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Dear Sir

SUBMISSION TO MACQUARIE-CASTLEREAGH REGIONAL WATER STRATEGY

General

The draft strategy, and the associated long list of potential options, has captured the key issues and potential solutions which have been discussed in recent years across the Macquarie-Castlereagh catchment.

Council is very supportive of the options which seek to develop new water sources, such as Option 7 - Re-use, recycle and stormwater projects, as well as Option 3 Managed Aquifer Recharge (MAR) investigations and policy. These projects represent an exciting change in the approach to long term water management in the catchment, and align strongly with Dubbo Regional Council's goal of becoming a 'Smart City', with an innovative approach to water infrastructure a key part of this overall philosophy.

As well, Council strongly supports options focused on better management of groundwater and ensuring a greater level of integration in the management of groundwater and surface water, both at an operational as well as a policy level.

In relation to the challenges faced by towns at the lower end of the catchment, Council has been a strong advocate of the development of a regional water supply pipeline. Council supports the inclusion of a number of options focussed on pipelines, and believes that when integrated with other water storage-related options, presents the opportunity for the development of a cost-effective and efficient water supply network which will bring long term security to the region.

As the strategy outlines, each of these options needs to be further investigated to determine those which offer the most overall benefits, and Dubbo Regional Council looks forward to actively participating in this process and sharing ideas and knowledge developed both with the Dubbo Regional Council LGA, as well as across the catchment more broadly

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The need for change in water management

The Draft Regional Water Strategy clearly outlines, the 'status quo' is no longer an option for water management in the Castlereagh-Macquarie Catchment. A new approach to water management must be adopted. Without a willingness to make significant changes, this strategy and all those associated with it, will be harshly judged in the future. And deservedly so when the long list of options identifies the key infrastructure solutions as well as operational and management processes which should be fully explored and ultimately, those deemed worthy, implemented.

The strategy offers the opportunity for all stakeholders to fully recognise that they are all dependent upon each other when it comes to responsible water management, and by working collaboratively and respecting the varied needs of each other, all can play a key role in charting the future for this catchment. Without this recognition the prospect of meaningful change being achieved is significantly threatened, and the prospect of this strategy being consigned to sit on a dusty shelf along with previous strategies very real.

From a town water perspective, the outcomes of this strategy could determine whether regional towns and villages in the Castlereagh-Macquarie are to be supported and ideally thrive, or be left to die a slow, thirsty death.

In Dubbo's case, as one of the major inland cities in NSW, the opportunity for sustained economic growth is very apparent. Council's goal of an ultimate population of 100,000 is achievable in the long term, especially with a renewed interest in people moving from the major cities to inland centres having the potential to accelerate an already healthy growth rate. As well, strategic initiatives such as the inland rail project have the capacity to significantly alter the economic development potential of regional NSW. This project is much more than a rail line linking Melbourne and Brisbane, but the nucleus of a transport and development corridor through the State which has the capacity to fundamentally alter the focus of economic activity in regional NSW. Rather than the traditional single focus on Sydney, this project will enable this region to broaden its focus to include both Brisbane and Melbourne, as well as generate regional economic activity within, and along the corridor, with the obvious flow-on benefits which will occur.

Dubbo's role as a regional centre, and its continued economic growth, relies heavily on surrounding towns being both successful and viable. These towns offer their own unique lifestyle opportunities, which are enhanced by proximity to key health, education and support services in Dubbo. In a similar way these towns, as well as Dubbo, are heavily dependent upon a viable and successful agricultural sector, as well as other key local employment opportunities in areas such as mining, transport and health.

The future potential of the region will be unable to be achieved without a sustainable water supply.

The current operating regime across the Castlereagh-Macquarie catchment is unable to deliver this sustainable water supply.

The need for change is not only obvious, but, if not forthcoming, will ensure the region's future potential will never be realised.

Groundwater management

Council found it difficult to understand why, during the worst drought on record, severe restrictions were placed on surface water supplies in an attempt to avoid the very real prospect of 'day zero' while no restrictions were imposed on groundwater usage in the lower Macquarie.

There appears to be a significant lack of strategic management of groundwater, as a component of the total water resource, in the catchment. Areas of expertise and responsibility for groundwater management is shared between DPIE and Water NSW without, it appears, a high degree of coordination. This was evident during the recent drought when WaterNSW was very active in keeping water users well informed of projections for when Burrendong Dam would be empty, and outlining strategies to extend surface water supplies.

During the same period, virtually no information was provided regarding groundwater management in relation to the capacity or reliability of these supplies. Indeed this lack of information and focus on groundwater appeared to suggest either an unwillingness to intrude on the seemingly 'untouchable' area of placing limitations on groundwater usage more generally or, more concerning, a total lack of understanding of how to effectively manage this resource.

These concerns are reinforced when viewing the WaterNSW website, which identifies, as one of the five key descriptors of 'What We Do' includes, at dot point 3:

"System operator

*Efficient management of the state's surface and **groundwater resources** to maximise reliability for users through the operation of the state's river systems and bulk water supply systems, in collaboration with the Murray-Darling Basin Authority which directs operations of the River Murray system."*

Further examination of the website identifies very little information on what WaterNSW does in regard to **efficiently managing the State's groundwater resources**.

In the Water Operations section of the website it states:

"The Water Operations Reports provide updates on water system operations per valley. It includes information on current state (storage volumes, water availability, resource assessment and supplementary events), influences and forecast and planning."

A review of the Annual Operations Plan for the Macquarie Valley 2019/2020 identifies that this plan only relates to surface water. There is no annual operations plan for groundwater in the Macquarie, or indeed any other groundwater source in regional NSW, listed on the WaterNSW website, despite the fact that they are charged with management of this resource

Water resource plans developed by DPIE Water include specific groundwater plans such as the Macquarie-Castlereagh Alluvium Water Sharing Plan. There is no clear link to these plans on the WaterNSW website, and as evidenced in the recent drought, apparently no single authority in NSW utilising these plans to keep water users informed of resource capacity, or reliability in the way surface water operations plans were?????. Indeed, from a water customer perspective, there

appears to be a missing link between the development of these plans, by DPIE, and their implementation, by Water NSW.

The whole issue of groundwater management in NSW is in urgent need of review, particularly as these resources offer significant opportunities to improve water security for rural towns in the long term. There needs to be a single point of knowledge in NSW for groundwater management to replace the existing system, which is confused and failing to meet the needs of all customers.

Two stage management of Burrendong Dam as an irrigation dam and water supply dam

There is a fundamental mismatch with the operation of Burrendong Dam, and the hierarchy of access to water by customers. The highest priority use of the water in the Dam is for critical human needs, which cannot be met once the Dam is allowed to fall to very low levels, often the very time these needs are most critical.

Apart from environmental flow obligations Burrendong Dam operates predominantly as an irrigation dam, which involves releasing water to meet the needs of irrigators in accordance with allocations. Allocations for town water supplies are also provided, however these only represent a very small proportion of the total flows compared to those required for irrigators and environmental flows.

As became evident in the recent drought, once the Dam reached very low levels, and the releases for the environment and irrigators ceased, it became evident how inefficient the system was in supplying the remaining limited supplies to towns, and therefore satisfying critical human needs. With most towns on very severe water restrictions, extractions from the River were significantly reduced. However, in order to deliver water to towns at the end of the system, the majority of the remaining water in Burrendong Dam was needed to run the River. While the volume of water remaining in the Dam could have met the restricted needs of towns for many years, if it all could have been accessed, the system is not capable of doing this without major losses. Consequently, cease to flow predictions became the key planning tool for Local Water Utilities (LWUs), highlighting the inherent inadequacies in the system on meeting town water supply needs.

This made it very clear that, while town water enjoys the highest priority allocation for water, this cannot practically be achieved under the current operating protocols when the Dam is at very low levels.

LWUs have very little ability to influence decisions on how releases are made from the Dam, and are generally compelled to take what water is provided by WaterNSW as they run the River.

This situation requires that, in future droughts, the Dam needs to be managed differently when storages are approaching very low levels. The volume of water retained for town water needs also must account to the volume needed to run the system, so that a sufficient volume is quarantined to meet town water needs for a much longer time frame, and initial predictions of cease to flow is still years away, not months. There needs to be a much more conservative approach taken by WaterNSW in managing discharges from the Dam when predictions indicate storages are reaching low levels.

As the recent drought will now become the new drought of record, future planning needs to include zero inflow predictions over a significantly longer time period than has previously been the case. The operational mindset needs to change from the existing operating mode of running the Dam to very low levels to one more focussed on predicting and then meeting the needs of towns. This needs to occur when there is sufficient water left to meet the needs of towns for a reasonable time period, at least two to three years. This would require implementation of this 'town water operating mode' to commence when the Dam was at around 20 to 25%, which should also include commencement of water restrictions for all LWUs to prepare communities for possibly more onerous restrictions in the future.

An alternative approach would be to install the necessary additional infrastructure to enable the Dam to operate almost exclusively as a water supply dam when town water supplies are under serious threat. This approach would enable the Dam to drop to less than 5%, as this would represent many years of remaining supply for LWUs. The infrastructure required would include constructing a direct pipe connection from the outlet of the Dam to the reticulation system of each town, which would eliminate the transmission losses associated with supplying water to LWUs.

This solution would facilitate maximum usage of the Dam for irrigation purposes, allowing the value of additional 20% of water which would be available during every fill-cycle of the Dam to offset the one-off cost of construction of this pipe connection.

Regional pipeline grid

The role of WaterNSW includes:

- ***Bulk water supply***
Supplying water from its storages to customers in the Greater Sydney drinking water catchment and in the State's regulated surface water systems.
- ***System operator***
Efficient management of the State's surface and groundwater resources to maximise reliability for users through the operation of the State's river systems and bulk water supply systems, in collaboration with the Murray-Darling Basin Authority which directs operations of the River Murray system.
- ***Infrastructure planning, delivery and operation***
Meet customer-defined levels of service consistent with NSW Government policy and priorities to increase the security and reliability of water supplies to customers and the communities of NSW. (WaterNSW website).

WaterNSW's capacity to meet its requirements of supplying bulk water efficiently to customers, specifically LWUs in the Macquarie Catchment, during the recent drought was placed under significant pressure.

The projections in the Macquarie-Castlereagh Regional Water Strategy of significantly reduced inflows into Burrendong Dam will ensure that the task of providing sustainable water to these LWUs will continue to be an ongoing challenge for WaterNSW.

The strategy offers a viable and very effective solution to this issue, one which is not unique, however requires a change of mindset amongst WaterNSW and LWUs within the Lower Macquarie Catchment in relation to the supply and management of urban water.

Regional pipeline networks have been constructed and operated across many parts of NSW. For example, the original South-West Tablelands Water Supply Scheme was built in 1929, and has now developed into Goldenfields Water with a network of over 2,100 km of water mains servicing 11,000 customers over an area of 22,500 square kilometres. In recent years the Wentworth to Broken Hill pipeline was constructed, providing long term water security to one of the most isolated centres in NSW.

The option of a developing a pipeline from Burrendong Dam to Nyngan would provide the necessary infrastructure to enable town water supplies to all centres in the Lower Macquarie to be maintained for as long as there is still water in Burrendong Dam. Installation of this pipeline offers WaterNSW ultimate operational flexibility to maximise the use of this stored water to meet customer's requirements, especially those in the 'critical human need' category.

However, the development of this pipeline, while a very significant and necessary infrastructure option, should be seen in the broader context of its role in forming part of a regional water grid throughout the regulated section of the Macquarie catchment.

This grid could connect a number of water sources, both surface and groundwater, across the catchment and allow for two-way movement of water to areas of need. Such a grid could also provide stock and domestic water to rural properties throughout the catchment. This would help allay the concerns of existing property owner who currently extract water directly from the River, and who see a pipeline as being used at the expense of maintaining flows in the River, thus potentially reducing their capacity to maintain a regular stock and domestic water supply. Connection to this grid would provide them with a significantly more secure water supply during future droughts. As well, it could lead to the development of additional high-value agricultural opportunities, which would be more likely to develop on the basis of an assured water supply.

A regional water grid would benefit all LWUs across the catchment, not only providing them with a reliable and more diverse water supply, but also by assisting them in meeting their ongoing water quality obligations. As well, there may be the potential for rationalisation of key infrastructure as each individual LWU would have the opportunity to re-assess existing and future water infrastructure needs within their areas of operation, which could include a decision to share this infrastructure through their connection to the grid rather than duplicate it within their local area.

The development of a regional water grid would require the commitment of a sufficient number of parties to justify the initial construction costs and ensure the necessary strategic, operational and financial plans were in place to enable the network to be successfully managed in the long term.

This project should not be seen as too ambitious, or unachievable. On the contrary, it is a relatively simple engineering solution, which is guaranteed to significantly improve the security of water supply to urban as well as rural customers. It could be considered a 'catch up' project, given the Macquarie catchment is one of the few major river catchments in NSW which does not have an extensive pipe network servicing rural towns and villages.

The ownership and operation of the grid requires considerable investigation and consultation with all parties, to fully explore all options with an open mind and a focus on achieving the best long term outcome across the catchment.

If it is operated as a bulk water supply system, this is consistent with the role of WaterNSW. At the present time WaterNSW has the benefit of being able to utilise the Macquarie River for the distribution of water. Being a natural feature, as opposed to a man-made structure, it does not suffer the ongoing issues associated with asset ownership, particularly in regard to depreciation and renewal. Therefore, it is a relative inexpensive system to own and operate. However, as the recent drought highlighted, this is not an efficient means of transporting water for human consumption when dam levels are very low. Therefore the addition of an alternative means of water distribution, ie the water grid, could be seen as addressing this shortcoming, giving WaterNSW enhanced capacity to fulfil its bulk water supply obligations to ensure an efficient and secure supply for human consumption.

The operation of the grid becomes more complex when it interconnects both surface and groundwater supplies, and involves the distribution of treated water. While still essentially performing a bulk water supply function, this operating mode also encompasses a key part of the role of LWUs in treating and distributing potable water to its customers. This would require effective collaboration between potentially a number of independent LWUs, which could be achieved by the development of formal agreements between the LWUs, which would need to meet both their individual needs and those of other LWUs in the network. Given the degree of autonomy, which individual councils operate under, there is the potential for regional collaboration to prove challenging for some councils, especially as the decisions councils ultimately make are generally focussed on the needs of their own ratepayers.

Consideration could be given to the formation of a specific body, made up of representatives of the five LWUs who would benefit from, and therefore manage, the operations of this water grid ie Dubbo Regional Council, Narromine Council, Bogan Council, Warren Council and Cobar Council, as well as the Cobar Water Board. This new entity could act as a bulk water supply entity, with the individual member councils still retaining responsibility for the management and operation of their reticulation systems, and therefore the bulk of their existing local staff.

There are a number of organisations in NSW who operate under a similar general operating regime, with many of these also having the flexibility to accommodate particular local needs of members as well.

The development of this new entity will require a high level of collaboration between the members, at both a political as well as a managerial level, to ensure all issues are fully identified and addressed and the short and long term benefits realised for all members.

Without a strong and ongoing willingness to work together, the potential for the development of a sustainable water grid across the lower Macquarie region is less likely. Additionally, if it does proceed, and the councils involved are not fully engaged in the development and operation of this network, the outcome could be one which limits their ongoing capacity for influence in the future, especially in regard to the cost of water and how the benefits of the grid could be maximised for local communities.

Accessing Burrendong Dam deep storage

In relation to the pumping of the deep storage at Burrendong, this water is effectively 'new' water in the system as it cannot be accessed under normal operating regimes, and therefore cannot be allocated to users under normal operations.

As a project which would only be activated when the Dam is at critically low levels, the value of this water in extending day zero is significant, therefore it is vital that the benefits of this supply be maximised. Simply pumping this water into a river system, which is likely to be under significant stress by the time any consideration of accessing the deep storage is contemplated, would potentially only yield a limited benefit due to transmission losses.

However, if this project was undertaken in conjunction with the construction of a pipeline from Burrendong Dam to Nyngan, effectively all of this deep storage water could be utilised by LWUs. Given the large volume in the deep storage from a town water use perspective, and the relatively small volume used by LWUs, who would be experiencing water restrictions at the same time, development of an efficient means of delivering this remaining limited supply is critical. The connection to a regional pipeline maximises the beneficial use of this water, potentially sustaining towns for a number of additional years, compared to only months if the same volume of water was discharged into the river system.

Further investigations would also optimise the benefits provided by accessing the deep storage in conjunction with a regional pipeline. For example, at the top end of the catchment, where the transmission losses are least and the cost of a pipeline highest, due to pipe size and challenging terrain, the most appropriate solution may be to initially utilise the River to convey this water to a key location, then divert the water into a pipeline for the remainder of the route down the catchment. This junction could, for example be the Dubbo weir, which provides a convenient off-take point for a pipeline. This location is still relatively high up in the catchment, so transmission losses would not be significant, and potentially offset to some extent from inflows from the Bell and Little rivers, which join the Macquarie upstream of Dubbo. The terrain west of Dubbo is very flat, making construction of a pipeline directly between Dubbo and Nyngan relatively easy and cost-effective, especially compared to the terrain in the upper reaches of the catchment below Burrendong Dam.

Changing full supply level of Burrendong Dam

Option 11 proposes to increase in full supply level of Burrendong Dam by utilising some of the flood mitigation storage capacity in the Dam to increase the permanent supply level.

Council supports this proposal as a way of altering the operation of the Dam to both increase overall water security whilst still ensuring adequate flood mitigation capacity.

This could be a very cost-effective means of increasing the Dam's full supply level, by operating the Dam in a more adaptive manner to maximise water security whilst still being able to effectively manage future flood events. Given floods occur infrequently there is a considerable amount of time when the flood storage capacity of the Dam is not needed, this presenting the opportunity to utilise this space differently during these times. With sophisticated flood monitoring and modelling techniques it should be possible to develop operating protocols that enable the Dam to be operated in such a way that the Dam can still provide sufficient flood storage when floods are predicted, whilst being able to also utilise the additional storage capacity at other times to improve water security.

The key issue from Council's perspective is to ensure that there is no increase in the overall flood impact on Wellington in particular, given its close proximity to Burrendong Dam, as well as Dubbo and other towns downstream. Therefore, any alterations to the Dam or its operation need to ensure that consequential flooding impacts downstream are fully assessed and, if necessary, additional flood protection works undertaken in Wellington and Dubbo as part of this overall project. In addition, given that these changes to the Dam could result in longer periods of flooding, this would have maximum impacts on urban areas, especially on LWUs ability to extract water from the River due to prolonged periods of high turbidity. Therefore, there is further justification for the construction of a pipeline from Burrendong Dam to ensure towns are supplied with raw water of appropriate quality at all times, especially during floods.

The changes proposed under Option 11, along with the construction of a pipe from Burrendong Dam (Option 8) which forms part of a regional pipe grid, highlight the significant benefits which can be realised when projects are considered as part of a scenario of options rather than separately. Council believes this represents a smart approach to achieving multiple significant outcomes, by maximising the use of existing infrastructure, enhancing its effectiveness with targeted additional infrastructure and developing enhanced operating systems to minimise risk and maximise the operational capacity to benefit all water users below Burrendong Dam. This is also a very cost-effective approach to capital expenditure, especially when compared to the alternative of major new infrastructure construction, which will also result in affordable ongoing whole-of-life costs which can be spread across all downstream water users who benefit from this proposed scenario.

Development of scenarios

The options identified need to be seen as both stand-alone solutions as well as part of a larger portfolio of options, or scenarios, which, when grouped together can offer significantly more benefits than as a suite of individual projects. There needs to be a mix of infrastructure solutions developed, as well as a review of the associated operational and management issues, which will ensure maximum benefit can be gained from the operation of this new infrastructure. Similarly, key environmental outcomes need to be also achieved along with addressing the needs of Aboriginal people.

Ongoing ownership and management of key water infrastructure by LWUs

The strategy outlines in Section 3.3 p 103

“Other important considerations when we arrive at shortlisted options will be who owns and maintains infrastructure options, who benefits from the option, what the impacts are and how to pay for the option: for example, should the cost be recovered from water users and what can be funded by the Australian or NSW Governments?”

A key consideration for any major infrastructure option which benefits LWUs will be how the ongoing operational and renewal costs of this infrastructure is dealt with.

This is particularly relevant for smaller, more remote communities where there are only a limited number of customers to share any additional costs associated with either owning and operating, or benefitting directly from major water security infrastructure. These communities are burdened by declining and ageing populations, often with limited financial capacity to pay significant cost increases for water. At the same time these LWUs are compelled to provide water at the appropriate ADWG standard, often with a treatment and reticulation network which is old and requiring frequent maintenance and repairs. In addition, there is the ever-present challenge of these LWUs attracting and retaining the appropriately skilled staff to manage and operate these systems, which, by necessity are becoming more complex due to increased compliance requirements.

Therefore, while it is critical to address water security issues for these communities, it is also essential to fully understand the very real and challenging situation many LWUs are already in as far as meeting their water supply/management obligations. In this context there needs to be genuine consultation with these communities about the most appropriate solutions, not just to their water security issues, but more fundamentally about their overall capacity to manage their local water supply system in the medium to long term. In some cases these conversations may be challenging, however, unless these issues are properly addressed, the overall effectiveness of this water security strategy for those LWUs most in need could be significantly compromised.

More effective alignment of the high-level strategic direction of the strategy with the actual development and delivery of projects

The Draft Strategy offers a wide range of options which have the capacity to ensure very significant and long term water security for this catchment

Within the long list of options are a number of projects which offer the opportunity to take a fundamentally new approach to water management within the catchment. Given the experiences of recent droughts, as well as the climate change projections it is clear that water management under BAU will no longer be sufficient for the medium to long term in this, and other inland river catchments in NSW.

In order for many of these projects to succeed there needs to be a fundamental assessment of how bold we want to be.

This is a challenge faced by all parties involved in the development of this strategy.

Within NSW Government, from the approvals and regulatory viewpoint there will need to be a much greater appetite for innovation and a willingness to give new ideas a chance to be seriously considered, rather than applying such an excess of caution that stifles progress. As well there needs to be greater collaboration between LWUs and key NSW government agencies to develop and assess these opportunities, with an open-minded approach from all parties which also respects the need for appropriate diligence and caution, and an acceptance that not every idea will succeed, but at least they will be given due consideration.

At the same time councils need to be open to new approaches in the long term management of water. This strategy encompasses the entire Macquarie-Castlereagh catchment, therefore councils similarly need to take a catchment-wide view of the issues and not confine their focus simply to the boundaries of their LGA. Councils need to be open to an honest assessment of the very real challenges they face in managing their water supply systems, both now and in the future, and work collaboratively with fellow councils, as well as the NSW Government to ensure the right solutions are adopted.

This strategy offers a unique opportunity for all parties involved in water management in the catchment to learn from the challenges of the recent droughts, appreciate that there needs to be a paradigm shift in the approach to water management, and work together in a genuinely collaborative manner to deliver lasting and sustainable water management to our communities.

Yours faithfully

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