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submission: Regional Water Supply - Northern Rivers

Thanks for doing this Strategy - we do need to be strategic with Water. Australia's recent history on this aspect of land management is shocking and needs radical revision.

And thanks for having me at your session on the Draft Strategy for my region, held on 12 November in Lismore. Your staff there will recall that attendees overwhelmingly object to the Draft at its page 130 using the adjective 'contentious' in relation to the Byrill Creek dam proposal in the Tweed valley, and not doing the same for the proposed Dunoon Dam nearby in the Richmond valley.

I trust you will honour the commitments of your Lead Staff (Mark Simmons, Daniel Harris and others) to amend the Draft by adding the word 'contentious' for the Dunoon proposal.

Please also reconsider the badge *Far North Coast* allocated by state government to our region. It's true we are north of Sydney. But we aren't far from anything. Please use the term *Northern Rivers* or do even better and drop the compass reference *North*. Such references are not allowed in street naming, for example.

I am a Civil Engineer specialised in flood hydrology and with a good working knowledge of the rest of the water cycle, including water supply and sewerage (both urban and rural).

I am very familiar with the activities and approach of urban water and sewerage authorities through having been a member of several water-related Advisory Committees of Byron Shire Council over the last 25 years. I have been a Councillor on Byron Shire Council for a total of 6 years so far (2002-04; 2012-16).

I was a Councillor on Rous Water 2012-16 and am familiar with operation and philosophy of that organisation. During that period, we oversaw investigations for Rous's current project that now proposes a new dam for supplying urban water in this region. That proposal was on public exhibition ending last month. I made a submission similar to this one.

While on Rous, I made the following observations on its approach:

- a) Rous supplies only one quality of water. Hence all water supplied has to be top quality (ie drinking water quality);
- b) Rous makes no arrangements to limit the quantum of its supply. Rous doesn't mandate demand management by its four constituent Councils or by its many direct customers. Pricing offers almost no incentive to conserve water. Rous connects new customers on call (both via the Councils or direct) with no consideration of alternatives;
- c) Rous's costs revolve around (i) maintaining & expanding its network of trunk pipelines; (ii) treating its supply to drinking water quality standards; (iii) electricity including for lifting raw water 200m in altitude from its Wilsons Creek source at sea level to its Nightcap Water Treatment Plant; and (iv) planning for expansion.

I believe the imperative to open up a new supply of clean water from a new rural catchment using traditional on-creek storage (*Dunoon Dam*) is a result of poor organisational choices. These choices are driven by preferences around my observations a) and b) above, and by the physical layout of Rous's facilities locking in its current management options.

Were Rous to amend its approach on those matters, the security of water supply (including that required by future urban areas) could be guaranteed without the need for a new dam.

Were Rous to produce or to encourage the four Councils to produce non-potable water, that water could supply more than half the daily needs of urban users in the region.

About 1.5% of Rous's potable supply actually gets ingested - the rest is not ingested. Rous aims to provide households with 160 litres/person/day. 1.5% of that = 2.4 litres/person/day.

The ABC reported in 2018 as per the link below on the quantum of water humans ingest. The article suggests that the 1945 recommendation of the Food and Nutrition Board of the United States National Research Council still holds: "A suitable allowance of water for adults is 2.5 litres daily in most instances ... most of this quantity is in prepared foods."

<https://www.abc.net.au/news/health/2017-10-18/how-much-water-do-we-need-to-drink-a-day/8996668>

The estimate of 2.5 litres could rise in a warmer climate such as ours. I use my own experience as an example. I live alone and filter my water into bottles for direct drinking, including taking a bottle when I go out. I've thus accidentally monitored my usage in this climate over many years. In winter I drink less than one litre/day. In summer I drink up to about three litres/day.

Possibly more relevant figures are what an average household uses, from various pipe outlets. Sydney Water has pretty good numbers on this, at:

<https://www.sydneywater.com.au/SW/education/drinking-water/Water-use-conservation/index.htm>

They say: "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; 1% dishwasher.

Were Rous to supply the 12% that must be potable and the 1% dishwasher, then 87% 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.

Clearly, the remaining 55% of water must also be provided. Were Rous to divest itself of that responsibility, the four constituent Water Authorities could fill the gap from various local sources rather than from a new central dam.

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 (Maron 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. Richmond Valley Council's area includes the Woodburn groundwater source. While that may not yield potable water, treatment for non-potable use is not as complex as for potable.

A key problem lies in the high cost to date of supplying non-potable water compared with that from Rous sources. This is actually a dual problem - supply by Rous is cheap, because no compensation is required for the permanent loss of the land beneath *Rocky Creek Dam* (current surface water storage). This loss includes elements that we can no longer assess for the existing dam but can and must assess for the proposed *Dunoon Dam*.

Were Rous to add to its water price the value of preserving terrain that would otherwise be lost beneath the proposed *Dunoon Dam* (including the kudos gained within this community) that income above Rous's on-going costs could be set aside to subsidise alternate sources like those described above, plus any or all of the following supply methods (for existing development): conventional demand management; leak detection; roof-water tanks; stormwater harvesting; recycled water for non-potable uses; and supplying multiple streams (so drinking quality water is only for drinking).

I acknowledge that responsibility for such methods runs across many parties (Rous, the Councils, the users) and would require organisational change.

For future development, Rous Water would 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; water licences for access to streams or bores; stormwater harvesting; recycled water for non-potable uses; and multiple streams.

Were Rous to recognise the huge increase in security of supply that results from tapping into more than one mode of supply, the efficacy of multiple sources would shine. For example, roof-tanks are sensitive to droughts of a few months duration while dams are sensitive to droughts over several years. During those dry years, a roof-tank fills and empties many times - even in a dry year half* the annual average rain still falls:

* Alstonville Tropical Fruit Research Station (BoM site number 058131) has rainfall records from 1963 to 2011. This site is often used for regional modelling. Average annual rainfall is 1805mm. The highest fall was 2888mm (160% of the average) in 1988 and the lowest fall was 1122mm (62% of average) in 1986.

Mullumbimby's average annual rainfall is 1753mm (Fairview Farm; BoM site # 058040). A three-bedroom house might have 200m² of roof area. The annual average catch of that roof would be 350 kilolitres. That household's annual water use is less (say 290 kL).

Such a resource relieves the dam of supplying huge volumes during its dry years. Having these two modes working in unison means that one is likely available when the other is stressed. They thus each boost the others' security of supply. Overall security rises.

I ask DPIE to recognise and to include in its Strategy the hydrologic advantage of multiple sources, which raise secure yield by their multiplicity, not just by their volume. For the Rous region and urban water considerations, taking advantage of this hydrologic fact requires a different style of cooperation between players (customers, the four water authorities, Rous).

I recognise that administration of water treatment is easier when equipment is centralised but suggest that decentralisation is required in the Northern Rivers, if Rous stays involved in operating the diverse sources that I believe should be tapped into.

Please recognise the 80-year-old nature of the structure of Rous itself. This has strengths and weaknesses. The 'board of directors' is an amalgamation of Councillors, two selected from each of the four constituent Councils (by the Councils). Much administration and indeed the relationships between Rous and the constituent Councils are set through cooperation by staff members from each organisation (without Councillors contributing). My view is that administration is sound but leaves little room for innovation of the type we need to modernise water supply in the Northern Rivers region. Modernisation is however what communities in this area expect. It includes respecting our natural places.

The "community information" published by Rous tells the public that their current supply is over 12 Gigalitres per year, to about 110,000 residents. Most of that supply comes from fresh surface water catchments. Rous acknowledges that climate change will cause secure supply from current sources to decline from the current annual 13.4 GL to 10.4 GL in forty years' time (ie at 2060).

The failure attributed by Rous to Indirect Potable Reuse (IPR) should not be used as a shield against other types of Reuse. I have asked Rous to consider Direct Non-potable Reuse - as is already practiced in Ballina Shire, but with hiccups that need attention. While Rous's role may not include supplying such water, Rous could have a role in promoting such reuse. That role should include cross-subsidy.

Sydney Water gained approval from IPART in 2020 (as attached) to vary its 'usage' price according to the level of Warragamba Dam. This is a first very small step towards saying to Australia "when the dam empties you'll need a second source, which we don't provide". The impact should be that we conserve the last litres for drinking and get creative about the rest. Reasons to do this are that we value our wild places so incredibly highly that we won't drown them just for our urban convenience. In fact, we'll pay to keep them.

The views I express above revolve around the Dunoon Dam proposal but are relevant to water management in general because, as is state policy, urban water supply is given the highest priority in Water Sharing arrangements. I do not agree that is the best way forward. Sadly, that priority leads to wastage of water resources as well as unnecessary damage to environment.

Please make the strategic management of water a sub-set of environmental considerations, and not vice versa as is current practice.

Please recognise the management inefficiencies of split roles as Water Authorities in our local example: Rous County Council and its four constituent Shire Councils. The relationship between them is described in legislation, regulation and Service Level Agreements, a complex and inefficient web of paperwork.

Please recognise the out-of-date approach of many Water Authorities, who still aim to meet demand rather than to manage water.

They also consider water a commodity, rather than a service. As I outline above, very little water is ingested (the commodity), most of it performs a service (eg clean clothes).

Please adopt a strategic approach to water, that separates the needs of existing users from the needs attributed to future users. Change needs to happen but the needs of existing users must not be used as arguments for the same modes of supply for future users. Future supply is our opportunity to commence best practice in water management.

Please do not allow urban planners to assert that more water from conventional supplies contributes to our economic benefit. Dunoon Dam is a perfect example. The desecration of beautiful wild areas reduces our economic wealth, by destroying the very thing that attracts visitors and new residents to our region. Destroying biodiversity is also a sure way to ruin this region in the long term. Please find other ways, and there are many.

Water management needs to look beyond water supply. It must consider the impacts of the re-release for example of sewage into the environment after it goes through the urban areas to which the water is supplied. This is called Integrated Water Cycle Management, to which the state has been committed for decades. Rous County Council makes zero commitment to this, for example - it pays no heed to sewerage management.

Water is currently supplied in this region from dams that pre-date the requirement for them to release an environmental flow. The Water Authorities managing these water sources have no plans to relax the stranglehold they have on extracting water from these sources. Two examples are Rocky Creek Dam and Byron Shire Council's weir at Lavertys gap. Those authorities see current arrangements as an advantage, which is the wrong attitude. Please include in your Strategies (for all regions) the introduction of state legislation to apply the same rules to old structures, as would apply to new ones. It would be appropriate to introduce such rules slowly, over a decade for example, to allow water suppliers to adapt.

Other current practices that need to be reviewed to enable best water practice to prevail include:

- (a) the rhetoric and state funding that leans towards new dams - this is despicable;
- (b) NSWHealth restrictions (or the perception of them) that limit the re-use of water;
- (c) the perception that planners can rezone land to urban without first determining where water will come from and where sewage will go to. A local example is the recent Residential Strategy adopted on 10 December by Byron Shire Council; and
- (d) the concept which persists that urban growth can continue forever.

Yours faithfully,



please ensure my attachment "IPART on variable sydney water prices 20 03" accompanies this submission