

Draft Greater Sydney Water Strategy

Submission from Members of the AWA Water Efficiency Specialist Network

November 2021

Summary

The focus on water efficiency is excellent and we strongly agree that water efficiency is a key component of water security and a strategy for Sydney.

The anticipated savings from water efficiency included in the strategy of 49GL/yr by 2040 seem low we urge DPIE to revise this to a range from 49GL/year to 150GL/yr in savings including a two year and a five year target.

Introduction

Thank you for the opportunity to make a submission. DPIE are congratulated on preparing a strategy on these important issues at a time when Sydney is not in a water security crisis and we do have some time to carefully consider the options.

The strategy is commended for the discussion around many important ideas including water efficiency, integrated water management, sustainability and resilience, greening Sydney, healthy waterways and reflecting community and Aboriginal interests.

The Water Efficiency Specialist Network was particular pleased to see the prominence placed on water efficiency in the rationale and rhetoric of the strategy as there the Network strongly believe that the potentially significant role of water efficiency in water security is commonly over looked.

The Water Efficiency Specialist Network is, however, a 'broad church' of skills and experience in water efficiency with a wide range of sometimes conflicting views. This submission is not a unanimous conclusion or endorsed by the network or the AWA, it represents a range of views that hopefully contribute to an important conversation about the Greater Sydney Water Strategy.

Water security

The concept of an enduring water supply, not reliant on the natural environment, underpins the strategy. We are not all convinced this is the best strategy or mode of analysis, however if it is adopted this should be jointly considered with the concept of water efficiency/demand management which reduces the volume of enduring water supply required to an efficient minimum.

There is evidence to support the assessment that Sydney is facing water security challenges. These challenges are widespread across the water industry with Infrastructure Australia 2019 noting "of all the forms of infrastructure, the potential risks and costs of climate change are greatest in the water sector".¹ The challenge may be exacerbated by a lack of investment since the millennium drought in all aspects of water management but particularly in water efficiency and demand management and a more efficient mix of water sources. Current estimates from the AWA are that runoff in Eastern Australia will decline by 25-50%. Coombes calculates a 30-80% decline in runoff² in dry periods.

¹ Infrastructure Australia. (2019). An Assessment of Australia's Future Infrastructure Needs - The Australian Infrastructure Audit 2019. © Infrastructure Australia 2019.

² Coombes, P., & Barry, M. (2008). The relative efficiency of water supply catchments and rainwater tanks in cities subject to variable climate and the potential for climate change. *Australian Journal of Water Resources*, Vol 12 85-100

Climate Change is real, this decline has already started. The urgency is probably greater than that stated in the draft strategy.

Despite the encouraging rhetoric on water efficiency, the central recommendation of the strategy seems to be to build more centralised supply infrastructure. There has been a shift from dams and desalination plants to desalination plants and purified recycled water for drinking but the focus is still on large scale additions to the supply infrastructure. The strategy finds that business as usual will not achieve our goals but then proposes solutions based principally in an unchanged centralised thinking.

Demand and population projections are historically unreliable, there were views from different members that demand projections were both too high and too low. Too high in that over time Australia has seen a trend in declining per capita demand. Too low in that likely demand could be much higher creating a crisis in the future.

Water Efficiency and Demand Management

DPIE are commended on their assessment of water efficiency as an efficient, low cost form of water management. The strategy notes that 'business as usual' will not achieve our objectives and the first step in making our water systems sustainable and resilient is a strong focus on water conservation and efficiency. We fully support this important observation.

More emphasis could have been made on reductions in demand being the same as an increase in supply and that reducing demand in Greater Sydney reduces the need for future additional rainfall independent supply³. Water Efficiency in Greater Sydney is already providing nearly the same volume as the desalination plant, at much less cost and all the time. Using water more efficiently reduces the volume of enduring water supply required.

The strategy does not explain how a water efficiency target of 49GL by 2040 was arrived at. This is an important conversation given that the Economic Level of Water Conservation seems to be based on the value of water when there is a surplus, not the value of water when we really need it.

There are many components of water efficiency with different costs and benefits and if this strategy is the first response in the draft strategy more work is required on residential water efficiency, non residential water efficiency, unaccounted losses and government water use including levels of investment and water efficiency targets.

This discussion emphasises why it is so important to talk about the costs and benefits of different options. If water efficiency is a low cost option why does the draft strategy only recommend a 49 GL annual reduction in twenty years time? An annual investment of \$23 million annually seems insignificant compared to a multi-billion desalination plant. What are the arguments for and against a water efficiency target of 100GL or 500GL for example? It seems reasonable given the emphasis placed on water efficient in the draft that the final strategy flag the intention to explore possible savings in 2040 in a range from 49GL/yr up to say 150GL/yr.

There is a need to count all costs, and to use the correct cost comparator in strategies. For example, assuming that the 128ML/day (BOM, 2020) leakage only has a cost/value of \$0.07/kl when it is one of the key drivers for high cost augmentation strategies. Comparison to the cost of desalination is also inadequate as most of the costs to develop, produce and transfer this water are not counted.

³ AWA Water Efficiency Specialist Network. (2012). The case for Water Efficiency - AWA Position Paper October 2012. Sydney: Australian Water Association.

But suppose we did count this full produce and supply cost, for use as a comparator, then we will have better/more balanced assessment of water efficiency and leakage reduction strategies. So the regulatory asset base (the utility is all about constructing assets) is just part of a sequence of issues. The spatial and temporal costs of water supply in any utility region experience strong variation – with the highest costs distant from water supply and sewage treatment – and where new or infill development is occurring! – the current average assessment is also misleading for the development of effective water strategy. So, there is also a need to adequately characterise the urban water market of water sources and savings (utility supply is a market segment) and analyse this joined up system.

In relation to unaccounted losses the Auditor General identified that Sydney Water lost 131 million litres each day due to leakage and that the cost of reducing leakage at that level was 3 cents a kilolitre⁴. This represents nearly 48GL each year, about the same as the water efficiency target to be achieved by 2040. We suggest the loss of more than 5% of the Sydney water supply, and equivalent to half the volume of the first desalination augmentation, should be a cost comparator and high priority for the strategy requiring a clear performance target.

Integrated Water Management and Strategic Thinking

The strategy has not recognised or discussed ‘one of the strongest sustainability planning measures to be undertaken in Australia’ (DPIE website) and the enormous value of a strong regulatory link between water management and the land use development and building process.

Sydney and all of NSW operates an effective water and energy efficiency program through the BASIX State Environmental Planning Policy. The current estimated water savings from BASIX are 79GL annually, 49GL from water efficient appliances and 30GL from rainwater harvesting. The statement that BASIX has not been as effective as it should be is strongly contested in the Greater Sydney Alternative Water Plan published in 2020 by members of the Specialist Network and a summary is attached as an appendix as further information but not endorsed by the Specialist Network.

The Sydney strategy could be expanded to include a more integrated approach to water management using the BASIX state environmental planning policy which also achieves stormwater objectives and land use planning integration with water management.

Regulatory Asset Base as an investment driver

The continued legislative imperative for a growing family of NSW Water Corporations including Sydney Water and Water NSW to increase the size of their regulatory asset base and thereby secure decades of increased future income in order ‘to be a successful business’ seems to be driving investment decisions in Sydney.

While increasing the size of the regulatory asset base results in long term increases in future income for large water corporations, a water efficiency program does not. We are concerned that this legitimate and legislated financial interest is affecting water efficiency investment decisions and putting the Sydney community at risk.

⁴ New South Wales Auditor General. (2020). Water Conservation in Greater Sydney. Audit Office of New South Wales

As an alternative driver, our goal could be to sell less water and reduce the typical residential bill whilst still providing the standards of living that water currently provides. We should investigate ways to meet living standards without using as much water or even any water at all.

We welcome the DPIE assessment of the investment and operating costs required for all the options in the strategy.

Conclusion

Thank you for the opportunity to comment and your consideration. Members of the Specialist Network are keen to provide skills and experience to work with Sydney to participate in decision making and help develop better solutions.

Appendix 1: Greater Sydney Alternative Water Plan Executive Summary

Greater Sydney is the premier Australian city and it faces profound urban water challenges. Sydney must manage its infrastructure efficiently and sustainably to compete internationally as a Global city. Sydney has a strongly performing water services sector but has a traditional approach to water service management. Significant challenges include long transfer distances for water and sewage services and inadequate urban stormwater infrastructure management. These problems appear to be intractable using traditional water analysis approaches however a Systems Framework investigation can identify efficient solutions.

The Systems Framework methodology was recognised in 2018 by Engineers Australia as leading water resource research.

This report finds that Greater Sydney, despite significant challenges, currently has the most efficient and sustainable water services in Australia. This has been achieved through the strategic alignment of water demand management, rainwater harvesting and urban development. The BASIX state environmental planning policy has built-in demand management and stormwater management in most new buildings in the Greater Sydney region since 2004 and this 'bottom up' approach has a major legacy impact on the efficiency of water services. BASIX policies have already saved the Greater Sydney region about 79 billion litres of water annually by 2019, comparable to the 90 billion litre annual capacity of the Sydney desalination plant.

The Systems Framework is used to model and then compare four future scenarios based around the current BASIX policy. Business as Usual projects continuing the current Planning Policy compared to

- not having BASIX,*
- an improved BASIX to include water sensitive urban design and*
- a combined improved BASIX and variable price structure for water and sewage.*

Up to 2050 an improved BASIX and variable price structure would deliver benefits of \$7B in community benefits compared to Business as Usual and \$11B compared to not having BASIX at all.

The key insight is that a combination of supply and demand management is more efficient than relying entirely on supply solutions when considering whole of society benefits. These demand management solutions include behaviour change, water efficient appliances and rainwater harvesting. An example of these benefits is the 5 year deferral of the multi-billion dollar desalination augmentation provided by the BASIX policy. The inclusion of rainwater harvesting as a stormwater management solution has both infrastructure and demand management benefits and is an efficient decentralised infrastructure asset that improves the performance of the whole system.

This investigation has identified water and sewage transfer distances of over 50 km across Greater Sydney. Transporting a heavy liquid over these distances and significant changes in ground elevations represents high capital and operational costs and potential economic inefficiencies. In some parts of Greater Sydney, the shadow cost (medium run marginal cost) of delivering water and sewage services is greater than \$16/kL, which is nearly 800% more than the household usage tariff as shown in Figure 1.

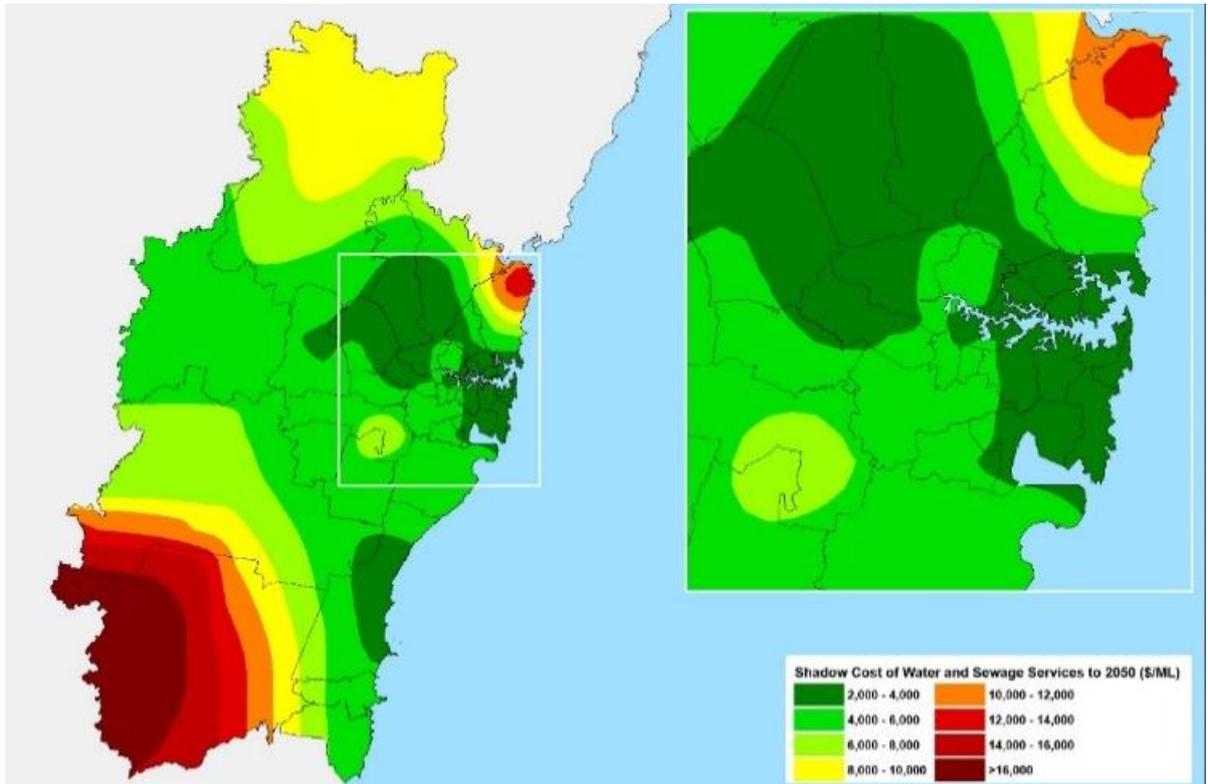


Figure 1 Medium run spatial costs of utility water and sewage services map

As a result of the analysis the report recommends continuing the BASIX program, considering an improved version of BASIX and considering a more efficient pricing structure for water and sewage services.

Bibliography

AWA Water Efficiency Specialist Network. (2012). *The case for Water Efficiency - AWA Position Paper October 2012*. Sydney: Australian Water Association.

Coombes, P., & Barry, M. (2008). The relative efficiency of water supply catchments and rainwater tanks in cities subject to variable climate and the potential for climate change. *Australian Journal of Water Resources*, Vol 12 85-100.

Coombes, P., & Smit, M. (2020). *Alternative Water Strategy for Sydney v1*. Newcastle: Urban Water Cycle Solutions.

Infrastructure Australia. (2019). *An Assessment of Australia's Future Infrastructure Needs - The Australian Infrastructure Audit 2019*. © Infrastructure Australia 2019.

New South Wales Auditor General. (2020). *Water Conservation in Greater Sydney*. Audit Office of New South Wales.