[redacted]

[redacted]

To whom it may concern

SUBMISSION - FNC Water Strategy

Thank you for the opportunity to make a submission on the Draft Far North Coast Water Strategy. I am grateful for the efforts that the Department of Primary Industries and Environment (DPIE) has put into consulting the community and exploring all options in the development of a strategy that addresses reliable water supply for the Far North Coast over the next 30-50 years.

Overview

We know that water security and water scarcity will be some of the most significant and major challenges facing communities across NSW, Australia and the world as the planet continues to warm and as topographic rainfall on the East coast of NSW declines. I commend DPIE for looking to that future and for developing a long-term Regional Water Strategy that can guide successive Governments on how best to prepare for the water challenges in the not-too-distant future and beyond.

[redacted]

Our Regional County Council – Rous, is also to be commended for looking at water security in the Northern Rivers over the next 40 years and seeking community feedback on their *Future Water 2060* project. However, it is disappointing for many in our community that Rous have focused primarily on a new Dunoon dam for Rocky Creek rather than focusing on water saving technologies or direct and indirect potable reuse of purified recycled water. Many water scientists working in Government and in the University sector are telling us that smarter water use and water recycling will be the best way to safeguard water security in light of global warming, increased droughts and declining topographic rainfalls on the East coast of Australia.

I was particularly disappointed that underpinning the entire Rous *Future Water Strategy 2060* was the assumption of only 1 Degree of global warming between now and 2060! The IPCC has recently announced that we have already reached 1 Degree of warming and that we are on our way to an increase of 1.7 Degree of warming by the end of 2022. Rous's underestimation of global warming brings into question all of their calculations around yields. This also brings into question the adequacy of the proposed Dunoon Dam since there is likely to be a much higher need for water sources other than from rainfall, and that is completely underestimated in its report.

Whilst the DPIE has been comprehensive in drafting this strategy, we think that the strategy must not rely on Rous's *Future Water 2060* reports because of the fundamental flaw in the science around global warming temperature increases and because the cultural and environmental costs of the dam far outweigh any short-term water gains. Moreover, there is widespread opposition to the proposed Dunoon Dam as evidenced by more than 92% of public submissions made to the Rous *Future Water Strategy 2060* opposing the dam proposal.

New Dunoon Dam on Rocky Creek

Rous and Lismore Council failed to provide the Department of Primary Industries and Environment with an accurate appraisal of Dunoon Dam. Not simply in the inadequacy of projected rainfall yields in the report due to a highly conservative model of global warming being relied upon, but in the suggestion that there is community support for the dam.

The Dunoon Dam proposal is not new and was roundly rejected in 2014 by the community and by the 4 Local Councils that are represented on Rous. There is widespread community opposition to the dam based on the damage to Aboriginal cultural heritage that will result from the dam and environmental damage from flooding 40 square hectares of high value biodiversity and koala habitat. In terms of providing water security for our communities it does not stack up.

[redacted]

The Member for Lismore, [redacted] and I recently co-wrote a letter to the Chair of Rous, Keith Williams, requesting the release of the community report from the *Future Water Strategy 2060* before the deadline for submissions to the Draft Far North Coast Strategy. Rous has had over 2 months to publish the report and it is my opinion that Rous have been duplicitous in allowing DPIE to believe that the proposed Dunoon Dam has broad community support.

[redacted] I believe that Rous has been negligent in not publishing the report on community feedback before the closure of submissions to the FNC Water Strategy. I am aware of widespread concerns in the community about the destructiveness of Dunoon Dam and the failure of Rous County Council to plan for water resilience using modern technologies. If the Far North Coast Water Strategy aims to implement water reforms that promote improving compliance and transparency, the first step towards that should be to consider 92% of 1290 written and online submissions to Rous that opposed the dam option.

As I outlined in my submission to Rous's *Water Strategy 2060*, we need to make sure that all of our supply yield modelling is based on at least 2 Degree Celsius of global warming to 2060. The Rous *Water Strategy 2060* is premised on 1 Degree Celsius of global warming and according to the IPCC in 2020 that is a major under-estimation.

The de-salination proposal is an excellent one and accompanied by water saving technologies, at the home water generation, current water supplies and the upgrade of the Marom WTP we do not need to go down the path of an expensive new dam that is not fit for a warmer planet and will destroy precious Aboriginal heritage, wildlife and biodiversity.

The demand for water is likely to be far higher than that predicted by these reports due to higher than 1 degree Celsius in global warming. This means we need an array of measures to cover every contingency. The cost of the proposed dam at $220 million total initial capital cost and over $400 million in maintenance and operating costs over 80 years does nothing to insure us for a future of dwindling annual rainfall, longer and longer droughts and less and less day to day topographic rainfall in our region.

Whereas, moving towards one and perhaps several desalination plants in the next 40 years covers every contingency. Combining water recycling with renewable energy and/or Green Hydrogen power sources makes Purified Recycled Water extremely viable financially and secure in terms of future weather patterns. We understand that the community needs to be educated that we are moving from creeks and dams for drinking water to reverse osmosis from sea water on a warming planet.

Dams in the face of global warming are becoming increasingly ill-equipped to deal with potable drinking water demand – primarily because we as a society are using a precious resource for household purposes that simply are not warranted. Why do we use best quality drinking water for all of our household needs instead of only using potable water for drinking?

Climate Change

I am concerned that there is not much detail on the impacts of climate change in the assessment of groundwater extraction in Jacobs, *Future Water Strategy: Groundwater Schemes and Whole of Life Cycle Costings,* in Rous's *Future Water Strategy* or in the calculation of the figures in the *Rous Regional Supply: Future Water Project 2060, Integrated Water cycle Management Development: Assessment of Augmentation Scenarios* report. The projection of only 1 Degree Celsius of global warming in the report scenarios and an uncertain timeframe for reaching that level of warming is a major concern and I believe risks all of the data sets outlined in their work.

According to the Intergovernmental Panel on Climate Change report, *Understanding Global Warming of 1.5 degrees Celsius*, published in 2019, global warming is likely to reach 1.5 degrees Celsius between 2030 and 2052 if it continues to increase at the current rate.

On page 11 of *Rous Regional Supply: Future Water Project 2060, Integrated Water cycle Management Development: Assessment of Augmentation Scenarios* report, the author acknowledges that:

> *Determining the impact of climate change on the secure yield of a water supply system involves two modelling steps:*
>
> - *modification of daily rainfall and evapotranspiration data and calibrated rainfall-runoff models to produce climate changed daily stream flows, and*
> - *the daily climate changed streamflow, rainfall and evapotranspiration are input into the water supply system simulation models to determine climate changed secure yields.*

The report takes as its basis the same scientific logic of the CSIRO's Murray Darling Basin Sustainable Yields Project which used daily historical data from 1895 to 2006 – a period during which global warming was on a less step trajectory.

The report goes on to state that their projections have relied on the assumption that secure yields are premised on 1 degree of climate warming to represent the available water supply in 2030. Given IPCC projections this seems to be a fundamental underestimation of global warming and hence brings into question the accuracy of the data around supply yields.

Far North Coast groundwater sources

Jacobs *Future Water Strategy: Groundwater Schemes and Whole of Life Cycle Costings Report B* in Rous's *Future Water Strategy 2060*, explores water mining/ groundwater sources as an option to secure water for the future. It looks at new and exceptionally large bores at Woodburn, Newrybar, Tyagarah and Alstonville. It should be noted that each of these locations is prime agricultural land and are basically our food belt.

In the Draft Far North Coast Water Strategy options are outlined to; "Establish sustainable extraction limits for Far North Coast surface water and groundwater sources", and "Manage aquifer recharge investigations and policy." I have rated those options in the Far North Coast Water Strategy extremely low in terms of viable options for water sustainability into the future.

Greens NSW do not support industrial extraction of groundwater and there is no social license for the industrial extraction of groundwater in the Northern Rivers. We saw this on the Alstonville Plateau in 2018 and 2019 where farmers started to report that their groundwater levels were extremely low through the drought and when they raised serious concerns about extracting licenses for commercial use.

Whilst the Chief Scientist of NSW argues that there is endless groundwater, that is not the lived experience of farmers in our region and the precautionary principles tells us that further large-scale extraction is unwise. Water for NSW has done no rigorous scientific investigation of groundwater levels in the Northern Rivers in the last decade. Only desk top studies that are devoid of likely climate change scenarios are relied upon and quite frankly why we would risk our food growing water.

There is plenty of evidence in the United States where water mining near the coastline has resulted in higher and higher salinity levels in the groundwater. Farmers can't grow food with salt water and cows can't drink salt water! It is interesting to read the predicted brackish water quality from the proposed new bores in Rous's *Water Strategy 2060*. Each bore water yield requires reverse osmosis to provide drinking water to the community. Why would you risk our food growing water when a desalination plant can use sea water with no risk to food or folk?

Supporting water use efficiency and conservation

Both the Rous *Water Strategy 2060* and the draft Far North Coast Water Strategy fail to adequately explore water conservation as a key option for securing water for the far north coast over the next 40 years. Neither place water use efficiency and water conservation on the table for addressing water security and supply on the North Coast. Both studies have missed opportunities for leadership in contemporary water management.

The draft FNC Water Strategy only contains 4 dot points under the option of "Supporting water use efficiency and conservation" and there is a complete omission of water efficiency in Rous's *2020 Integrated Water Cycle Management Development options for increasing supply* report. The fact that Rous undertook no specialist studies on water conservation is disappointing to say the least. Why has water efficiency or roof and stormwater harvesting (including tanks) not been given serious consideration in either strategy?

Dams on a warming planet are becoming increasingly ill-equipped to deal with potable drinking water demand – primarily because we as a society are using a precious resource for household purposes that simply are not warranted. Why do we use best quality drinking water for all of our household needs instead of only using potable water for drinking?

On average, each person in Sydney uses about 200 litres of water a day. Sydney Water says that, of that 200 litres, 26% is showers; 23% outdoors; 20% toilets; 12% washing clothes; 12% inside taps; 6% bathtubs and 1% for dishwashers.

Were Rous to supply the 12% that must be potable then 88% of Rous's supply could be non-potable. With a bold education programme, we could wean ourselves off drinking shower and bath water as well (total 32%). Even without that change, a total of 55% of daily use (outdoor + toilets + washing clothes) should not be potable.

Were Rous to supply just that 45% of its current and future estimates of 'demand', its current supply would be adequate for many decades beyond 2060.

Ballina Shire Council is already leading the way, with dual reticulation in new subdivisions and with supplying suitably treated water to households for flushing toilets, washing clothes and watering gardens and it provides recycled water for agriculture and irrigation. Ballina Shire Council has invested $85 million in the Ballina-Lennox Head Recycled Water Masterplan and the program aims to: reuse 80% of recycled water in times of dry weather by 2050, preserving drinking water, delivering high quality recycled water to more than 7,200 new residential blocks over 30 years, providing recycled water for irrigation of sporting fields, parks and open spaces and opportunities to irrigate vegetation regeneration.

A key problem lies in the high cost to date of supplying non-potable water compared with that from Rous sources. For future development, Rous Water could support urban water users managing their own supplies (as do rural users) either singly or collectively via a variety of methods including, roof-water tanks; stormwater harvesting and recycled water for non-potable uses.

Sydney Water gained approval from IPART this year to vary its 'usage' price according to the level of Warragamba Dam. This sends a clear virtue signal and price signal to households to start saving and recycling water at their residence.

Why are Rous and DPIE not working further with each Council in NSW to subsidise water tanks and water recycling for people on low incomes and then charging a premium to other households for potable water. So many of our villages are not connected to town water and already pay for water so that in itself incentivises those to use water smart technologies and practices.

Why aren't we looking at education and more at-the-home water saving and water recycling technologies?

Indirect and direct potable reuse of purified recycled water

On a warming planet and with IPCC predictions of greater than a 1.5-degree Celsius temperature rise by 2030, desalination plants are going to truly stand the test of time no matter the scenario. Given the NSW Government's proposed investment of 50 million dollars in green hydrogen projects over the next 10 years - green powered desalination plants seem to be a no brainer on every level.

The Ganden report in the Rous *Future Water Strategy 2060* provides a detailed 195-page report that explores the feasibility of desalination sites in 3 locations in the Ballina Electorate: Byron Bay, South Ballina, and Lennox Head. They have only considered a, "single relatively large-scale facility" as opposed to two or multiple facilities. It is the view of the report that multiple facilities are not considered economically or socially viable but at no point does the study consider powering facilities with renewable energy.

The Ganden Report makes it clear that the cost of a desalination plant is significant and that a facility can only be justified from an economic sense when always operated at a close to full capacity. This suggests that if we as a community opt for that capital expenditure and investment that Rous will need to work on educating the community that this is the way of the future and is best for people and the planet.

Critics of desalination plants argue that they are an expensive capital investment in the short term and that they are only utilised as a last resort when water runs out. Interestingly, in the last 2 years we have seen the Adelaide desalination plant, that is currently being expanded to double its capacity, turned on to save water from the Murray-Darling Basin and the Sydney desalination plant, that is also being expanded to double its capacity, turned on in response to the last drought.

[redacted]

I fully support the construction of a 10MLD Seawater Reverse Osmosis (SWRO) Plant with an offshore intake and outfall. I also support the idea of a staged construction with an initial 5MLD plant, followed by incremental increases of 2.5 MLD to achieve the ultimate 10MLD plant capacity.

Given the shortfall in terms of climate modelling that underpins these reports the Desalination Plant proposal stands out to me as the best scenario to support our communities to 2060.

According to the yield benefit table in the Rous report, the 50 GL Dunoon Dam with 15,057 ML/a looks to be a great option compared to the 10 ml/D Desalination plant with only 1,550 ML/a water yields. However, given that the entire underpinning of the figures in these reports relies on only 1 degree Celsius warming over the next 40 years! I would argue that this is not a risk worth taking.

The combination of at-resident-site water saving and water generating capacities, the upgrade of the Marom Creek WTP and the current predicted flows from our current water sources coupled with a desalination plant in Byron Bay, and possibly several others, all powered by Green Hydrogen, prepares us for any future contingencies in terms of drought.

I would think that we will need several desalination plants in the Northern Rivers before 2060 if we as a species continue on our current trajectory of carbon emissions.

Thank you for this opportunity and I look forward to seeing where the submissions take you.

Warm regards

[redacted]

Regional Water Strategies Public Exhibition Submission Questionnaire

The NSW Government is taking action to improve the security, reliability, quality and resilience of the state's water resources. The Far North Coast Regional Water Strategy will deliver healthy and resilient water resources for a liveable and prosperous regional NSW.

This draft strategy is being developed by the Department of Planning, Industry and Environment and provides an opportunity to re-shape what we are doing in regional water management and chart a path forward.

We have been working with local water utilities, councils, communities, Aboriginal people and other stakeholders to ensure local and traditional knowledge informs the draft Far North Coast Regional Water Strategy and that it serves the regional community, including First Nations, the environment and industry.

Your Voice is important

We have prepared this draft strategy to continue our discussions with you. We would like to hear your views on the draft strategy as a whole including the process we used to develop the strategy and the evidence that supports it. We are also seeking your feedback on the options presented in the draft strategy and whether you have any further information that could help us to assess the benefits and disadvantages of any of the options.

Please provide your feedback in the submission form below and email your completed submission to regionalwater.strategies@dpie.nsw.gov.au or post to Regional Water Strategies, Department of Planning, Industry and Environment, Locked Bag 5022, Parramatta NSW 2124 by **13 December, 2020.**

The questionnaire includes general questions about the regional water strategy including objectives, vision, modelling, opportunities and challenges. It also includes questions regarding the draft options along with personal information questions.

The questionnaire will take approximately 15 minutes to complete and your response can remain anonymous if you wish (see question 3).

Questions marked with an asterisk (*) require an answer.

If you have any questions about the questionnaire, please email:
regionalwater.strategies@dpie.nsw.gov.au

Making your submission public

We collect information about you, which may include personal information, to assess submissions in response to the department's dealings and activities, and perform other functions required to complete the project. This information must be supplied. If you choose not to provide the requested information we may not be able to assess your submission.

To promote transparency and open government, we intend to make all submissions publicly available on our website, or in reports. Your name or your organisation's name may appear in these reports with your feedback attributed.

If you would like your submission and/or feedback to be kept confidential, please let us know when making your submission. You will be asked for your confidentiality preference at question 1.

If you request your submission be kept confidential, it will not be published on our website or included in any relevant reports, however it will still be subject to the *Government Information Public Access Act 2009.*

Your submission will be stored securely consistent with the department's Records Management Policy and you have the right to request access to, and correction of, your personal information held by the department.

Further details can be found in our privacy statement available on our website.
https://www.industry.nsw.gov.au/privacy

Information from this form is collected for the purpose of receiving your feedback on the draft regional water strategy. The supply of this information is voluntary. Your details will be stored in NSW Department of Planning, Industry and Environment records. Information will be stored and managed in accordance with provisions under the Privacy and Personal Information Protection Act 1998. It will not be used for any other purpose and will not be given to any other third party except where required by law. To access or correct your personal information, contact us using the information at dpie.nsw.gov.au/contact

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1. Information on confidentiality and privacy *

I give my permission for my submission to be publicly available on the NSW Department of Planning, Industry and Environment website.

○ Yes ○ No

I would like my personal details to be kept confidential.

◉ Yes ○ No

2. Your details

Email address *

[redacted]

Name *

[redacted]

Address *

[redacted]

Contact phone number *

[redacted]

Do you identify as an Aboriginal person?

◯ Yes ◉ No

Are you an individual or representing an organisation?

◯ Individual ◉ Organisation

3. Organisation or business details

Who do you represent?

◯ **Government:**
◯ Commonwealth ◯ New South Wales ◯ State other ◯ Local

◯ **Local Water Utility**

◯ **Peak representative organisation:**
◯ Environment ◯ Industry ◯ Business group or business chamber ◯ Community organisation

◉ **Other**

NSW Greens

4. Draft regional water strategy objectives and vision

The draft Far North Coast Regional Water Strategy is one of 13 strategies (12 regional water strategies and a Greater Sydney Water Strategy) being developed by the department. All regional water strategies are being developed in line with the following objectives:

- **Deliver and manage water for local communities**
  - Improve water security, water quality and flood management for regional towns and communities.
- **Enable economic prosperity**
  - Improve water access reliability for regional industries.
- **Recognise and protect Aboriginal water rights, interests and access to water**
  - Including Aboriginal heritage assets.
- **Protect and enhance the environment**
  - Improve the health and integrity of environmental systems and assets, including by improving water quality.
- **Affordability**
  - Identify least cost policy and infrastructure options.

All draft regional water strategy options need to address at least one of the above objectives.

Our vision for this strategy is to have healthy and resilient water resources (that withstand extreme events and adapt to these changes) for a liveable and prosperous Far North Coast region.

To achieve this, we need to position the region so there is the right amount of water of the right quality, delivered in the right way to meet the future needs of Aboriginal people, towns, communities, industries and the environment

Do you support this vision for the Far North Coast Regional Water Strategy?

(●) Yes ( ) No

If no, please outline your vision for the long term management of water resources in this region?

5. Information and modelling used to develop the Far North Coast Regional Water Strategy

The draft Far North Coast Regional Water Strategy packages the most up to date information and evidence with all the tools we have – policy, planning, behavioural, regulatory, technology and infrastructure solutions.

We have used the following information to develop the draft Far North Coast Regional Water Strategy:

- **New climate data**
  - Observed historical climate data - recorded rainfall, temperature and evaporation data from the past 130 years.
  - Paleoclimate data - scientific reconstructed data using sources such as tree rings.
  - Climate drivers – key drivers of wet and dry periods.
  - Climate change scenarios.
- **Review of existing studies**
  - to identify drivers and risks for water resource management.
- **Community engagement**
  - Local councils and joint council organisations.
  - Aboriginal peak bodies and Aboriginal community groups.
  - Review of previous water management consultations.

A) Do you have any comments about the information used to develop this strategy?

I encourage DPI to base water yield predictions on at least 2 Degrees of global warming between now and 2050.

B) Please provide details if there is additional information you think we should consider?

Rous County Council's Future Water Strategy 2060 was based on only 1 Degree of global warming which is ludicrous given that the IPCC has said we have already reached 1 degree and counting. This brings into question all of the predicted rainfall yields that Rous is using to justify the proposed Dunoon Dam. We believe that reverse osmosis powered by renewable energy and water saving technologies are the safest guarantee of

6. Stochastic modelling method

We used a stochastic modelling method (based on the statistical characteristics of the new climate data) in order to get a dataset covering up to 10,000 years. This enables us to quantify the natural variability and extremes in the region with greater certainty.

A) Do you have any comments about the modelling method used to develop this strategy?

The precautionary principle that underlies our planning and environmental laws in NSW needs to be vigorously applied to the development of this strategy. One would hope that the stochastic modelling method can account for the sharp spike in global temperatures over the last decade and one that is on an upwards trajectory. Looking to the past to predict the future when it comes to predicting climate change is proving unreliable. Weather data is different from temperature data and we are assuming that your modelling is nuanced and

B) Is there any additional information that you believe could help us assess the benefits and disadvantages of draft options?

The precautionary principle. We need you to explore options that secure water for our communities on the north coast based on the worst case scenarios of global warming. Dams for the north coast do not stack up in light of global warming as we face longer and hotter droughts and declines in rainfall yields as topographic rainfall declines. We believe that Purified Recycled Water that is powered by renewable energy, as well as smart water options, future proof our communities no matter how hot the planet gets.

7. Opportunities and challenges for water management in the Far North Coast region

During the Far North Coast Regional Water Strategy drafting stage, the following opportunities, risks and challenges were identified.

- **Changing climate conditions will increase the pressure on water resources and water management challenges facing the region**
  - Droughts may be more severe in the future and the region is also likely to see seasonal shifts in rainfall patterns.
  - Flooding is a major issue and can adversely affect towns, business and communities.
  - Sea levels are predicted to rise in the region by between 0.31 and 0.88 metres by 2090.
  - Water extraction from waterways to meet community and industry demands is likely to increase due to decreases in rainfall and greater evaporative losses.
- **Towns, communities and industries in the region are susceptible to climate variability and change**
  - Population growth, increased water demand and climate variability will place increasing challenges on town water supplies and industry sectors.
  - The region is not used to managing the extreme dry periods and there is relatively little water storage available.
  - Saline intrusion due to sea level rise will make some supplies unfit for use and affect sewerage treatment plant operations.
  - Sea level rise effects may be magnified as freshwater inflows reduce.
- **Protecting water-dependent environmental assets and native species is challenging**
  - Water for the environment is not actively managed and largely dependent on stream flows.
  - Reductions in river flows and estuary inflows are forecast.
  - Water quality problems are present and projected lower flows, higher temperatures and sea level rise may further reduce water quality.

- **Better management of groundwater**
  - Groundwater is found in fractured rocks, coastal sands and smaller alluvial aquifers.
  - Urbanisation in coastal areas is impacting groundwater recharge patterns and increasing pollution risks.
  - Greater knowledge and information on groundwater is needed to ensure its sustainability across the region.
- **Opportunities to improve how we manage and use water in the region**
  - Link population growth with new investment to ensure water security into the future.
  - New climate information offers opportunities to review and update water sharing and access rules.
  - Diversify town water and industry supplies using new sources such as recycled water and desalination.
  - Involve Aboriginal communities more directly in water decision-making and incorporate traditional knowledge into water management.
  - Options to support the regions farmers to mitigate water security risks and accommodate shifting market trends.
  - Investigate options to improve Toonumbar Dam's low rate of use, reduce its financial burden and maximise its value to the community.

A) Do you have any comments on the opportunities, risks and challenges identified?

We agree with the overview of opportunities, risks and challenges identified in this draft stategy. Additionally, we would add that social infrastructure is vital to building resilience in our communities to better prepare and recover from natural disasters. We would also add that there is an opportunity cost to options like Rous County Council's proposed Dunnon Dam in that it would flood over 40 square hectares of Aboriginal cultural heritage sites and heritage that simply can never be replaced and is priceless. We also strongly oppose any expansion

B) Are there any additional opportunities, risks and challenges that we should consider and what options could address these?

8. Draft Far North Coast Regional Water Strategy options

We have developed a long list of options that could be included in the final Far North Coast Regional Water Strategy. The options consider the opportunities and challenges facing the region and meet at least one regional water strategy objective.

The 39 options are grouped in different categories, being:

- Maintaining and diversifying water supplies.
- Protecting and enhancing natural ecosystems.
- Supporting water use efficiency and conservation.
- Strengthening community preparedness for climate extremes.

In addition the final long list of options will also include a focus on:

- Improving recognition of Aboriginal people's water rights, interests and access to water.

Only feasible options will be progressed to the final strategy stage – following a rigorous assessment process.

We are seeking your feedback to inform the options assessment process. Further details on each option is outlined in the strategy documents and a summary included below.

Maintaining and diversifying water supplies

1. Interconnection of independent water supplies in the region to the Rous County Council network
2. Interconnection of Rous County Council and Tweed Shire Council bulk water supplies
3. Use Toonumbar Dam to augment town water supplies
4. Connect the regional water system to the South East Queensland water grid
5. Vulnerability of surface water supplies to sea level rise
6. Remove impediments of water use reuse projects
7. Indirect potable reuse of purified recycled water
8. Direct potable reuse of purified recycle water
9. Manage aquifer recharge investigations and policy
10. Decentralise desalination
11. Regional desalination
12. Raise Clarrie Hall Dam level
13. New Dam on Byrrill Creek
14. New Dunoon Dam on Rocky Creek
15. Increased harvestable rights
16. Provide purified recycled wastewater for industry and rural users
17. Increased on-farm water storage
18. A grid of off-stream water storages in the Far North Coast Region
19. Raise Toonumbar Dam level

Protecting and enhancing natural ecosystems

20. Establish sustainable extraction limits for Far North Coast surface water and groundwater sources
21. Establish and/or increase environmental water releases from major storages in the Far North Coast
22. Convert low flow water access licences to high flow water access licences
23. Improve stormwater management
24. Bringing back riverine and estuarine habitat and threatened species
25. Fish-friendly water extraction
26. Improve fish passage in the Far North Coast region
27. Addressing cold water pollution
28. Characterising coastal groundwater resources
29. Protecting ecosystems that depend on coastal groundwater resources
30. Northern Rivers Watershed Initiative
31. River Recovery Program for the Far North Coast: a region-wide program on instream works, riparian vegetation and sediment control

Supporting water use efficiency and conservation

32. Improved data collection and information sharing
33. Active and effective water markets
34. Regional Demand Management Program
35. Regional network efficiency audit

Strengthening community preparedness for climate extremes

36. Apply the NSW Extreme Events Policy to the Far North Coast region
37. Protecting coastal groundwater resources for town water supplies and rural water users
38. Planning for climate change impacts on coastal groundwater resources
39. Planning for land use pressures on coastal groundwater resources

A) Which five (5) options do you think are *most* important?

Please list the option numbers in order of importance with the first option being most important

Option Number 8
Option Number 16
Option Number 24
Option Number 31
Option Number 35

B) Please comment on why you think these options are most important?

Given the speed at which global warming is impacting our weather systems, securing water for the future no matter the weather scenarios is of the highest importance. Katrina Wall from NSW Health recently spoke at a Conference on Purified Recycled Water for regional towns and said that there are no special regulatory hurdles to purified recycled water meeting current health regulations. As she said it, all water needs to meet standards and NSW Health has to be satisfied that these standards are met. As has been demonstrated in Ballina Shire

C) Which five (5) options do you think are *least* important (if any)?

Please list the option numbers in order of least importance with the first option being least important

Option Number 14
Option Number 20
Option Number 9
Option Number 15
Option Number 13

D) Please comment on why you think these options are least important?

Dams on a warming planet are becoming increasingly ill-equipped to deal with potable drinking water demand – primarily because we as a society are using a precious resource for household purposes that simply are not warranted. Why do we use best quality drinking water for all of our household needs instead of only using potable water for drinking? The demand for water is likely to be far higher than we expect and this means we need an array of measures to cover every contingency. The cost of the proposed Dunoon dam at

E) Do you have any comments on the draft options?

Rous County Council have failed to show leadership in contemporary water management. They have ignored all options that need to be given serious attention including water efficiency, roof and stormwater harvesting (including tanks), and water sources that don't rely on rainfall such as purified recycled water and desalination. Furthermore, they omitted water efficiency from their 2020 Integrated Water Cycle Management Development options for increasing supply and undertook no specialist studies on it. We know that there are many feasible

9. Option combinations

The option list provided in the draft strategy also identifies potential combinations of options. These combinations recognise that most options require associated works, further assessments and/or legislative, policy and planning changes to ensure they address the risks and challenges identified in the Far North Coast region and do not have unintended impacts.

A) Do you have any thoughts on how the options could be combined with other options?

The indirect and direct potable reuse of purified recycle options need to be explored in light of the NSW Government's recent legislation that will see a renewable energy boom and the creation of Renewable Energy Zones in NSW. Powering de-salination plants with renewable energy and green hydrogen is aboslutely future proofing our communities for all contingencies of drought, flood and extreme weather events as well as decreased rainfall and capture.

B) Are there additional options that we should consider?

Smart water and financial incentives for households across NSW to implement Smart Water technologies at the home should be an immediate priority for DPI. There is still no major incentive for people on the Far North Coast to recycle their own grey water, have water tanks, or install water saving devices. Why do we use best quality drinking water for all of our household needs instead of only using potable water for drinking?
On average, each person in Sydney uses about 200 litres of water a day. Sydney Water says that, of that 200

10. Other comments

Do you have any other comments about the Far North Coast Regional Water Strategy?

Please ask for the immediate release of the public consultation submissions on the Rous Future Water Strategy regarding the proposed Dunoon Dam on Rocky Creek before finalising this draft. We have been informed that 92% of submissions opposed the Dunoon Dam. It would seem that the Minister was misled into thinking that the Dunoon Dam had broad community support - it does not.

11. How did you hear about the public exhibition of this strategy?

We are interested to know how you heard about the opportunity to make a submission. Please indicate the communication methods below:

- ◯ Newspaper
- ◯ Radio
- ◯ Department of Planning, Industry and Environment website
- ◯ Direct email
- ☑ Social media
- ◯ Have your say NSW Government website
- ◯ Communication from peak body
- ◯ Other

12. Additional Information and submission process

If you would like to provide any supporting documents to help us understand your view, please either, email these from the same email you provided in this form, or attach supporting documents to this form if you are returning your submission by mail.

All submissions on the draft Far North Coast Regional Water Strategy will be reviewed following the public exhibition period. Further targeted engagement will be undertaken along with the final phase of stakeholder engagement later in the year to review the final documents.

Please email your completed submission and supporting documents to regionalwater.strategies@dpie.nsw.gov.au

or post to Regional Water Strategies, Department of Planning, Industry and Environment, Locked Bag 5022, Parramatta NSW 2124 by 13 December, 2020.

Further details on all regional water strategies can be found on our website https://www.dpie.nsw.gov.au/regional-water-strategies

Thank you for your submission.

Extracted answers from fillable form above:

Question 5B.
Rous County Council's Future Water Strategy 2060 was based on only 1 Degree of global warming which is ludicrous given that the IPCC has said we have already reached 1 degree and counting. This brings into question all of the predicted rainfall yields that Rous is using to justify the proposed Dunoon Dam. We believe that reverse osmosis powered by renewable energy and water saving technologies are the safest guarantee of water for the future of the Far North Coast given global warming predictions.

Question 6A.
The precautionary principle that underlies our planning and environmental laws in NSW needs to be vigorously applied to the development of this strategy. One would hope that the stochastic modelling method can account for the sharp spike in global temperatures over the last decade and one that is on an upwards trajectory. Looking to the past to predict the future when it comes to predicting climate change is proving unreliable. Weather data is different from temperature data and we are assuming that your modelling is nuanced and would stack up against reports from the United Nations body for assessing the science related to climate change - the Intergovernmental Panel on Climate Change.

Question 6B.
The precautionary principle. We need you to explore options that secure water for our communities on the north coast based on the worst case scenarios of global warming. Dams for the north coast do not stack up in light of global warming as we face longer and hotter droughts and declines in rainfall yields as topographic rainfall declines. We believe that Purified Recycled Water that is powered by renewable energy, as well as smart water options, future proof our communities no matter how hot the planet gets..

Question 7A.

We agree with the overview of opportunities, risks and challenges identified in this draft stategy. Additionally, we would add that social infrastructure is vital to building resilience in our communities to better prepare and recover from natural disasters. We would also add that there is an opportunity cost to options like Rous County Council's proposed Dunnon Dam in that it would flood over 40 square hectares of Aboriginal cultural heritage sites and heritage that simply can never be replaced and is priceless. We also strongly oppose any expansion of groundwater mining due to the precautionary principle and evidence both from local farmers that ground water is decreasing and becoming more saline and from the experience in other countries that have explored industrial extraction of ground water.

Question 8B.

Given the speed at which global warming is impacting our weather systems, securing water for the future no matter the weather scenarios is of the highest importance. Katrina Wall from NSW Health recently spoke at a Conference on Purified Recycled Water for regional towns and said that there are no special regulatory hurdles to purified recycled water meeting current health regulations. As she said it, all water needs to meet standards and NSW Health has to be satisfied that these standards are met. As has been demonstrated in Ballina Shire you can recycle grey water for entire towns and we believe that direct and indirect potable reuse of purified recycled water is the way of the future IF it is powered by renewable energy. Improving storm water management on and around the Richmond River is absolutely integral to restoring riverine and estuarine habitat and threatened species and this in turn will assist River Recovery Program and improve fish passages. The hurdles to cleaning and maintaining the over 500 storm water drains at the Ballina end of the Richmond River is a high factor impacting on the poor health of the river.

Question 8D.

Dams on a warming planet are becoming increasingly ill-equipped to deal with potable drinking water demand – primarily because we as a society are using a precious resource for household purposes that simply are not warranted. Why do we use best quality drinking water for all of our household needs instead of only using potable water for drinking? The demand for water is likely to be far higher than we expect and this means we need an array of measures to cover every contingency. The cost of the proposed Dunoon dam at $220 million total initial capital cost and over $400 million in maintenance and operating costs over 80 years does nothing to insure us for a future of dwindling annual rainfall, longer and longer droughts and less and less day to day topographic rainfall in our region. Whereas, moving towards one and perhaps several desalination plants in the next 40 years covers every contingency. Particularly, if the community is educated that we are moving from creeks and dams for drinking water to reverse osmosis from sea water on a warming planet.

Greens NSW do not support increased extraction of ground water beyond the current farm model. We believe that there is no environmental or social license for water mining in the Northern Rivers. We saw this in the Alstonville Plateau in 2018 and 2019 where farmers started to report that their groundwater levels were very low through the drought and when they raised serious concerns about extracting licenses for commercial use.

Whilst the Chief Scientist of NSW argues that there is endless groundwater that is not the lived experience of farmers in our region and the precautionary principles tells us that further large-scale extraction is unwise. Water for NSW has done no rigorous scientific investigation of groundwater levels in the Northern Rivers in the last decade. Only desk top studies that are devoid of likely climate change scenarios are relied upon and quite frankly why we would risk our food growing water.

There is plenty of evidence in the United States where water mining near the coastline has resulted in higher and higher salinity levels in the groundwater. Farmers can't grow food with salt water and cows can't drink salt water! It is interesting to read the predicted brackish water quality from the proposed new bores in Rous's Water Strategy. Each bore water yield requires reverse osmosis to provide drinking water to the community. Why would you risk our food growing water ?

Question 8E.

Rous County Council have failed to show leadership in contemporary water management. They have ignored all options that need to be given serious attention including water efficiency, roof and stormwater harvesting (including tanks), and water sources that don't rely on rainfall such as purified recycled water and desalination. Furthermore, they omitted water efficiency from their 2020 Integrated Water Cycle Management Development options for increasing supply and undertook no specialist studies on it. We know that there are many feasible options that could be included in the FNC Strategy. The Ganden report is a very detailed 195 page report that explores the feasibility of desalination sites in 3 locations; Byron Bay, South Ballina, and Lennox Head. They have only considered a, “single relatively large-scale facility” as opposed to two or multiple facilities. It is the view of the report that multiple facilities are not considered economically or socially viable but at no point does the study consider powering facilities with renewable energy. Given the NSW Government's proposed investment of 50 million dollars in green hydrogen projects - green powered desalination plants seem to be a no brainer on every level. The Report makes it clear that the cost of a desalination plant is significant and that a facility can only be justified from an economic sense when operated at a close to full capacity at all times. This suggests that if we as a community opt for that capital expenditure and investment that Rous will need to work on educating the community that this is the way of the future and is best for people and the planet.

Critics of desalination plants argue that they are a very expensive capital investment in the short term and that they are only utilised as a last resort when water runs out. Interestingly, in the last 2 years we have seen the Adelaide desalination plant, that is currently being expanded to double its capacity, turned on to save water from the Murray-Darling Basin and the Sydney desalination plant, that is also being expanded to double its capacity, turned on in response to the last drought. On a warming planet and IPCC predictions of greater than a 1.5 degree Celsius temperature rise, desalination plants are going to truly stand the test of time no matter the scenario.

Question 9A.

The indirect and direct potable reuse of purified recycle options need to be explored in light of the NSW Government's recent legislation that will see a renewable energy boom and the creation of Renewable Energy Zones in NSW. Powering de-salination plants with renewable energy and green hydrogen is aboslutely future proofing our communities for all contingencies of drought, flood and extreme weather events as well as decreased rainfall and capture.

Question 9B.

Smart water and financial incentives for households across NSW to implement Smart Water technologies at the home should be an immediate priority for DPI. There is still no major incentive for people on the Far North Coast to recycle their own grey water, have water tanks, or install water saving devices. Why do we use best quality drinking water for all of our household needs instead of only using potable water for drinking?

On average, each person in Sydney uses about 200 litres of water a day. Sydney Water says that, of that 200 litres, 26% is showers; 23% outdoors; 20% toilets; 12% washing clothes; 12% inside taps; 6% bathtubs and 1% for dishwashers. Were Rous to supply the 12% that must be potable then 88% of Rous's supply could be non-potable. With a bold education programme, we could wean ourselves off drinking shower and bath water as well (total 32%). Even without that change, a total of 55% of daily use (outdoor + toilets + washing clothes) should not be potable. Were Rous to supply just that 45% of its current and future estimates of 'demand', its current supply would be adequate for many decades beyond 2060. Ballina Shire Council is already leading the way, with dual reticulation in new subdivisions and with supplying suitably treated water. It also has access to alternative existing sources (Marom Creek, Alstonville Plateau). Byron Shire Council supplies locally procured water to Mullumbimby, though without a significant storage - an off-creek storage could be added to boost security of that source. A key problem lies in the high cost to date of supplying non-potable water compared with that from Rous sources. For future development, Rous Water could support urban water users managing their own supplies (as do rural users) either singly or collectively via a variety of methods including: roof-water tanks; stormwater harvesting and recycled water for non-potable uses. Sydney Water gained approval from IPART this year to vary its 'usage' price according to the level of Warragamba Dam. This sends a clear virtue signal and price signal to households to start saving and recycling water at their residence. Why isn't Rous looking at working further with Councils to subsidise water tanks and water recycling for people on low incomes and then charging a premium for potable water?