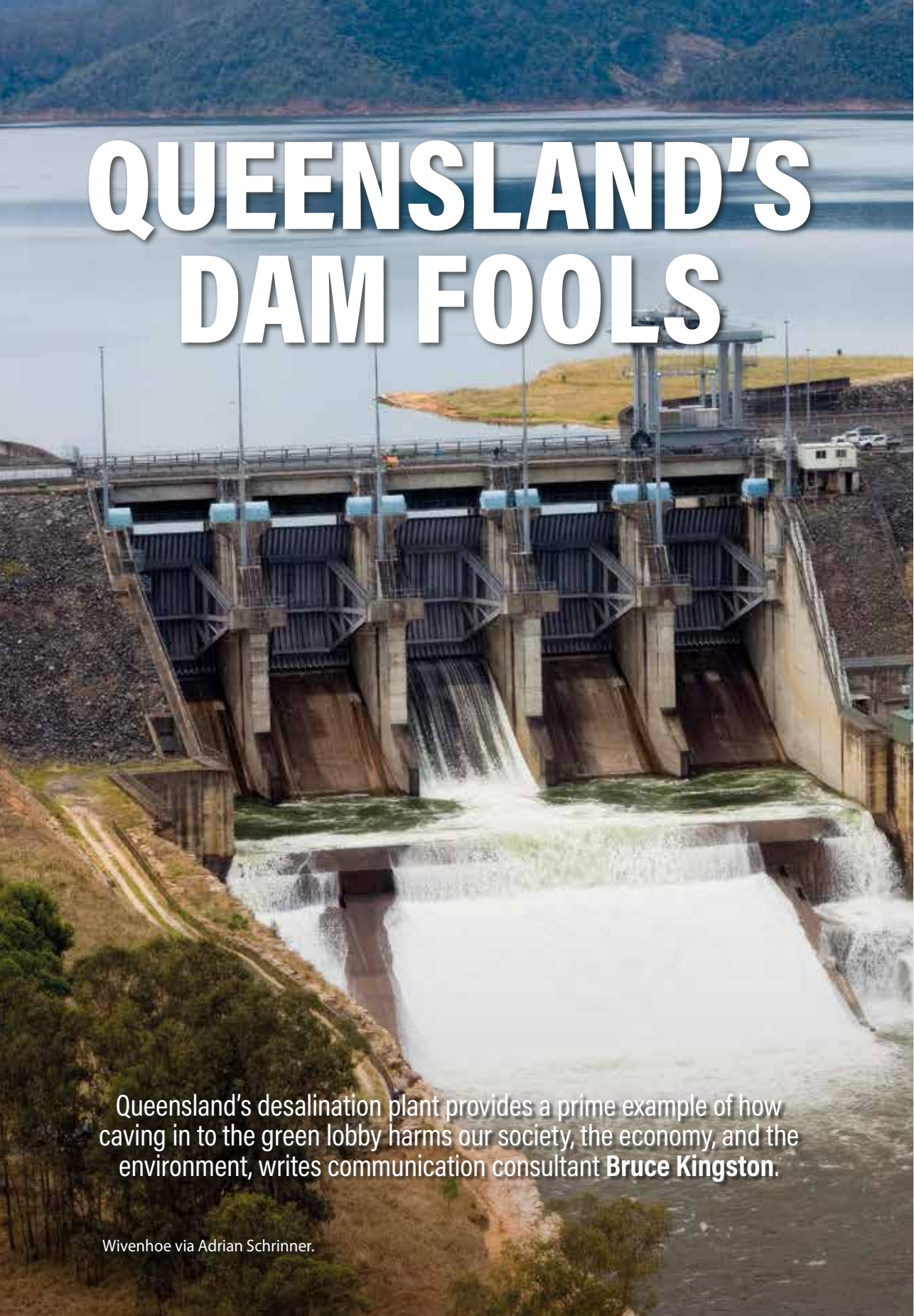


QUEENSLAND'S DAM FOOLS



Queensland's desalination plant provides a prime example of how caving in to the green lobby harms our society, the economy, and the environment, writes communication consultant **Bruce Kingston**.

Water is often ignored because of its ubiquity, but without it we humans can maintain life for only some three or four days. Major dam projects in Australia in the first half of the 20th century were commonly hailed as substantially improving the public good, but by the 1970s dams were becoming political footballs. Ever since there has been a rush by State Governments to pursue desalination plants as an alternative, producing a raft of expensive projects rightly dubbed 'white elephants'.

The Queensland government of National Party Premier, Joh Bjelke-Petersen (governing from 1968 to 1987) began creating a business and social environment attractive to intrastate migration, driving commercial and residential real estate developments across the State's south-east.

Completion of the Wivenhoe dam in 1984, some 80km west of Brisbane, delivered not only water security for the region but also offered flood mitigation capacity (though its dual role was brought into sharp contrast during arguments regarding liability for flood damage during the 2011 floods in the Brisbane Valley). However, not long after its completion, a 1988 cabinet submission to the Queensland Government from the Queensland Water Resources Commission stated that "the yield of Wivenhoe Dam will be fully committed by about 2015".

The logical solution to this impending serious problem was the development of another major dam in south-east Queensland. A site north-west of the Gold Coast had already been identified in the Albert River valley—the Wolffdene Dam—an area blessed with consistent and substantial rain. Oddly enough, this does not seem to have been a major criterion in the selection of other dam sites since.

Wolffdene also had particular attraction to those contemplating flood management, as it gave water managers the opportunity to release water progressively from Wivenhoe during flood incidents. Planning and land

acquisitions commenced during 1989. Much of this planning and discussion took place in the tumultuous waning period of the National Party government, seeing them lose to the ALP in December 1989. The impending State election of December 1989 saw this crucial piece of infrastructure become a political football.

Successive ALP governments ignored the water security issue.

Add to this the growing environmental movement which had thrown its weight into the Wolffdene debate (and created future political bedfellows), as noted in this 2009 *Sydney Morning Herald* article:

As the president of the Australian Conservation Foundation back in 1989, Peter Garrett was a vocal opponent of the Wolffdene Dam. He campaigned alongside aspiring Queensland Labor premier Wayne Goss to stop its construction. The first week after Labor broke the National Party's 30-year stranglehold on Queensland politics, the newly-elected Goss government—with Kevin Rudd as its top public servant—canned the Wolffdene Dam. In years to come, this decision would be labelled short-sighted as south-east Queensland went perilously close to running dry.

With the dam cancelled and no other viable programs in place the 'millennium drought' was to hit much of southern and eastern

Australia, with record low rainfall figures from 1996 until 2010. Successive ALP governments ignored the water security issue or focused on demand management to solve the water crisis. Few academics or resource managers believe demand management can do anything but reduce load on the system in peak periods.

In 2011 the Council of Mayors (representing all 11 major councils in SE Queensland and approximately a sixth of Australia's population) made a scathing response to the Productivity Commission's Inquiry into Australia's Urban Water Sector:

In 2007, South-East Queensland earned the distinction of becoming one of the first major metropolitan regions in the world to almost run out of water. With \$7 billion of borrowed State funds later, we have now earned the reputation as having some of the most expensive white elephants in water infrastructure in Australia, with a \$2.5 billion recycling system the Government had pledged not to turn on until dams are below 40 per cent, a \$1.2 billion desalination plant that won't be turned on until dams are below 60 per cent, and a pipeline to a dam the State never built—but spent \$265m in non-recoverable costs in not doing it.

Successive ALP governments were still being warned of the very real possibility of the State's south-east running out of water and in this environment the option of desalination was grasped as a quick fix and a future white elephant. The Gold Coast Desalination Plant (GCDP), which was commissioned in 2009, has all the hallmarks of a classic government white elephant:

- very expensive to construct at some \$1.2 billion dollars.
- very expensive to operate, using large amounts of electricity.

- producing water at some six times the cost per kilolitre of conventional dams.
- having some significant environmental concerns.
- not really addressing the problem in the longer term, with a limited functional lifespan.

WHAT IS DESALINATION?

Desalination has been around for thousands of years, with modern desalination commonly used since the 1950s. The most common form of desalination nowadays involves the pumping of sea water at very high pressure through synthetic membranes to remove salt and other impurities in a process known as reverse osmosis.

There are some 16,000 major desalination plants worldwide across 177 countries. Desalination is a highly energy intensive process, consuming some 2.5–3.5kwh of electricity for every thousand litres of fresh water produced. Desal plants also can have significant environmental impacts.

Therefore, along with the very high costs of the physical plant construction and high costs of water produced, we need to also factor in the high energy costs and environmental impacts when assessing the virtues of desalination as a viable option for meeting a region's water needs.

The GCDP is primarily operated in standby mode.

It is also worth noting major desalination plants have been constructed in NSW (\$1.8 billion for double the output of the GCDP) and Victoria (\$3.5 billion for more than triple the output of the GCDP), and both of these have been dubbed white elephant



Gold Coast Desalination Plant.

Photo: seqwater.com.au

projects supplying little water into their respective communities. A desal plant in Adelaide (\$1.8 billion and 2.4 times the GCDP's output) would have seemed to make more sense given the area's climate, but it too has been dubbed a white elephant with high operating costs. Desal plants in Perth (\$1.35 billion and 3.2 times the GCDP's output) have had more success, though of course they are supplying water into environments dramatically drier than SE Queensland.

WHAT WAS THE GCDP?

The Gold Coast City Council initially developed plans for a smaller 55 megalitre per day desalination plant with a projected cost of some \$260 million. With the rapidly worsening drought conditions in south-east Queensland, the State government eagerly joined the project and expanded the projected water production to 133 megalitres

per day. The State government eventually contributed a further \$869 million to the project. Counterintuitively, this equates to a 430% increase in cost for a 240% increase in capacity.

Over a period of about two-and-a-half years from August 2006, the rushed project moved from design to construction to commissioning, producing the first water supply to the grid in February 2009. After rectification of 16 substantial construction issues, the GCDP was officially handed over to the State government in October 2010.

Almost immediately after opening, water storages for SE Queensland rose to more than 60% capacity and by late 2010 had reached an effective 100% capacity. In December 2010 the State government confirmed the plant would go into standby mode as a cost-saving measure. The GCDP has briefly returned to service on a number of occasions to augment water grid supplies, but is primarily operated in standby mode.

WHAT WERE THE ADVERSE EFFECTS?

The Minister responsible for the GCDP stated in Parliament that the cost of producing a megalitre of water from the GCDP was approximately \$800, dramatically higher than the average cost of dam water at approximately \$123 per megalitre—a 650% increase.

Australia's Urban Water Sector inquiry, conducted by the Productivity Commission in 2011, estimated operating costs of desalination plants in Australia were likely to vary from about \$500 per megalitre to \$1,100 per megalitre. Based on Seqwater's projections, if the GCDP operated at full capacity it would fall within the higher end of this range at \$1,021 per megalitre. However, when production is below full capacity as is currently the case, the plant's running costs are significantly higher than this benchmark. For example, in 2011-12, operating and

maintenance costs were \$4,403 per megalitre or about four times higher than the inquiry's maximum estimate.

The GCDP is at pains to explain that it carbon offsets some proportion of its high energy costs, but this really only amounts to some form of 'greenwashing' which further increases real production costs.

There was no robust business case for the GCDP.

The project's lifecycle cost also needs to be considered, as major international studies suggest the lifespan of desalination plants is in the order of 20 to 25 years. With the GCDP



Banner at a protest against the Wonthaggi desalination plant in May, 2009.

Photo: John Englart/Flickr

now in its second decade, its useful lifespan may only be until the early 2030s. What will be done to ensure SE Queensland's water security in the coming decades?

Had the Wolffdene Dam been built as planned during the 1990s, the projected costs were estimated to be in the order of \$900 million to \$1 billion and the likelihood of the impacts of the millennium drought would have been substantially reduced. It should also be remembered that dams commonly have a substantial lifespan (of more than 50 years) and as such would have been producing potable water for the region well into this millennium with minimal additional capital outlay and at dramatically reduced operating costs.

COULD IT HAVE BEEN AVOIDED AND/OR MADE BETTER?

Consistent expert advice both from within and without government over decades has clearly indicated that substantial additional water storage for SE Queensland in particular (but including other major regional centres as well) was not only prudent but absolutely necessary. Recycled water use is sometimes touted as an option; however, this has come to be seen as a politically unpalatable option of last resort.

Even as late as 2004, an SEQ Water strategy document did not raise the alarm regarding the state of the water problem in the south east. The Queensland Audit Office (QAO) stated:

The emergency water supply situation developed without any contingency planning or prepared solutions available to government to address the emerging critical supply shortage from a severe and prolonged drought.

They went on to note a further SEQ Water strategy document appeared a year later, stating:

In September 2005, a new strategy was released, titled 'Responding to Drought in SEQ – Contingency Planning for Urban Water Supplies', which addressed the ongoing drought and diminishing water supply levels. This report presented a scenario that water supplies may run out in less than three years, giving limited time to find additional climate-resilient water supplies. Desalination plants in Adelaide and Perth each involved an approval and construction phase of four years, extended to at least five years when the planning and procurement phases were included. In comparison, the delivery time frames for the GCDP and WCRWS were very aggressive and compressed.

Perhaps even more damningly, the QAO went on to say:

Robust program and budget management was not evident at the preliminary decision-making stages, as evidenced by the significant discrepancy between initial estimates of construction costs and the forecast target outturn cost/target operating cost determined jointly by the alliance partners.

One of the key findings of the QAO was that there was no robust business case for the GCDP, then went on to point out that:

All costs have significantly exceeded initial expectations, adversely affecting the value-for-money proposition for these assets. Rushed planning, and the procurement method chosen to deliver them, meant that achievement of lowest or 'least cost' outcomes cannot be demonstrated.



White elephants, Thailand, paying homage to the King.

Photo: Reuters

“White elephant projects are those which fail to meet their objectives, cost more than was originally estimated, and are costly to maintain, far exceeding any marginal benefits they might produce. The term derives from the old Thai custom of gifting rare, expensive-to-keep white elephants to the reigning monarch.”

This knee-jerk planning and the obvious need to ‘do something’ in the face of increasing community unrest saw normal procurement procedures drastically curtailed and many of the normal approaches to major capital investments almost entirely missing. This led the QAO to state in 2012 that:

For the GCDP in particular, it is not possible to determine with sufficient reliability whether the plant was constructed at best cost, or is being operated and maintained efficiently since. This is because it did not have a formally documented business case; a non-price competitive procurement strategy was chosen to deliver it; and it has not operated to its design capacity, or consistently in any one mode, since its commissioning.

To be kind, this suggests a far-from-strategic

approach by the government of the day to such a crucial issue as water security but one which becomes understandable in the more ‘executive’ focused government which had emerged since the public sector management changes of the Goss/Rudd era.

With more centralised decision-making and a much more politicised senior public service working on renewable contracts, and a constant focus on short-term news cycles and polling, strategic government planning has been seriously diminished and the more difficult decisions involving major capital works too easy to leave to another government in a few years.

The Queensland Government’s own peak water agency for the region, Seqwater, in its web download document ‘Planning Your Water Future’, states:

Currently South-East Queensland uses around 300,000 million litres a year. By 2046, with our increasing

population, the forecast medium demand is around 525,000 million litres a year. With all South-East Queensland water grid assets available and operating (including the Western Corridor Recycled Water Scheme), our region's bulk water system can supply about 440,000 million litres a year. Our bulk water supply system meets our region's current needs but in the future new sources will be required to meet the needs of our growing population, expected to reach 5.1 million by 2046.

This colourful and friendly PDF about saving water and environmental issues shows the water grid (despite also using substantial amounts of recycled water) will be some 85,000 million litres short within 25 years.

Dam construction is seen as a 'bridge too far'.

Additionally, it has been established that additional large-scale water storage apart from Wivenhoe Dam would allow Wivenhoe to fulfill one of its original and important roles as part of the region's flood mitigation program. It is somewhat disingenuous to claim the desalination plant now plays an integral part of the south-east Queensland water security program, as this security only comes at a vastly increased cost per kilolitre of water produced and represents only at best a relatively short-term fix to an overwhelming problem. At the risk of seeming oversimplistic, the major option that suggests itself would be to follow the advice of experts in the first place and build a dam where it actually rains.

However, between NIMBY voters and

environmental protestors, most governments seem to see dam construction as a bridge too far (to mix infrastructure metaphors).

Somewhat astonishingly, the current Queensland ALP Premier is talking of developing another desalination plant on the Sunshine Coast to cope with this region's increasing development pressures. Media reports place the capital cost of this plant from \$4 billion to \$8 billion.

Perhaps they should heed Dr Ian Wright, from the University of Western Sydney, who stated,

Adelaide, Melbourne, Sydney, Perth, Gold Coast have all built desalination plants and most of the time they just sit there, so they're partial white elephants. They use gargantuan amounts of electricity and whether we like it or not, most of our power grid is coal-fired so we will be burning more coal to create fresh water which seems pretty crazy in this day and age to be doing it.

It is time for a government serious about tackling issues like this to bite the bullet and make water security a key plank in their election platform.

This article is an edited version of 'Water, water everywhere and not a drop to drink: The sad history of water politics in SE Qld and the bad politics that led to the "solution" of desalination' by Bruce Kingston, which is the first chapter of *White Elephant Stampede: Case Studies in Policy and Project Management Failures*, edited by David Gration, Bruce Kingston, and Scott Prasser (Connor Court Publishing, November 2022). www.connorcourtpublishing.com.au

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