Macquarie – Castlereagh Draft Regional Strategy

Comment on the Options

Maintaining and diversifying water supplies

1. A new mid system re-regulating weir on the Macquarie River

   This project could be seen as a means to further increase the use of water. In a time when most people are conscious about conserving water, it may not meet with community expectations.

   It would need to be considered with other options, particularly involving pipelines.

   With the expected hotter and drier forecasts for the next 20-40 years, there may be a case for some rationalisation of farming practices in this area. There is difficulty in supplying the existing demand for water, without the expectation of supplying additional water by having a reliable and efficient method to supply it.

   "If all options" are to be seriously considered, the removal of the weir to achieve a better environmental outcome should be investigated.

2. Access water from Burrendong Dam's deep storage
   Recently, it was alarming to see the critical water situation in Dubbo as the city is situated just below the huge Burrendong Dam.
   To overcome Dubbo's water supply problem, some consideration should be given to allocating 5-7 years water supply for townships, stock and domestic supply from Burrendong Dam – as is the case with Windamere Dam. This may eliminate the need to access the "dead water" in Burrendong Dam.
   This could influence the need for some pipelines.
   Although the State is committed to accessing the deepwater storage at Burrendong Dam, it may prove not to be the best possible solution (after further detailed investigations).

3. Managed aquifer recharge investigations and policy

   The greatest difficulty with managed aquifer recharge is finding the water to accomplish it.

   It would be an advantage to know how the existing aquifers in this area function, particularly in regard to the restriction of low to medium flood events.

   I would have reservations of the usefulness of Dubbo using their water entitlement for aquifer recharge. Dubbo City Council could investigate and implement other measures to reduce water consumption: more realistic water demand measures,

mandatory installation of suitably sized rainwater tanks on all new constructions, the introduction of "permanent water saving rules" (hopefully this will become a State initiative/direction), transitioning to a water sensitive city and possibly some water re-use programs.

Re-allocating a 5-7year water supply from the lower level water in Burrendong Dam for townships, stock and domestic would satisfy the high security needs below Burrendong Dam.

4. Improving town water security in the upper Macquarie unregulated river system
In 2007, a pipeline from Wyangala Dam was discussed as part of the Centroc Water Study. It was proposed to secure water for the towns in the Central West. This should seriously be reconsidered as an emergency drought water source. A pipeline from Wyangala Dam to the Central Tablelands Water infrastructure may achieve this outcome. This option should be more viable than individual councils implementing small water security projects (eg. dams for Orange, Bathurst, Blayney and stormwater harvesting for Bathurst). Bathurst may have included sourcing water from Wyangala Dam as part of their Local Strategy Planning Statement.

   Orange is progressing with diversifying its raw water supply by the following means:

   - Macquarie to Orange Pipeline
   - Investigating water re-use from the Sewer Treatment Plant. Council should come to an agreement with Cadia Valley Operations for reuse of the effluent, currently being transferred to the mine.
   - The use of Stormwater Harvesting as an indirect potable water source
   - The use of bores
   - Demand management – Orange has recently introduced "Permanent Water Saving Standards" (Rules) to replace Level 1 and 2 water restrictions.
   - Currently Orange Council is investigating transitioning to a Water Sensitive City
   - The existing Integrated Water Cycle Management is a good document, but requires a substantial update.
   - Mandatory rainwater tanks of a suitable size should be included in the approval process for all new buildings.

Bathurst is currently investigating options for securing its water supply:

- Bathurst usually has a fairly reliable raw water supply, sourced from the Fish River and Ben Chifley Dam (Campbell River) and the Macquarie River
- Some water stress maybe curtailed by reconsidering any water transfers to the Sydney Catchment, as Sydney has the potential to supply additional water for its own use by using water from its Desalination Plant.
- Bathurst is currently looking at a Stormwater Harvesting Project, which may not be required if other options are implemented.

5. Drought protocols for Bathurst and Oberon town water supply
   Water that used by Wallerawang Power station could be re-allocated to upper Macquarie townships and the Fish River/ Macquarie River ecosystem as Sydney has the capability to supplement its water supply by the desalination plant.

6. Inter-regional connections project investigation
   In general, the aim should be to minimise the inter-regional water transfers

   A pipeline connecting Wyangala Dam to the Central Tablelands Water pipeline network may prove to be a sensible emergency solution for township water security.

   The existing emergency potable water pipeline that connects Cowra, Blayney, Orange and Cabonne has greatly improved the water security for the townships of Cowra, Blayney, Molong, Orange and other Central Tablelands Water communities.

7. Reuse, recycling and stormwater projects
   A guiding principle for water reuse is that it would save an equivalent amount of potable water and assist in maintaining stream flows.

   A major impediment for Orange considering the reuse of effluent from the Sewer Treatment Plant is the agreement to supply Cadia Valley Operations, free of charge and on average approximately 9 ML/day (Council website & OEMP).
   This arrangement has impacted the dual water supply, since Orange's effluent was originally intended to be used in this system (refer to p25, Case Study: Orange Stormwater to Potable: www.watersensitivecities.org.au). Indications were that the effluent would become available to Orange Council in about 2012, but it is still held up in court action (refer to attachment). The Stormwater Harvesting Scheme is an unreliable source of water for the dual water supply and so potable water is used in the recycled water pipeline. This further impacts the energy efficiency of new homes in the recycled water area as credit is given in Basix for using recycled water.

   Orange City Council continues to investigate the reuse of water discharged from the STP. Cr McRae raised the issue again in Council's February 2020 meeting by asking for a report.

The Orange stormwater harvesting project(s) should be strongly supported as it is at the very headwaters of the catchment, although proper consideration needs to be given to the ecological state of the Summer Hill Creek and other streams (Ploughmans Creek).

Summer Hill Creek ecosystem has greatly suffered from Orange's need for water. This is because: its 3 storage dams are on its catchment

: the transfer of the discharge from the sewer treatment plant (STP) to Cadia Valley Operations (approx. 9 ML/day) since 1998.

: Council's willingness to amend the NCAT Agreement (DEC 2015) regarding environmental flows from Suma Park Dam

: impact from stormwater harvesting which is currently under review with the proposed Blackmans Swamp Stormwater Harvesting Stage 2 project.

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Bathurst:
The discharge from Bathurst's STP serves a useful environmental purpose by returning to the Macquarie River. It was only a few years ago that Bathurst Council decided to continue this practice rather than sell the effluent to a mining company with proposed operations near Blayney. I feel that Bathurst Regional Council (BRC) has a unique responsibility to ensure a baseflow in the Upper Macquarie River Catchment (Oberon to Burrendong Dam).

8. <u>Burrendong Dam to Nyngan pipeline</u>
   Pipeline from Burrendong Dam to Wellington, Dubbo and beyond?
   I mooted a pipeline from Burrendong Dam to Mumbil rail head which had the possibility of branching to Orange or Wellington during the Macquarie to Orange Pipeline discussion.
   The initial decision on allocating the lower Burrendong Dam water to towns, stock and domestic should be made to guide the future of pipelines.

9. Pipeline from the proposed new mid-system weir near Gin Gin to Nyngan
   The expected hotter and drier conditions in the next 20-40 years, and the forecast of lower water supplies in Burrendong Dam, could require some rationalisation of farming/food & fibre and mining activities in the area. Under the foreseeable future this pipeline may not be required.

10. Gunningbar Creek pipeline

11. Increase Burrendong Dam's Full Supply Level

    This measure may increase the chances of a larger major flood below Burrendong Dam, due to the fact that Burrendong's capacity reached 150-160% in the 2016 rain event with the existing flood mitigation measure in place. There may also possibly be an increase in future storm intensity associated with variable climate change.

    This option should not be supported - as it facilitates the use of additional captured water (whilst losing more water from the system due to evaporation) from the additional stored water in Burrendong Dam.

    I can not see the main users of irrigated water willing to pay for any infrastructure upgrade to accommodate this proposal, nor (although they should) would they agree to a reduction of their licence to compensate the addition loss due to evaporation.

    The Draft plan indicated that there will be more spare capacity for longer periods in Burrendong Dam, which would negate the necessity of the proposal.

    A review of the water licences is required, as there is expected reduction in surface flows into Burrendong Dam in the next 20-40 years, leading to less available water. There must be some realisation of water use, as you can't use water that doesn't exist. I do understand the frustration by water users, due to their inability to receive full allocations Future realistic water licences are a must.

12 Increase outlet valve capacity at Burrendong Dam
   It appears this measure is to accommodate the movement of water for irrigation but could have serious environmental impacts.

13 Reliable access to groundwater by towns

The use of groundwater should be kept to a minimum, by all groundwater users, as again there is a finite quantity of water in any aquifer.

If you are extracting water that could be 10 000 years old (determined by DNA testing), it would probably indicate the time it takes for the aquifer to recharge. If the extracted water is 2-3 years old, there may be the possibility of utilising sustainable quantities of groundwater, with proper monitoring.

Any extracted water should be directed immediately to a water treatment plant or enclosed storage to prevent losses due to evaporation if placed into a dam.

It is a worry that the demand on groundwater is ever increasing because it is seen as a magical solution for supplying water.

Andy Bakers team's (UNSW) research into the Wellington Caves appears to confirm a direct link between surface water and the watertable (aquifer). If this is correct, how will the reduction of surface flows affect the township aquifers? This may see the need to maintain a good baseflow (not environmental water) in streams or rivers.

Many townships (Molong, Wellington, Dubbo and Coonabarrabran) have extended their bore fields, increased the depth of their bores to secure more water during this drought period. The reliance on sourcing water from bores will continue to be a problem for the next 20 – 40 years.

Townships should be investigating other options for sourcing water: permanent water saving rules, mandatory rainwater tanks, transitioning to a water sensitive city and responsible water re-use.

Keep in mind that townships generally use little water compared to agriculture. Their requirements could quite easily be satisfied, depending where water is used.

Protecting and enhancing natural ecosystems

The protection of natural ecosystems is most important and would give a clear indication of available water to sustain other activities.

Two initiatives that are worthy of consideration, as they guide the enhancing of the natural ecosystems: Water Sensitive Cities and Regenerative Agriculture (Muldoon Institute).

Also, the NSW State architect has produced recent overarching documents, such as Urban Development for Regional NSW and Greener Places, that should be considered in the Regional Water Strategies.

Hopefully, the good work of the Local Land Service, Landcare and community groups will be acknowledged and gain some input into the Regional Water Strategies.

14 Address channel constraints to delivering environmental flows to the Macquarie Marshes

Every effort should be made to deliver environmental water efficiently and for the greatest benefit.

15 Fish Passage Strategy NSW

Fully support the Native Fish Recovery Program but would like to see timely implementation of means to control cold water pollution.

It would be of interest to know an estimation of the value of recreational fishing for the region.

This recent drought period clearly has identified the need for maintaining a minimum baseflow in the Macquarie River to ensure fish survival.

I'm not a fisherman but would express concern that the less frequent low to medium flood events will allow organic material build up on the floodplain, which may increase the severity of any "black water" event.

16 Introduce flow variability in the distributary (effluent) creeks

It may not be best practice to link environmental outcomes to irrigation water demands.

Will the next 20-40 years see some irrigation areas in these creeks becoming less viable?

Again, the aquatic ecosystem may require some minimum baseflow to maintain refuge pools.

17 Determine the feasibility of delivering water to the Talga Wetland/Overflow of the lower Crooked Creek
Environmental necessity may not be at optimum cost, which shouldn't preclude its implementation.

18 Undertake channel works to reinstate natural channel profiles in selected streams in the southern Macquarie Marshes
NSW is obligated to maintain the Macquarie Marshes, but deciding the extent which can be sustainably maintained is difficult. I would support any measures to secure the future of the Macquarie Marshes

19 Formalise channel sharing arrangements
This point appears to imply that natural streams are irrigation channels, which would be disappointing. If a natural stream is used, the environmental aspect of water conveyancy should have priority in any formal agreement.

20 Implement a native fish restoration project
I would suggest that any Native Fish Restoration would have a corresponding beneficial impact on the river ecosystem.

21 Diversion screens to prevent fish extraction at pump offtakes
It should be a requirement to install screens on any pump extracting water from the Macquarie River. Why have a fish recovery program, if severe fish/larvae loss happens when pumps are extracting water?

22 Cold water pollution mitigation measures
Cold water pollution must be eliminated for the benefit of the river ecosystem, which includes enhancing native fish breeding.

23 Modification and/or removal of existing floodwork structures causing adverse impacts
The environmental cost of not implementing would outweigh the cost of achieving it.

24 Relieve flow constraints on the Cudgegong River at Rocky Waterhole Bridge
Without knowing the exact nature of the situation, this measure appears to be satisfying the expected unnatural flows due to irrigation water demands.

In the next 20-40 years there could be some changes to the natural flow regime that may require some consideration to raising the height of the Rocky Waterhole Bridge and thereby be justified.

25 Improved understanding of groundwater processes

A most critical point that must be considered, as the demand for groundwater is forever increasing.

26 Sustainable access to groundwater

A guideline for extracting ground water must be the ability for the aquifer to recharge. If the extracted water is 10 000 years old (DNA tested), it would suggest that it takes about 10 000 years to recharge.

The use of young water (2-3 years old) from aquifers could bring some sustainability to its use, as the recharge period is shorter and measurable.

Economic reasons should not be used to justify over-extraction of groundwater. With expected drier conditions/slower recharge of aquifers in the next 20-40 years, stricter monitoring and lowering of extraction limits will probably be required.

The cost of short-term gains for long term destruction cannot be justified.

27 Improved clarity in managing groundwater resources sustainably

I feel that the existing Sustainable Diversion Limits will require adjusting downwards in the near future.

I would support the revision of account rules and transparency measures.

28 Investigation of water quality mitigation measures

Fully support enhancing the natural environment – including water quality - as it currently exists, which would lead to more liveable communities.

29 River Ranger program

Fully support any Aboriginal involvement in the program.

Further, consideration should be given to the volunteers (individuals, groups, associations) who already assist with similar activities, to be included in a program.

30 Secure flows for Beemunnel Aboriginal Place

I would support this measure

31 Connectivity with downstream systems

Connectivity is an important consideration for ensuring the health of a river system. Greater use of translucent flows could be required in the future, as holding back moderate inflows to storages may hinder connectivity.

A shame that the Australian Government didn't buy back some Queensland water licences when the opportunity arose a few years ago.

Supporting water use and delivery efficiency

32 End of system efficient stock and domestic water delivery options

With the recent drought, and similar conditions expected in the future, some existing activities may need to be rationalised or transformed Therefore water requirements may change. There may be some degree of adaptation in the near future which could change the water delivery efficiency.

Due diligence should be given to the possible impact on the environment, due to any changes in water delivery.

33 Enterprise water use efficiency programs

All water users should use the least amount of water, in order to conduct their activities.

I think most enterprises would be conscious of their water use and would probably have a "water saving plan".

*The Bloomfield Linen Service in Orange employed the use of the final rinse water to the initial wash cycle to save water consumption.
* Cadia Valley Operations (Gold Mine) recycle about 80% of the water used in their operations (about 190 ML/day) but still require a substantial amount of external imported water for their daily operations.
* Orange City Council conducted a water audit on the 50 largest water users in Orange in an effort to achieve more efficiency.

Any re-use or recycling of water shouldn't add to water use but conserve it, in dams and streams.

34 Market measures to support Dubbo's town water supply

Dubbo and downstream water security may be met by an administrative measure. This would see the lower storage capacity of Burrendong Dam allocated to townships, stock and domestic requirements. Refer to Option 3 response

I would suggest a re-appraisal of the proposed dual water system in Dubbo, as it may not be cost effective and it diverts water away from the Macquarie River.
The mandatory installation of suitable water tanks on all new constructions may be a more efficient means of developing a more liveable city, whilst off-setting the reuse proposal. The State and Council may consider financial support for rainwater tanks.

Council, in all of the new subdivisions, may consider introducing a water recycling project similar to the Aquavero (redevelopment of Fisherman's Bend) development in Melbourne which collects household roof runoff in a separate localised dual water system.

Other passive irrigation projects should be considered.

Keeping in mind Council aims to conserve water.

Strengthening community preparedness for climate change

35 Investigation of licence conversions

I would support the retention of the priority scheme that currently exists - whereby some environment water, essential activities, towns, stock and domestic water needs have a high priority.

I don't think there would be any social licence to implement this measure. I feel most people would find it totally unacceptable.

It should be a futile investigation.

The trading of water to higher value areas quite often allows mining companies to acquire water licences. Even within the agricultural industry, trading can cause enormous problems by transferring licences to permanent cropping (eg nuts) from other variable pursuits (eg cotton) that can adjust to the season. Recent experience along the Murray River bears this out

35 New drought operational rules (Macquarie River)
In light of all new available information, I feel there is a need to review the new Water Sharing Plans and Resources Plans which have just been completed.

More attention to environmental needs must be considered when implementing limited or no baseline/stream flows. Orange City Council's changes to the pumping regime for the Macquarie River to Orange pipeline, whereby the trigger was lowered from 108 ML flow (instantaneous) to 38 ML flow and the stopping of environmental flows from Suma Park Dam. This could be a case study in itself.

Reports/submissions associated with the DA (MP 10_0235, MP 10_0238), particularly those associated with the Preferred Project Report and the State's review of the hydrology, for the Macquarie River to Orange Pipeline clearly indicate that the 108 ML instantaneous flow rate for extraction is a good environmental trigger for commencing pumping. The 108 trigger is a sensible and realistic trigger when consideration is given to environmental concerns that should be maintained at all times.
I agree that there should be more water reserves for high security licences in storages, like Burrendong Dam. It was disheartening to see the water crisis that Dubbo and other nearby townships found themselves in during the recent drought.

Increasing the capacity of Gin Gin is not the answer, as it will take water away from downstream water users and the Macquarie River ecosystem. How would the additional water lost to evaporation be accounted for?

With the expected changes in the availability of water in the next 20-40 years, it could be imperative that water licences be reviewed. There is a need for a more realistic approach to extractions.

Is there a real need to be irrigating grass for the export market? Exporting food and fibre is exporting a huge amount of water.
The health of a river will be reflected by its end of system condition and so pulsing when necessary would help.

37 Review of regulated river water accounting and allocation process
Professor Quentin Grafton (ANU) reminded everyone on ABC RN radio recently that there is enough water available, but we (everyone – community and governments) need to decide where to use it.

Reserving water in storages for high security will be necessary into the future. A good reason for maintaining the hierarchy of water licences. Any change in land use or trade must be considered because of the water implications.

38 Improved data collection and information sharing
It is always good practice to be able to verify any decision by fact.

Correlation of all the existing data from all the different reports or reforms is a huge task but a necessary one.

39 Capacity building program:
- New climate data/modelling
- Managing groundwater resources sustainably

Like to see more community involvement at an earlier time.

40 Investigation to maintain amenity for regional towns during drought
All townships should seriously consider transitioning to a "water sensitive city".
www.watersensitivecities.org.au
Orange City Council has adopted "Permanent Water Saving Standards" to replace level 1 & 2 water restrictions and are currently investigating transition to a water sensitive city.

41 Land use change impact on water resources
This is an area that requires some detailed investigation and guidance when considering changes in landuse or trading water to a different landuse, as there could be increased consumption of water but not necessarily exceeding the extraction licence limit.

Some points for consideration:

- * temporary water trade from a vineyard during a non-productive year to a mine
- * agricultural cropping to permanent plantings (eg nuts)
- * stock and domestic to irrigated pasture
- * transfer from non-regulated to regulated
- * between valley transfers, between catchment transfer
- * transfers between upper catchment to lower catchment and vice-verse
- * the 3 (4?) storage dams for Orange
- * landuse and tree cover

Improving recognition of Aboriginal people's water rights. Interests and access to water

Fully support the consideration of Options 42 to 49.

Options not progressed

- * Ulmarrah Dam, totally accept not progressing on sound reasoning.

- * new dam on the Bell River, totally accept not progressing
  Some consideration should be given to the operation of Lake Canobolas at Nashdale (Orange and Cabonne Council) as a water supply for Orange and Molong.
  The Bell River is a stream for supporting the ecosystem for the Bell River and Macquarie River below Burrendong Dam and should maintain this purpose.

- Raise the Burendong Dam wall by six metres
  A realistic and an appropriate decision.

- There has been a great loss of environmental water in the last 200 years, particularly since the dam projects of the 1960s.
  The sustainable use of available water still means that there is an agreed amount of destruction to the environment.
  Australian scientists have informed the community that environmental needs are not met under the existing water management.
  Consideration should be given to elevating environmental water to the high security level, particularly when it is used for cultural purposes.

- With the realisation of continuing lower surface water in the foreseeable future, there exists a need to conserve more water (use less) as well as a need for some rationalisation of water licences.

- More effort and guidance is necessary when allotting water to the competing water users: environment, urban & commercial, within agriculture, industry and mining. Will it be prudent to implement quotas for the different areas in order to maintain a sensible balance between the competitors?

- With so many reports, reviews, reforms and commissions: the Regional Water Strategies could require a constant review mechanism for a few years in an effort to reflect the latest information and directions.

- The NSW State Government's commitment to a number of projects is conditional on any project (option) following due planning process, which includes a supportive final business case. The final business case should include items relating to their intangible value (or lack of) in promoting a more liveable region.

- "A town's water supply constitutes about 2% of total water entitlements in the region" (Draft p89) which is not a great amount of water, as a good percentage could be returned to the catchment via sewer treatment plants.
  The major cities in the region (Bathurst, Orange and Dubbo) should have updated Integrated Water Cycle Management plans to indicate their management of water for the next 20 years.
  All townships and local government areas should be guided by rehydrating principles of water sensitive cities and regenerative farming.

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