resource is explained in the Ooloo plan is much more understandable and diagrammatic than that in the Katherine Tindal draft plan. An example of this is the schematic representation on page 69 of the Ooloo draft plan. Simple to understand and effective in its message.	A diagram representing the aquifer recharge will be included in the final plan.

Comment		Department recommendation / response
1v	The draft plan makes no mention of finding ways to increase the water available to industry and the community. Respondent is aware of a study commissioned by the department in 2018 to look at options such as Managed Aquifer Recharge by capturing a small amount of the Wet season flow using a weir on the King River and pumping to recharge points to replenish the Tindall aquifer. This type of option needs to be mentioned in the plan as a possible option for the future.	This report (three parts) by Jacobs is publicly available. Depending on site characteristics, scale and crop type MAR may be a viable option in fully allocated systems. The cost per megalitre of water under the King River managed aquifer recharge scenario was not considered viable in the study.
1w	The current uncertainty resulting from piecemeal legislative changes, policy reviews and new policy developments, large gaps in science and monitoring data and the rigorous implementation of regulations that give no consideration to agronomic or market factors, is leading to widespread distrust and uncertainty that will result in business failure or potential investment going to other states or countries. If the purpose of licensing water is to support sustainable economic activity it logically follows that licence conditions, licence assessment processes and licence review processes should consider economic factors - at present, they do not.	Outside the scope of this plan. Comment to be provided into water regulatory reform process.
1x	Concern about the unjustified Estimated Sustainable Yield (ESY) figure and the ongoing and unexplained departure from the Department's employment of the Precautionary Principle in accordance with the NT Water Allocation Planning Framework. Furthermore, respondent not supportive of the proposed 10-year term of this plan because it relies upon significant assumptions and acknowledged uncertainty being used to guide future management and decision-making.	Comments considered under section 3.2.3.
1y	Respondent strongly endorses the adoption of an integrated approach to the water resources in the plan; encompassing the management of all water from the Tindall Limestone Aquifer within the plan area, including the water in the groundwater system, and the groundwater discharge to surface water systems.	Refer 1g.

Comment	Department recommendation / response
<p>1z How do we know this plan is a success or failure? What are the Key Performance Indicators and the weighting of those indicators?</p> <ul style="list-style-type: none"> • Culture, Environment, Mining (and others), & Agriculture should be considered equally. Mining (and others), and Agriculture, the main commercial operators, clearly being a source of funds to enhance culture and environmental aspects. It is about management of a good strategy rather than regulate the commercial operators to do either nothing or not enough for industries to flourish. • The DENR personnel need to be driven to see this succeed. Respondent thinks there are too many negative influences in DENR and this needs to be curtailed by the powers that be. <p>Success will be when we see logistical assets being built in NT and exports of agricultural commodities out of the Port of Darwin. Without these we are not competitive and never will be. Agriculture industries are now having a go. Support them please.</p>	Nil.
<p>1aa In Table 5 of this plan, the respondent recommends an additional strategy be included under Objective 2 as follows: "Cultural site monitoring and reporting continued over plan implementation, under the guidance/direction of the Aboriginal Reference Group" (this is in line with the strategy for ecosystem monitoring under Objective 1).</p>	Update objective table according to comment.
<p>1ab Environmental and cultural non-consumptive flows, although linked, are not the same and should be delineated as separate uses. This is recognised in the plan, but this intent would be strengthened by amending the legislation.</p> <p>Furthermore, the current definition of 'cultural' as a consumptive use within the Act is inadequate, outdated and misleading. The definition should be changed, with Aboriginal culture identified as a separate use to the current use, which could be better classified as 'recreation and amenity'.</p>	Outside the scope of this plan. Comment to be provided into water regulatory reform process.
<p>1ac Move the glossary and abbreviation list to the front of the plan and avoid abbreviations where possible.</p>	Departmental style manual recommends placement at the end of the document. Abbreviations are avoided where possible.
<p>1ad Include a mechanism in the plan by which community members can raise issues or concerns, including about water flow or quality which may be impacted by water extraction licences.</p>	Include a note at the beginning of the plan including information on contacting Water Resources Division.
<p>1ae It is essential that downstream impacts beyond the plan area are included in mapping and flow-setting.</p>	Review of the non-consumptive water requirements will need to consider downstream values and impacts influenced by management of the Tindall Limestone aquifer.

Comment		Department recommendation / response
1af	The respondent notes that the draft plan recognises the importance of Aboriginal cultural values and their association with water, implementing measures to ensure that Aboriginal cultural values are protected by their water requirements. If required, the respondent would welcome the opportunity work with the DENR to identify sacred sites and consider the protection these sites require.	This will be part of the implementation of the plan
1ag	The respondent holds concerns with over allocation of the aquifer by almost 4,000 ML per year. Over extraction and pollution caused by developments and properties within the water allocation area may affect cave microclimates and other groundwater dependent ecosystems along with cultural values and tourism and recreational areas.	This will be part of implementation of the plan and considered when developing the environmental monitoring program.
1ah	The respondent supports the plans intent of not issuing new water extraction licences until the system is no longer over allocated, returned water contributes to non-consumptive water requirements along with the 'Management of Unused Licensed Water Entitlements' policy.	Nil.
1ai	The respondent would like to remain engaged with the plan's implementation and review including work on ecological and cultural values monitoring and assessment and the MERI program.	The will be an opportunity to nominate for a water advisory committee overseeing the implementation of the plan. The offer will be considered when developing the environmental monitoring program.
2	Estimated sustainable yield determination	
2a	The aquifer is over allocated. Given that the estimated sustainable yield has been carried forward from the 2016-2019 plan rather than based upon science, the stated over allocation is highly likely to be a substantial understatement of the over allocation should an ecologically based sustainable yield be applied. An ecologically based sustainable yield has not been quantified.	Comments considered under section 3.2.3.
2b	The sustainable yield adopted in the plan far exceeds the 80/20 rule of the NT government Water Allocation Framework and there is a gap in scientific research that can be used as a basis for the alternative allocation. There has been a failure to apply the precautionary principle that is reflected in the 80/20 rule. Water flow information for the Katherine River is applied, however, the ecological consequence of these flow regimes has not been quantified.	Comments considered under section 3.2.3.
2c	A major endeavour is required to quantify the sustainable yield while achieving the objective to 'meet the environmental water requirement of water dependent ecosystems'. In the absence of a scientifically based sustainable yield, the plan should progress toward the 80/20 rule in accord with NT Government policy.	Comments considered under section 3.2.3.

Comment		Department recommendation / response
2d	<p>The proposed plan has a median recharge volume of 53 GL (down from the 74 GL in the existing plan). The draft plan also states that the licences issued allows for some 40 GL plus 2 GL for stock. This equates to an allocation, during a median year, of 79%. The allocation to the environment is 21%, the government guidelines states that 80% should be allocated to the environment if limited data exists.</p> <p>Respondent notes that we have been avoiding a calamity because those who have the right have not been using it - according to the figures in the plan only 38% of the 79% allocated had been used in recent years.</p> <p>It seems obvious that the most basic principle of leaving enough water for the environment MUST be adhered to.</p> <p>The current allocation should be reduced to a maximum 20% during a median year. All decisions must be either based on science or the default government guideline(s) followed.</p>	Comments considered under section 3.2.3.
2e	<p>The estimated as 22.2 GL under the existing plan. This is the long-term annual extraction limit – equating to 30% of the average annual recharge of 74 GL. In the 2019-29 Plan the ESY is 38.4 GL, which was the old maximum extraction limit and the average annual recharge is now 53 GL. The long-term average extraction limit should be used as the ESY not the maximum extraction limit</p>	Comments considered under section 3.2.3.
2f	<p>Respondent suggests the use of the term 'sustainable yield' throughout the draft Plan is not appropriate. The true 'sustainable' yield is not yet known as the necessary ecological and cultural studies have not been completed, despite being highlighted as an action in the previous Katherine Water Allocation Plan. Use of 'maximum diversion limit' or 'agreed maximum diversion limit' or another similar term would be preferable.</p>	Comments considered under section 3.2.3.
2g	<p>A simple rollover or continued application of the same 'sustainable yield' from the previous Water Allocation Plan (38,391 ML/year) is understandable in the absence of a definitive number based on comprehensive ecological/cultural water needs assessments, though not ideal and should not potentially misleadingly be termed a 'sustainable yield'. Determination of the actual environmental and cultural water requirements is an essential body of knowledge needed for proper planning, and should be afforded the highest priority with resources allocated accordingly.</p>	Comments considered under section 3.2.3.
2h	<p>More explicit references to over allocation are required throughout plan. The plan also needs to express strong caution about the current proposed estimated sustainable yield of 38 GL being the final ESY in the plan.</p>	Update plan accordingly.
2i	<p>Supportive of the proposal to prioritise estimated sustainable yield research and until that is complete no new water allocation licences should be issued.</p>	Comments considered under section 3.2.3.

Comment		Department recommendation / response
2j	Community and stakeholder consultation should be clearly described within the plan as this will be critical to explain how dry years affect river flows and how the plan will deal with these issues.	Include recommendation for community and stakeholder consultation and engagement on the implications for stakeholders of the plan.
2k	Respondent reasonably confident that the numbers for sustainable yields and recharge rates will change over time with more objective data. This data should be all that changes the numbers and not directives from politicians running with the political breeze of the moment - the data must never be manipulated as I am sure it has been in the past.	Nil.
2l	The draft plan sets 38,391 ML/year as the ESY. However, this has been set as a simple and seemingly arbitrary figure carried forward from the previous plan, and is equal to the announced allocation from the previous plan. Therefore, it does not represent consideration of environmental or cultural needs of the system, and is not following the principles of the National Water Initiative - i.e. to consider and allocate for environmental and cultural values prior to any consumptive water allocation. Respondent contends that this proposed ESY is not precautionary, as defined by the NT Water Allocation Framework and was also not an agreed outcome by all stakeholders through the Water Advisory Committee. Respondent also contends that the proposed ESY may have unintended negative consequences both to river health and water security in the future.	Comments considered under section 3.2.3.
2m	The proposed ESY in the draft plan represents a significant departure from the precautionary approach adopted in the NT Water Allocation Planning Framework. The proposed plan allocates 72% of all available water to consumptive use/ESY (38,391 ML/yr), and therefore allocates only 28% of the available water source for environmental and cultural water needs. The current departure away from the "80:20 rule" in this plan is a major concern and demonstrates that the aquifer is currently significantly overallocated. Whilst the respondent understands the need to consider existing licence holders and commitments, and that the current 'water use' is below that licensed; it is however highly likely that even when more evidence does become available to set environmental and cultural water requirements for the Katherine River, the system will still be over allocated.	Comments considered under section 3.2.3.
2n	Supportive of the notion in the Plan, that at present there is little scientific evidence to establish the environmental or cultural water requirements for the Katherine River. Also supportive of the urgent need for research to address key gaps in our knowledge. We do know how important dry season flows are to the integrity and health of the river; and therefore a precautionary approach is needed to protect these flows. Indeed, the NT Water Allocation Planning Framework uses this exact principle.	Nil.

Comment		Department recommendation / response
2o	<p>The proposed draft ESY for the plan places the ecological integrity of the Katherine River at risk. The low-flow dry season period in tropical savannah rivers is particularly vulnerable to changes in water levels and consequently to the ecological health of the river system. Major research outputs will soon be released which will confirm critical flow-ecology relationships with both dry and wet season flows in Daly River system.</p> <p>Whilst the Katherine River is generally in good ecological health, there are indicators of ecological stress. For example, the fish community took at least six years to recover from the impact of the 2012 blackwater and fish kill event (King unpub data). Furthermore, while the system may appear to be in reasonable ecological health now, this could also be because the impact of full water use has not been realised.</p>	<p>Opportunity to update plan to improve description of the ecological risk of low flows.</p>
2p	<p>The inclusion of Environmental and Cultural uses within the beneficial uses has created a great deal of confusion and the department has not been successful in explaining the system to other stakeholders. The estimated sustainable yield (ESY) is calculated after the amount of water for non-consumptive uses of the environment and cultural has been reserved but the environment and cultural uses are also now in the consumptive pool and need to be identified there as well. This confusion on apparent double dipping or the implication of very nominal amounts of water for the environment and cultural uses has led to misinterpretation and emotional outbursts in the local press.</p>	<p>Provide additional clarify on the ESY and Beneficial Use categories, and the allocation of water to each. Explain that there a consumptive cultural beneficial uses as well as non-consumptive beneficial uses and that the Water Act requires an allocation to the environment beneficial use in a plan.</p>

	Comment	Department recommendation / response
2q	<p>The proposed ESY of 38.4 GL is not supported; is problematic, and best replaced by a lower number that incorporates a greater caution for environmental requirements and is more suited to avoiding imminent pressure for the release of recouped water for a plan that does not presently employ standard environmental precaution. Respondent proposes that the ESY for the Katherine Water Allocation Plan 2019 be set at 27.56 GL, a figure that is proportionate to the annual recharge to maximum extraction limit ratio from the previous plan, using the more reliable median recharge estimate, and updated water accounting.</p> <p>Given the recalculated recharge figures for the Water Allocation Plan (WAP) area and the understanding that median recharge figures are the most reliable predictor of future water availability; a reduced ESY is essential to apply at least a minor level of precaution and to properly signal the likely over allocation in the system (based upon the best available information). A failure to reduce the ESY would send the wrong message to stakeholders and would increase the risks of environmental damage that the plan is mandated to prevent.</p> <p>The proposed ESY of 27.56 GL / year will convey a more appropriate indication of proportional water use to all stakeholders. Furthermore, it is important to note that a 52% consumptive allocation is still likely to be above the eventually understood environmental and cultural requirements, necessitating further reductions in the future. Applying a proportionate, reduced ESY over the next four years would be a prudent action and one that is more likely to avoid pressure to issue new licences or to make an unsustainable allocation to the SWR, once any underused water is recovered and incorporated into the water balance.</p>	<p>Comments considered under section 3.2.3.</p>
2r	<p>Establishing an ESY figure that will protect environmental and cultural requirements based on information provided by directly relevant research should be listed as a Principal Objective of the new plan. This principle should be listed on page 9 and added to Table 5, along with the appropriate strategies to achieve this, as well as KPIs to measure success. The key importance of having either an informed or precautionary ESY should be elevated, and clearly communicated to all stakeholders. The centrality of this need to the future effective and mature management of the water resource must rank as a Principal Objective of the plan, and the completion of this objective should lead to a new plan being developed.</p>	<p>Update principal objectives section accordingly to provide more clarity on the intent of the comment.</p>

Comment		Department recommendation / response
2s	<p>Commitments to undertaking/completing the research (and other work) to inform a new ESY need to be made more explicit and upfront in the plan. This should include references to the 3-year timeline, as well as to any additional funding that may be required. This research was an aim identified four years ago and was a stated key action of the previous (2016-2019) plan yet remains incomplete. The <i>status quo</i> is not satisfactory, and this must be effectively communicated to all stakeholders via appropriate prioritisation.</p>	<p>Improve visibility of the commitment to undertake and complete research in the plan. Timeframe considered under section 3.2.3.</p>
2t	<p>When developing the allocation plan the best available science must be central to all decision making processes. It appears that thorough research into the maximum sustainable yield from the aquifer has not been completed. In the absence of this data the precautionary principle must be strictly adhered to in order to avoid the deterioration of such an important ecological asset.</p>	<p>Comments considered under section 3.2.3.</p>
2u	<p>Omission of climate change from the plan is a major oversight and the significant known and unknown risks associated with climate change further supports the absolute need for application of the precautionary principle.</p> <p>In this case the 80:20 rule (80% allocation to environment, 20% for consumptive uses) as laid out in the NT water allocation planning framework would be pertinent. However, the plan risks 70% of water being made available for consumptive uses under a 'use it or lose it model'. Further, the plans simple application of previous allocations as a proxy for Estimated Sustainable Yield is far from best practice.</p> <p>As we have seen in recent years rainfall and aquifer recharge rates have been highly variable with extended periods of well below average rainfall. This variability highlights the need for the precautionary principle to be applied and for the plan to be short term until the necessary science has been completed.</p>	<p>Comments considered under section 3.2.3.</p>
2v	<p>The respondent notes the acknowledgement in the plan that "there is insufficient information directly applicable for determination of environmental and cultural water requirements in the plan area". The respondent strongly support activities to better define these requirements, as well as the establishment of ecological and cultural values monitoring programs, and urge that resources be allocated for this work to begin as soon as possible and be completed within two years.</p>	<p>Nil.</p>
2w	<p>The respondent supports outcomes from the ecological and cultural values monitoring and assessment being used to inform a non-consumptive water requirement report for use in the review of the plan including to refine the estimated sustainable yield.</p>	<p>Nil.</p>
3	Water allocation to consumptive uses	
3a	<p>Strongly support the recommendation that no new water being granted from the Katherine Tindall Limestone Aquifer until the non-consumptive water requirements are known.</p>	<p>Nil.</p>

Comment		Department recommendation / response
3b	Respondent strongly endorses that new allocations (licences) should not occur (be issued by the Water Controller) until the non-consumptive environmental and cultural water requirements are established and documented and the ESY figure is updated in future refinements of the plan (new plan).	Nil.
3c	Throughout the draft Plan there are repeated statements to the effect that existing licence entitlements will not be impacted by the new water allocation plan. However the draft Plan also states that the Katherine Tindall groundwater system over allocated, and yet average reported water use is still low at around 30% (or 12,000 ML/p.a.) of the total licensed volume. So it is unclear why the Plan does take this opportunity to address the issue now? There is seemingly an opportunity to act decisively now, with minimal 'pain' for licensed water users. If DENR does not have the ability through the Plan to modify the volume of water granted under existing extraction licences, then it should explain why not. Regardless, the Plan could and should still clearly and definitively commit to reducing through the appropriate mechanism (e.g. rigorous application of the 'Management of Unused Water Policy' or similar) as its highest priority.	The plan explains the relationship between a water allocation plan and a water extraction licence including the role of the Management of Unused Licensed Water Entitlements Policy and renewal of water extraction licences in section 8.4 of the plan.
3d	The Tindall Limestone Aquifer is a critical part of this broader ecosystem and any over allocation of water extraction will have adverse affects well beyond the immediate vicinity of the aquifer.	Nil.
3e	Respondent concerned over allocation has been stated yet lacking in the same sentence is the considerable under usage of allocation. Respondent hopes allocating water to those who are unlikely to use it never becomes a strategy. Those who do not use their licences to a satisfactory basis should lose them and the allocation reissued to another capable applicant	Nil. Underuse of water is managed through compliance with licence conditions in accordance with relevant NTG policy.
3f	Environment and Aboriginal cultural issues have a massive bearing on the plan and over restrict agricultural activities. Respondent believes this is not balanced in the current form; however, I do not wish to see either the environment or Aboriginal cultures compromised. Respondent believes local aboriginal communities certainly need to be beneficiaries but the mechanism for them to trade water back to farmers, I suspect will be very difficult and may deliver nothing to them at the local level, and/or the water may not get used at all.	Nil.
3g	Respondent thinks the SWR should be linked more or solely to mining rather than agriculture. Particularly for when the water trading market develops. Respondent can imagine a severe disparity between what miners can afford to pay for water against farmers, or even plantation operators. Currently in the Murray Darling schemes the almond producers can afford to pay more the twice what annual crop farmers can pay, and this is causing problems.	Nil. No proposed change to plan. The Strategic Aboriginal Water Reserves will be managed according to NTG policy. There is no proposal to restrict the trade of the Strategic Aboriginal Water Reserve to certain beneficial uses.

Comment		Department recommendation / response
3h	<p>There is concern on how the annual announced allocation determinations will impact on perennial and annual horticulture crops in the Katherine Tindall area. The allowable impact of consumptive use for dry and very dry years appears to be much less than the current water usage of 15,947 ML for 2017/18 (p40). This will cause damage to perennial crops and market damage to annual crop producers if implemented as shown on p54-57 and have a detrimental impact on the overall economic output of these businesses.</p>	<p>Nil. In dry and very dry years, all users (along with the environment) will be impacted by lack of water.</p>
3i	<p>The announced allocations impacts directly on the outcome of the NT Management of Unused Licensed Water Entitlements Policy. Dry and very dry years are the year when growers are most likely to use the 70% or 90% of their water extraction licence as defined in the policy but this will not be allowed under the annual announced allocations framework as the growers will only be able to use a percentage of their entitlement under medium and high security licences respectively. This will result in growers then losing water under the unused water policy. This is unsustainable for any irrigation enterprise. It is directly contrary to good agricultural practices that would have irrigators maintaining a buffer for those dry years when irrigation demand is highest. This policy is aimed at achieving the objective of the best use of the water resource but seems to be structured and implemented to achieve the opposite.</p>	<p>Nil. No proposed change to plan. The annual announced allocation process works on an annual timeframe. The management of licences in an ongoing activity. The process to return unused water does not occur annually for each licence.</p>
3j	<p>The previous water allocation plan for the Tindall Aquifer dictates during "dry years" 20 per cent of annual discharge from the aquifer is available for extraction under water licences, with the remaining 80 per cent set aside for environmental flows. However, under conditions in the allocation plan, flows in the Katherine River currently allow 30 per cent of annual discharge to be extracted and 70 per cent left for environmental flows (5.2.1.3). Preserving the environmental flows within the Katherine, Daly and Roper Rivers is the fundamental test applied to the detailed modelling that is undertaken when assessing all water licence applications. We are unaware of any new data that supports increasing the current allocation by 200% In the absence of adequate data reference should be made to the table in the existing plan which states that flows up to 1 cumecs @ Katherine Bridge should have an extraction limit of 11,128 ML (15% of the aquifer), not the proposed 30% (22,200 ML) @ +1.01 cumecs</p>	<p>The existing water allocation plan considered flow modelling at Katherine Railway Bridge and Low Level and determined a scale of allowable extraction between 13% and 30% of modelled natural flows. The draft plan considers flow modelling at Wilden gauging station and retains the arrangement of allowing between 13% and 30% of modelled natural flows to be impacted by extraction. Under a dry scenario under the draft plan, 80% of the modelled natural flow is to be preserved, with extraction able to impact flows by up to 20%.</p>
3k	<p>The respondent supports the Annual Announced Allocation process being implemented according to the plan, ensuring non-consumptive water requirements are met.</p>	<p>Nil.</p>

Comment		Department recommendation / response
3l	The respondent supports non-consumptive water requirements (including cultural water requirements) being considered in any future licensing decisions and water extraction from surface water and groundwater within the plan area being managed at sustainable levels.	Nil.
4	Monitoring and reporting	
4a	Strongly support further work on identifying GDEs and developing a comprehensive monitoring plan that will assess parameters of the ecosystems or key plant or animal populations that will provide an assessment of ecosystem health and act as triggers to guide management.	Nil.
4b	Development of a monitoring, evaluation, reporting and improvement (MERI) program as indicated in the implementation plan will assist transparency. Transparency would be further enhanced by providing annual public reporting, for example: progress on quantifying the sustainable yield; advances with identifying and mapping GDEs; and progress on developing a monitoring program for these GDEs. Respondent suggests a robust annual public reporting system will significantly assist confidence in the plan and demonstrate that an adaptive management approach is indeed being applied.	Nil. Annual reporting is a recommendation in Table 10.
4c	The plan provides no guidance on monitoring protocols or direct ecosystem or population parameters that could or should be monitored and that would act as triggers to guide decision making. However the plan does rely heavily upon the surrogate measure of late dry season flows in the Katherine River at Wilden Gauging Station. The relationship between late dry season flow and ecosystem response is intuitive, but not quantified. There is ongoing work such as that being undertaken by the Northern Australia Environmental Resources Hub that may partially fill these gaps.	A critical component of early stages of plan implementation will be to develop the monitoring protocols and parameters that should be monitored. This will be developed in conjunction with internal and external experts. Table 10 has an action to establish an environmental monitoring program
4d	Appendix 2 Monitoring Plan item 5 "Identification of specific environmental water requirements that maintain ecological processes in the Katherine and Daly Rivers." – Annual report to be written. The only report the respondent could find on the government's web portal recommends that less that: "...Agricultural water extraction allowed from the Daly River and aquifers providing spring input must be managed so that the cumulative impact on flows is < 8% when streamflow reach the following thresholds at the stated locations..." The annual reports compiled as part of plan monitoring be made public so an assessment can be made by stakeholders.	Nil. This refers to an action in the 2009 plan. The annual reports were not published. The new plan proposes annual reports are published, in Table 10.

Comment		Department recommendation / response
4e	<p>Groundwater dependent ecosystems have not been comprehensively identified throughout the plan area. The spatial arrangement of bores and proximity of water extraction points to GDEs is highly relevant to the maintenance of these ecosystems. The identification of the groundwater discharge protection area is an illustration of this concept. As the understanding of GDEs is advanced in the plan area, the respondent suggests guidance be developed as to the proximity of extraction bores to GDEs.</p>	Nil.
4f	<p>Resources need to be committed to monitoring and research to improve water management and the plan in the future.</p> <p>The success of this plan or any water management will rely heavily on obtaining the required information to justify any future changes. Monitoring and research needs are clearly evident throughout the plan and include critical features such as establishing the environmental and cultural water requirements, establishing median annual groundwater discharge, validating the current flow model used for Announced Allocations, and monitoring the ecological health of the system. Commitment to resources should be made explicit in the Plan.</p>	Comments considered under section 3.2.3.
4g	<p>Respondent repeats its call for more monitoring and science based decision making in water planning. Environmental water requirements for the very dry, dry average and wet years are presumably determined by the precautionary principle because the statement on page 69 states that the “environmental water requirements have not yet been determined for the plan area”. Growers are right to ask, “what is the minimum flow required at the Wilden to maintain basic river health?” “How does this relate to the 87%, 80% and 70% currently being proposed?”</p>	Comments considered under section 3.2.3.
4h	<p>The plan should clearly support the monitoring and review of Annual Announced Allocations (AAA) to ensure that the stated flow objectives are being met and are calibrated with actual water use and observations. A defined action should be to update the model to incorporate trends (e.g. successive dry years) and to evaluate potential impacts on aquifer storage levels and/or discharge over the medium-term. Additionally, it should be noted in the plan that the environmental needs research will also inform the future flow rates that need to be preserved through AAA’s.</p>	Comments considered under section 3.2.3.
4i	<p>Respondent strongly endorses ongoing surface and groundwater monitoring to continue over plan implementation. Regular interrogation of information to be undertaken and reported through water monitoring reporting.</p>	Comments considered under section 3.2.3.

Comment		Department recommendation / response
4j	The research needs during plan implementation should be elevated and better communicated within the plan. Needs include; establishing environmental and cultural requirements - including environmental river flow requirements, as well as validating the model that informs Annual Announced Allocations by comparing observed November flow rates and actual water usage.	Update plan accordingly and consider under implementation of the plan.
4k	Adequate resources will need to be made available to address the knowledge gaps and appropriate allocation of funds over coming years is encouraged.	Nil.
4l	The respondent supports a systematic ecological monitoring program being established as part of implementation of the plan.	Nil.
4m	The respondent supports the development and implementation of a detailed Monitoring, Evaluation, Reporting and Improvement (MERI) program.	Nil.

Comment	Department recommendation / response
5 Adaptive management	
<p>5a There is little evidence of increasing knowledge over time above and beyond that provided through monitoring and modelling. While monitoring and modelling are important there is no excuse for not investing in science to underpin decision-making. We must see steady improvements in knowledge, tools and resources to assist us in effectively managing the steadily increasing pressure on our limited water resources.</p> <p>Respondent notes the 2016-2019 Katherine Tindall WAP states that "Further details of strategies and performance indicators will be developed in an Implementation Plan". However, no evidence of an implementation plan or any public reporting against the KPIs.</p> <p>Respondent notes that this is the third Katherine Tindall WAP and we still have no confidence in the ESY which is the keystone to the whole planning process. Is this adaptive planning?</p> <p>The highest level of evidence that the basic tenets of an 'adaptive management framework' and application of the 'precautionary principle' are not working is that increasing numbers of planning areas appear to be in some form of crisis. At worst this is over extraction (in the case of the Howard and Berry Springs aquifers), in other cases it is over allocation (in the case of Katherine Tindall and the northern zone of Ooloo). This pattern has appeared rapidly and despite the NT being at an early stage of development. Planning is not giving us increased water security, and concern about water security is deadly to economic development. Various comments regarding planning. Implementation activities outlined in WAPs need to be acted on and reported publicly.</p>	<p>This a comment on the implementation of the 2009 plan. Commitment to undertaking activities in this space is considered under section 3.2.3.</p>
<p>5b Katherine Tindall draft plan makes the statement that "an adaptive management framework cannot be fully constructed" (p66) because of a number of uncertainties. The Ooloo draft plan has a full adaptive management framework on pages 90-95 with a similar list of uncertainties. The whole point of an adaptive management plan is to collect data around the uncertainties and to improve the monitoring and modelling that will get the plan closer to the best management plan possible. There is no need for exact figures to be put in place to design and implement an adaptive management framework. That should be outcome, not a pre-requisite. The framework from the Ooloo plan would be suitable with very minor adaptations.</p>	<p>Nil.</p> <p>The adaptive management framework will be developed along with reviewing the ESY, with input from internal and external stakeholders.</p>
6 Water quality	
<p>6a Respondent raised some issues with the references to water being of appropriate quality - is this out of the control of water resources division and therefore the plan?</p>	<p>In future quality, quantity and timing of flows will need to be considered in determining non-consumptive water requirements. This will be a component of the implementation of the plan.</p>

Comment		Department recommendation / response
6b	<p>Nitrate and pesticide contamination should be revised (section 4.5.2): Monitoring shows that nitrate is elevated in many areas of the Tindall aquifer and while levels are below drinking water quality guidelines, and lower than in other agricultural areas, they are very likely to originate from anthropogenic sources are not natural. There is contamination with pesticides and herbicides, for example atrazine contamination is low level, but widespread in the aquifer and there are other pesticides present locally as well. Pesticides can be detected in the river in the dry season. Update the sentence: 'contamination of the water resource from nitrates and pesticides is not currently occurring in the plan area' to be in line with the monitoring findings.</p>	Plan to be updated accordingly.
6c	<p>PFAS is not an emerging threat but a full contamination of groundwater. The source is clearly the RAAF Base and the contamination plume moves along the flow gradient from the base to the river. Other sources also exist and there is more diffuse contamination as well. Respondent finds the wording a little too soft here.</p>	Plan to be updated accordingly.
6d	<p>The fact that unconfined recharge areas are close to the surface in the Katherine region make the aquifer very vulnerable to contamination (as in the case of PFAS, and pesticides). Perhaps this should be mentioned somewhere.</p>	Plan to be updated accordingly.
6e	<p>Impact of PFAS/ PFOA on beneficial uses - Known impacts of the PFAS/ PFOA chemicals, and the resultant severe constraint on the beneficial uses (drinking water and horticulture) in recent years get minimal reference in the draft Plan. The impacts to beneficial uses and values, the likely severity and duration of these impacts and the resultant constraints on extracted water usage should be highlighted and better articulated.</p>	Plan to be updated accordingly.
7	Model refinement	
7a	<p>Supportive of activities that lead to improved models, such as refining the rainfall model for prediction of inflows to the Katherine River. Another refinement would be an emphasis on a run of dry years, given the scenario is likely to maximise stress on both consumers and the natural environment; and is more likely given the occurrence of extreme events under the influence of a changing climate. Efforts to understand and include the combined effects of surface and groundwater flows is also supported.</p>	Will be considered as part of determining non-consumptive water requirements through implementation.
7b	<p>The data comparing actual to modelled must be presented. Due to the exceptional sustained low levels of the Daly River it seems likely that environmental flow(s) provisions are inadequate. If there is insufficient data available, then the adoption of the precautionary principal should be applied. Provide the data for stakeholders to view of modelled and actual data for the past plan period, 2009-19 so an assessment of the current modelling values can be done.</p>	Provide additional information to stakeholders.

Comment		Department recommendation / response
7c	Proposed changes to the method of calculating recharge with median and mean rainfall options (p35) simply creates more confusion and uncertainty for business investment and planning. The Tindall Water plan needs to work towards the more definitive recharge information provided in the Ooloo Dolostone Aquifer Draft Water Allocation Plan (p43 Ooloo WAP) with water balance information per zone.	Proposal to include diagram to describe recharge in the system.
8	Strategic Aboriginal Water Reserve	
8a	<p>The respondent welcomes the establishment of a Strategic Aboriginal Water Reserve in this plan. However, given that the system is substantially over-allocated and the Strategic Aboriginal Water Reserve has a 'notional allocation' only, the respondent is greatly concerned the reserve will remain nothing more than a hypothetical concept unless this issue is urgently addressed. A principal objective of the Katherine plan is to "Provide access to water resources to support local Aboriginal economic development". To meet this objective, the respondent recommends the following are put in place:</p> <ul style="list-style-type: none"> • A plan implemented to fill the Strategic Aboriginal Water Reserve allocation through the return of unused water, in line with the Management of Unused Licensed Water Entitlements Policy. • Trading of entitlements (except for trading into or out of the Strategic Aboriginal Water Reserve) be suspended until the Strategic Aboriginal Water Reserve allocation can be met. • After the Strategic Aboriginal Water Reserve allocation is met, trading by non- Strategic Aboriginal Water Reserve licence-holders be limited to those who have gained water savings through efficiencies. 'Water speculation' by licence-holders who have held onto unused water should not be permitted, and this restriction should be stated clearly in both the plan and the trading policy currently in development. To allow trading as a means of water profiteering would be unacceptable. • Water allocated to the Strategic Aboriginal Water Reserve include a majority assigned as high security; if low security water is recovered first and allocated to the Strategic Aboriginal Water Reserve, a proportion is converted to high security. This is particularly important in the Katherine system, where the range of announced allocations is highly variable. 	<p>There is an existing policy, the NT Government's Strategic Aboriginal Water Reserves Policy Framework (NTG 2017). The plan establishes a Strategic Aboriginal Water Reserve based on the ESY recommended in the plan and the relevant Policy Framework. Implementation of the policy and Management of Unused Licensed Water Entitlements Policy will determine when and how the Strategic Aboriginal Water Reserve will be provisioned. Restrictions on trade are not considered viable options for provisioning the Strategic Aboriginal Water Reserve. Trade into the Strategic Aboriginal Water Reserve is not contemplated by the policy.</p>

Comment	Department recommendation / response
<p>8b Some elements relating to the Strategic Aboriginal Water Reserve are unclear and may require clarification in the plan:</p> <ul style="list-style-type: none"> • It is possible that the Strategic Aboriginal Water Reserve allocation may not be fixed – for example, if pending native title claims are settled, the allocation could potentially increase. • It is unclear whether water can be traded into a Strategic Aboriginal Water Reserve. It may be that Traditional Owners wish to do this, especially when there is no water available within the Strategic Aboriginal Water Reserve. • Strategic Aboriginal Water Reserve allocations have not been included in the ‘available water’ figure (p50) or in the total beneficial use figure in Table 7. This is confusing and could give readers the impression that once the over-allocation of 3,772 ML is returned to the system, water will be available for licence entitlements. We recommend that totals including Strategic Aboriginal Water Reserve allocations be included so it is clear what is actually available. 	<p>Strategic Aboriginal Water Reserve is determined at the time the plan is declared. If the Strategic Aboriginal Water Reserve conformation changes, it will be reflected when the plan is reviewed.</p> <p>Trade into the Strategic Aboriginal Water Reserve is not contemplated by the policy (NTG 2017).</p> <p>The plan will be updated to reduce confusion regarding the availability of the Strategic Aboriginal Water Reserve.</p>
<p>8c The Aboriginal Reference Group should be actively involved in the development and implementation of defining the environmental and cultural water requirements, with Traditional Owners and/or Indigenous ranger groups engaged by the Department of Environment and Natural Resources on a fee-for-service basis to assist with collection of data, ongoing monitoring, and compliance activities.</p>	<p>Options and opportunities for this will be explored through implementation.</p>
<p>9 Trade Katherine Water Advisory Committee recommendation (Meeting 11, 23 July 2019): Given the uncertainty associated with the estimated sustainable yield, there was concern that trading may increase the use of water from the resource above sustainable levels. The Katherine Water Advisory Committee recommends that trade should be restricted to existing water licence holders already subject to the Katherine water allocation plan for the life of the plan.</p>	
<p>9a There are multiple references to trade in the plan. There is potential to reduce the current over allocation by retrieving water from unused water entitlements and adding to the non-consumptive pool in the first instance and Strategic Aboriginal Water Reserve next. A clear statement to this effect in the water allocation plan would accord with section 7 of the NT Government Policy on ‘management of unused licensed water entitlements.’</p>	<p>The Management of Unused Licensed Water Entitlements Policy (NTG 2019) describes this process. A summary could be included in section 8.6 of the plan.</p>
<p>9b Water trading, otherwise known as “water banking”, should be discouraged as it effectively locks up water that may be used by others to benefit the community. Trading of water should be explicitly prohibited from this water management plan. The principle of “use it or lose it” should be adopted.</p>	<p>An unused licensed water entitlements process has recently been applied in the plan area to return some unused water. The results of this process and the licence renewal process addresses the issue of water banking.</p>

Comment		Department recommendation / response
9c	To prevent disappointment, as well as any further reliance upon the use of potentially unsustainable and unreliable water, there should be no trading allowed of low or medium security water until a new ESY, justified by directly relevant research (or otherwise the Precautionary Principle) is established in a new plan.	Restricting trade of lower security water may not reduce the risk to the resource. There is no clear justification for these proposed trading guidelines. It is proposed not to change the trading guidelines in this plan.
9d	The plan refers to the establishment of Groundwater Discharge Protection Areas (GDPA). It is unclear what additional measures are or will be in place for GDPAs, including how trading rules affect GDPAs differently from the wider water allocation area. It is also unclear how new GDPAs may be established, including what the requirements are for their establishment.	Additional clarity to be provided in the plan.
10	Aboriginal reference group	
10a	<p>The respondent strongly supports the recommendations to establish an Aboriginal Reference Group (ARG) and for an ongoing role for a Water Advisory Committee. The Aboriginal Reference Group should be set up as soon as possible and the respondent makes the following recommendations:</p> <ul style="list-style-type: none"> • The group be given a meaningful role, including having their advice and recommendations considered by the Water Controller prior to making decisions. • The role of the group not be restricted to cultural matters and the Strategic Aboriginal Water Reserve (as indicated in the plan), but broadened to include provision of advice on water and land management. This will help to ensure the integration of traditional scientific knowledge in decision-making and management. • The establishment of an ARG be legislated within the Water Act. This would avoid the pattern seen historically of groups being established and disbanded according to the current government, and the subsequent loss of 'corporate knowledge' and expertise this entails. • Decisions regarding the makeup of the ARG, the area encompassed, and the group's structure be led by Traditional Owners. • Representatives from the ARG be included on the Water Advisory Committee (as was the case with the earlier Daly River Aboriginal Reference Group). 	Recommendations to be addressed as part of ARG development. Comment regarding the Water Act 1992 to be provided as part of water reform process.
11	Timeframe of plan	
11a	Given the existing gaps in knowledge and attempts being made to fill these gaps, the plan should be for five rather than ten years. This will encourage efforts to attend to these gaps and incorporate the new knowledge in a timely fashion.	Comments considered under section 3.2.3.
11b	A three-year review period for the plan should be provided – not a five-year review. The plan should not set out to be a ten-year plan. The key points of the plan should include reference to reviewing the ESY within three years.	Comments considered under section 3.2.3.

Comment		Department recommendation / response
11c	The term of the plan should be reduced from 10 years to four years, with a review commencing in September 2022 (3 years). This proposal is to allow time to undertake the required research to determine the environmental and cultural water needs and to justify, with evidence, an informed median Estimated Sustainable ESY Yield figure for consumptive purposes. Should this not occur, then a default to the 80/20 rule in line with the NT Water Allocation Planning Framework should be implemented from 2023.	Comments considered under section 3.2.3.
11d	Given the insufficient data currently available, the respondent recommends the plan be reviewed within three years.	Comments considered under section 3.2.3.
11e	Identifying the plan as '2019-2029' implies the current plan will be in place for the full ten year duration. Given the issues discussed above, the respondent suggests a flexible approach with the plan changed as needed and as further information becomes available.	Comments considered under section 3.2.3.
12	Climate change	
12a	The failure to acknowledge the uncertainties of climate change are a serious omission in the plan. While there is a great uncertainty as to the specific outcomes of climate change in the Katherine Region, global evidence clearly indicates more extreme events, be they floods or droughts. At a minimum, the impact of climate change should be included in the risk assessment.	Plan to include climate change in risk assessment.
13	Risk assessment	
13a	The risk assessment is based upon a principle that financial impact carries more weight than environmental or cultural values as evident in the definition of consequence whereby a high impact on environmental and/or cultural values is classes as of moderate consequence while a high financial impact is classed as of major consequence.	The risk assessment uses the Department's framework with aligns with the Australian Standard for risk assessment. Financial, environmental and cultural values carry equal weight.
14	Public water supply	
14a	Importance of groundwater to public water supply – The draft Plan contains references to public water supply, particularly where it is explicitly referenced and supported as Objective 3, and this recognition is appreciated. However we note that within the 'Values' (Section 3.2) various community benefits are listed but there is no mention of the value of the resource for public drinking water supply. We suggest the critical importance of groundwater to Katherine's drinking water supply (now and into the future) should be briefly described and acknowledged in this Section.	Values section to be updated accordingly.
15	Water advisory committees	
15a	The plan appears to refer to three different water advisory committees for the water allocation area, including the existing Katherine Water Advisory Committee established to assist with preparation of the plan. An outline of committee representatives and roles would be helpful for differentiating between each committee and understanding their intended purpose.	Additional clarification to be provided in plan.

Glossary

Term	Meaning
the Act	Northern Territory Water Act 1992
Allocation	A specific volume of water allocated to water access entitlements for a specific beneficial use in a given season, defined according to rules established in the relevant water allocation plan.
Annual Announced Allocation	A portion of a licence entitlement volume that can be taken in a year, announced annually on 1 May. Applied in systems where the volume of water that can sustainably be taken from the aquifer varies from year to year.
Annual extraction limit	The amount of water allowed to be taken in a particular year as stated in the period of entitlement table on a water extraction licence
Beneficial use	The uses of water specified in section 4(3) of the Water Act 1992. Beneficial uses include: agriculture, aquaculture, public water supply, environment, cultural, industry, rural stock and domestic uses, mining activity and petroleum activity. The Administrator declares beneficial uses for a water control district under section 22A of the Water Act 1992.
Climate	Generalised weather conditions of a region or place.
Confined aquifer	An aquifer bounded above and below by impermeable beds, or by beds of distinctly lower permeability than that of the aquifer itself and the upper water surface is the bottom of the upper confining bed.
Consumptive beneficial use	Water that is taken or diverted from a waterway or groundwater to enable beneficial uses. It is part of the estimated sustainable yield.
Consumptive water	The volume of water from the estimated sustainable yield set in the relevant water allocation plan that is available for allocation to consumptive beneficial uses from a water resource after the water needed non-consumptive uses have been met.
Cultural water requirement	A combination of water quantity, quality and availability for protection of key cultural values including Aboriginal, aesthetic and recreation.
Cumec	A cubic metre per second, a unit of measurement used to describe flow in surface water systems; one cumec is equal to one thousand litres per second.
Department	At plan commencement, the Department of Environment and Natural Resources, the agency responsible for administration of the Water Act 1992.
Entitlement	The specific volume of water licensed under section 45 (surface water) or section 60 (groundwater) of the Water Act 1992 to take or use water for given period, from a specific water resource and location, according to the terms and conditions of the licence.
Environmental water requirement	A combination of water quantity, quality and availability for protection of key environmental values including an ecosystem's structure, function and dependent species.

Term	Meaning
Estimated Sustainable Yield	The estimated sustainable yield is the amount of water that can be allocated from the water resource to support declared beneficial uses without compromising key cultural and environmental values, or ecosystem functions or the productive base of the resource or declared water quality standards, criteria or objectives.
Extraction limit	The entitlement for the current period multiplied by the announced allocation percentage
Hydraulic Fracturing	The underground gas and oil extraction process involving the injection of fluids at high pressure into a geological formation to induce fractures that conduct hydrocarbons for extraction.
Mean	The mean obtained by adding several quantities together and dividing the sum by the number of quantities. It is the same as average.
Median	The middle number in a series of numbers. The median is a value where 50% are higher and 50% are lower values.
Minister	Northern Territory Government Minister responsible for the Water Act 1992 under the Administrative Arrangements Order.
Percentile	A percentile is a measure used in statistics indicating the value below which a given percentage of observations in a group of observations falls.
Maximum water entitlement	The maximum annual volume of water licensed under section 45 (to use or take water from a waterway) or section 60 (to take water from a bore) of the Water Act 1992 for the term of the licence, from a specific water resource and location, according to the terms and conditions of the licence.
Nominal allocation	A small amount of water (usually 20 ML/yr) allocated to beneficial uses to meet the requirement for an allocation to each declared beneficial use in a water allocation plan under the Act.
Notional allocation	An amount of water allocated to the strategic Aboriginal water reserve (currently a subclass of other beneficial uses) that may not be provisioned depending on the level of existing water entitlements at the time a water allocation plan is declared.
Non-consumptive beneficial use	water allocated from the estimated sustainable yield to the environment beneficial use
Non-consumptive pool	The volume of water required to meet the water requirements of key environmental and cultural values, ecosystem function, maintain the productive base of the resource and maintain water quality.
Objectives	Something you plan to do to achieve an outcome. Eg Objective: to allocate water to beneficial uses. Outcome: water is managed sustainably.
Outcomes	The way things turn out (the consequence of meeting your objective or taking an action or completing a strategy).
the plan	This water allocation plan

Term	Meaning
Reliability	A percentage number representing how many years the total volume of licence entitlements would have been available in full if all entitlements were extracted at their maximum entitlement under the same aquifer recharge and river flow conditions that have been observed over the last 30 years.
Unconfined aquifer	An aquifer that isn't confined beneath relatively impermeable rocks
Security Level	Represents the order in which Annual Announced Allocations are applied to licence holders, e.g. in years when a less than 100% announced allocation is required, Low Security licence allocations are reduced first, then medium security licences and finally high security licences, as is required to meet objectives for minimum change in river flow.
Strategic Aboriginal Water Reserve	The Strategic Aboriginal Water Reserve (AWR) is a Northern Territory Government policy to allocate water in a water allocation plan for Aboriginal social and economic benefit proportional to the area of land with direct physical access to the water resource. It can be established as a subclass of some other beneficial uses.
Strategies	A plan which is devised to achieve a particular outcome
Wet season	The period from October to April when more than 95% of annual rainfall occurs
Water Entitlement	The specific volume of water licensed under section 45 (surface water) or section 60 (ground water) of the NT Water Act 1992 to take or use water for given period, from a specific water resource and location, according to the terms and conditions of the licence.
Weather	The state of the atmosphere with respect to wind, temperature, cloudiness, humidity, pressure, moisture, etc.

Abbreviations

Acronym	Description
AAA	Annual Announced Allocations
AHD	Australian Height Datum
AWR	Strategic Aboriginal Water Reserve
BoM	Bureau of Meteorology
Cth	Commonwealth of Australia
WCD	Water Control District
ESY	Estimated Sustainable Yield
GDPA	Groundwater Discharge Protection Area
mAHD	Elevation in metres relative to the Australian Height Datum
NESP	National Environmental Science Program
NLC	Northern Land Council
NT	Northern Territory
NTG	Northern Territory Government
NWI	National Water Initiative
PFAS	Perfluorinated and polyfluorinated alkyl substances
WAP	Water Allocation Plan
WCD	Water Control District

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