

Damnation

From the Hinze Dam to the Tugun desalination plant⁵¹

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Australia's major cities have long relied on large dams as their main source of water. These dams, including Warragamba, are household names in their own cities. Some cities are blessed with good quality catchment areas, most notably Sydney, while others, including Brisbane, have catchments compromised by agricultural pursuits and very little green space in their immediate hinterland. Outside the cities and country towns, rural Australia continues to get by on tank water, just as it has done for the past two centuries (Frost et al 2015).

Criss-crossed with creeks and rivers, the indigenous people of the region had no difficulty in accessing clean water. The infant European settlements of the area now known as the Gold Coast relied on tank water for drinking and the waterways for commercial quantities of water. A dam on Tallebudgera Creek was replaced in 1962 with the Little Nerang Dam. At the time, the Gold Coast's population hovered around fifty thousand. Fifty years later it boasted a population of half a million, a tenfold increase.

The Gold Coast developed rapidly as a tourist resort in the 1950s and 1960s, with key Melbourne entrepreneurs, Stanley Korman and Bruce Small, introducing canal developments, based on the Florida model. Waterways, sun, surf and sand came to dominate how the Gold Coast promoted itself, not just to residents of Brisbane, bereft of surf beaches, but to the Sydney and Melbourne markets who could fly or drive (Davidson and Spearritt 2000, 161-162).

Prior to the introduction of sewers – which require a great deal of water to keep them flowing – 'night soil' collections and septic tanks dealt with toilet and laundry waste, though not in what today would be regarded as an environmentally acceptable manner. While sandy soil septic tanks easily coped with the volume, the water table became increasingly contaminated. With the coming of more substantial blocks of flats the beachside suburban holiday houses and fibro shacks were gradually demolished and replaced by apartment blocks that were only feasible if connected to the sewer.

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With the roll out of a sewerage system in the 1960s, sewerage treatment plants were built at Elanora, Benowa and Tugun. More dramatically, work started on the Hinze Dam, in the foothills of the Lamington National Park, with the Border Ranges national park beyond (Gold Coast City Council 2013, 27-29). Named after Carl and Johanna Hinze, pioneering rural grandparents of former South Coast MLA and Minister Russ Hinze, most Queenslanders assume that the dam is named after the latter, not least because of his reputation for pork barrelling, on behalf of both himself and the National Party. Opened in 1976, it had a storage capacity of 42,400 megalitres (ML). With the rapid growth of the Gold Coast, including a quarter of a million new residents between 1961 and 1991, the dam wall was raised in 1989, increasing capacity fourfold, to 163,500 ML, offering the Gold Coast 'an assured water supply' (*Courier-Mail* 20 March, 1989; *Gold Coast Bulletin* 20 March, 1989).

When the Hinze Dam level fell below about 50 per cent, water was pumped in from the huge Wivenhoe dam, west of Brisbane. As the great urban drought started to unfold in south-east Queensland from 2005, the Gold Coast city council became increasingly alarmed that the Coast could no longer rely on water from Wivenhoe, if Brisbane itself was running dry.

The onset of the water crisis

The Queensland state government was (and remains) well informed about the rapid rate of population growth in south-east Queensland (Queensland Government Statistician's Office 2016). So why did the state government and the major councils, including Brisbane and the Gold Coast, allow water stocks in the dams to fall to perilously low levels while simultaneously allowing the government's own electric power stations to continue to rely on potable water supplies, rather than recycled water? By 2006 the power stations were using up to one fifth of SEQ's daily consumption of water.

Only 17 per cent of south-east Queensland is held in state forests and national parks, compared to 43 per cent of Greater Sydney (Brisbane Institute 2003). One obvious result is that the catchment areas for dams in SEQ are not a patch on the Sydney catchment areas. Because so much of the environment of SEQ was carved up into small rural landholdings by the early 1950s, when it came to locating new, large dams they ended up to the north-west of Brisbane in a relatively dry catchment area, dotted with farms. The Wivenhoe dam site, to complement the smaller Somerset dam, was selected as much to prevent flooding as to collect and store water.

The Gold Coast's hinterland dams, though smaller than others in SEQ, are set in catchment areas of higher rainfall. Even so, Gold Coast property developers got worried at the thought that the water might run out. Imagine the indignity of having to buy in water – via truck – from northern New South Wales to fill up your lap pool. It hardly goes with the Gold Coast's image of sunshine, instant palm plantings and unlimited largesse, from meter maids and schoolies week to champagne at the annual V8 Supercar race. The 2010 Gold Coast marketing campaign, 'Very GC', bragged of 'miles of sandy beach, lush green rainforest, world-class golfing greens and world famous theme parks' (Gold Coast Tourism 2010).

The city most threatened by the water shortage was Toowoomba, where water bureaucrats and some politicians thought recycling the best remedy in such a dire situation. So with state and federal government support, a local referendum on the issue was called. On 29 July 2006, 62 per cent of the

city's population voted against the referendum question, 'Do you support the addition of purified recycled water to Toowoomba's water supply?' Clive Berghofer, a former National Party member of parliament, a real estate developer and a medical research philanthropist, masterminded the 'no' campaign, complaining that Toowoomba, with its population of 120,000, would become known as Poowomba if the 'yes' campaign succeeded (van Vuuren 2007).⁵²

Deducing that it would be hard to convince south-east Queenslanders to embrace recycled water, the state government report *Water for South-East Queensland* came up with the notion that demand for water could be reduced dramatically if the community understood the severity of the crisis (Queensland Government 2006b, 6-8). 'If Queenslanders are to maintain the lifestyle they currently take for granted, it is essential that demand for water is reduced and supplies are increased, so that economic growth and wealth creation can continue'. Despite the defeat of the Toowoomba referendum, the report stated that 'recycling within residential and non-residential developments will need to be introduced'.

In late October 2006, less than two months after his victory in the state election, Beattie announced that he would hold a referendum in the coming year on water recycling. The South-East Queensland Council of Mayors were unable to present a united front, and said – nervous after the Toowoomba result – they would not take sides in the referendum, though Brisbane Lord Mayor Campbell Newman came out in favour of recycling. Beattie abandoned the referendum idea in late January, explaining that the situation was so dire that purified recycled water 'is no longer an option, we have no choice'. He also explained that the Queensland Water Commission had given him 'compelling advice' to cancel the March 17 plebiscite (Queensland Government 2007). For once Beattie got a favourable editorial in the *Courier-Mail*: 'with Brisbane's Wivenhoe Dam at just above 20 per cent capacity, Premier Peter Beattie has made the right decision to press ahead with recycled drinking water for south-east Queensland and scrap what would have been a farcical \$10 million plebiscite over the issue' (*Courier-Mail* 29 January, 2007). Five days later the newspaper informed its readers that some of them were already drinking recycled water (*Courier-Mail* 3 February, 2007).

The south-east council mayors had bickered for months about uniform water restrictions and they would often break ranks. Outrage greeted Gold Coast Mayor Ron Clarke when he allowed his own residents a 'wet weekend' of hosing down their driveways and washing their cars in May 2006, simply because the Hinze dam happened to be full (*Courier-Mail* 21 April, 2006). But Clarke's action reflected the local view voiced by many Gold Coast residents that they should not be dictated to by Brisbane (*Gold Coast Bulletin* 1 May, 2006, 25 May, 2006). The complications of overlapping jurisdictions and financial responsibilities in the water bureaucracies are much less tractable.

The phenomenal success of the Queensland Water Commission in its 2007 'Target 140' campaign, with Brisbane soon boasting the lowest per capita water use of any major Australian urban area, shows just how much consumption can be reduced with media support and a degree of bi-partisan consensus (Queensland Water Commission 2010, 107-108). The Water Commission, defunct since January 2013, continued to run a clever and successful marketing campaign for its Target 140. Their

⁵² Premier Peter Beattie's Community Cabinet met with the Toowoomba Water Supply Taskforce in December 2006, months after the failed referendum, and announced a 47-kilometre pipeline from Wivenhoe Dam to Perseverance Dam. See Queensland Government, 2006a.

website carried weekly updates on dam levels and household consumption. One of its key selling points was that if residents could stick to 140 litres per day they would still be allowed to water plants with a bucket or watering can for a few hours a week. This approach had the great merit that the Commission, while attempting to severely curtail household usage, was not trying to mandate exactly how and where individuals can use what is deemed as a reasonable, if heavily constrained, daily rate of consumption. There is an element of trust in this that paid off in a level of region-wide compliance that is quite remarkable. Council mayors were mightily relieved that the Commission took responsibility for determining water restriction policy. Gold Coast Mayor Ron Clarke wanted to break ranks again in January 2008 when heavy summer rain overflowed the still relatively small Hinze Dam and he suggested that allowing ratepayers to water down their driveways would reduce the risk of flooding! The Water Commission did make one minor and sensible concession: Gold Coast beaches could again turn on their outdoor showers (*Courier-Mail* 18 January, 2008; *Gold Coast Bulletin* 18 January, 2008). Overseas tourists, not appreciating the severity of the water shortage, were always perplexed as to why the outdoor showers were turned off.

Desalination to the rescue

In 1994 the Albert Shire Council and the Gold Coast City Council, before they were amalgamated the following year, produced a 14-page glossy brochure entitled, *Water... Lifeline of a City*, replete with photographs of the Hinze Dam wall, a natural waterfall, sprinklers on golf courses, with the largest image the obligatory swim-suited woman lolling on a red flotation device in a swimming pool. Like most such brochures there is a brief explanation of the water cycle and of Australia as the driest inhabited continent, before readers were informed that a reliable water supply is 'vital' for 'the nation's most popular holiday region'. The little Nerang dam and the Hinze dam were said to provide for the region's needs 'well into the next century' The brochure also devoted quite a few pages to saving water. With sixty per cent of water used inside their homes, householders were advised not to use their toilet bowl as a bin or ashtray, take shorter showers and check their taps for leaks. The forty per cent of water used on the garden could be reduced by soaking, not spraying, using mulch, adding a timer to your sprinkler, letting the lawn go brown in summer and installing a swimming pool cover. You were even instructed as to how to read your water meter (Spearritt 2010, 29-30).

Because the Gold Coast has a higher average rainfall than Brisbane,⁵³ the Hinze dam fills quickly, but because it is a small dam it also empties quickly. The Gold Coast continued to draw water from Wivenhoe, but once levels fell below 30 per cent the Gold Coast looked like it might be hung out to dry. The Goss Labor government, having abandoned the proposal to build the Wolffdene dam in the early 1990s, ostensibly in response to resident opposition to the proposal in the lead up to the 1989 state election, had not left the Gold Coast with a conventional legacy of large urban dams. Despite the Bjelke-Petersen government (the original architect of the Wolffdene plan) having rezoned much of the land around Wolffdene as 'rural/residential', thereby increasing subdivisions and property development and effectively making the dam proposal economically and politically more fraught, Goss's government still wears most of the blame – including from former Natural Resources

⁵³ On average, Brisbane receives a little over 1000mm of rain annually, while the Gold Coast and its hinterland receive close to 1400mm. See Bureau of Meteorology, 2016.

Department senior officials – for opposing the dam’s construction as part of its successful 1989 election platform (Norton 2007; Centre for the Government of Queensland 2011). This criticism extends to the dubious suggestion that, in the absence of a dam at Wolffdene, the flood events of 2010-11 in Brisbane and the Lockyer Valley were worse than they might have been.

Ironically, Goss effectively lost office a handful of years later when his government attempted to push forward with another major infrastructure development – this time a highway duplication between Brisbane and the Gold Coast – which stirred similarly negative sentiments among likely-affected residents of swinging electorates through which the development would pass. It seems that both Premiers Goss and Beattie were willing at times, in respect of different problems related partly to population pressures, to wear a level of voter backlash against potentially unpopular building projects in areas south of Brisbane and on the Gold Coast that more often than not, especially in terms of the latter, have voted for the conservative parties. Gold Coast investors got worried as water reserves became sparser, as did their backers, the banks and the superannuation funds. The Gold Coast had lived through the rise and withdrawal of Japanese investment in the 1980s, and had seen property booms and busts ever since, so investors and developers were understandably jittery (Hajdu 2005; Forbes and Spearritt 2006).

By early 2005 the Gold Coast was well on the way to the strictest water restrictions in its history. Gold Coast Mayor Ron Clarke announced in April that south-east Queensland needed at least six mini-desalination plants, but a Brisbane City Council spokesman pointed out that using recycled water at Swanbank Power station would save as much potable water as one of Clarke’s projected plants. By September 2005, Clarke was heavily pushing for a fast-tracked desal plant, allegedly necessary because the coast’s population would increase from 500,000 to 1.2 million within 50 years (*Courier-Mail* 27 April, 2005; *Gold Coast Bulletin* 24 September, 2005). The Gold Coast council decided to bankroll a \$165 million desalination plant to create a ‘bulk water source’, ‘regardless of the drought’ (*Gold Coast Bulletin* 26 November, 2005). As part of the water grid the State Government agreed, in June 2006, to partner with the Gold Coast City council and in November 2006 they formed a 50/50 joint venture company to develop and own the desalination plant, to be built on council land to the immediate west of the Gold Coast airport. This plant would have a capacity of 125ML per day. The promotional video for the site, with its intake off Tugun beach, described the project as ‘environmentally sound and sustainable’, while admitting that the desal water will be ‘so free of salt and minerals’ that ‘minerals will have to be added’ for potable consumption.⁵⁴

A bold and well prepared state government and a similarly well-informed Gold Coast City Council could have rolled out a mammoth water tank initiative, offering 150,000 suburban dwellings on the Coast 20,000 litres of tank capacity, retaining potable water supplies for kitchen and bathroom. This could have been undertaken for a maximum cost of \$750,000,000 over that period, including the cost of a pump and plumbing in for toilet and laundry use. This is calculated on a realistic basis of \$5,000 per dwelling. But governments rarely want to give out anything for free, especially something that might add to the value of the properties, even though the Tugun desalination plant cost a lot more than a sustainable tank roll out. The Rudd Labor government’s home insulation roll out, an

⁵⁴ Video presentation viewed 29 January 2008. The propagandistic details of the project, in addition to its regular *Community Newsletter*, could previously be viewed at the now archived project website: www.desalinfo.com.au.

admirable scheme in terms of environmental impact, made – with problems in implementation – most governments wary of improving dwellings on a mass scale.

The Tugun plant cost \$1.2 billion, not counting the operating costs, and even at full capacity would never be able to manufacture more than one quarter of the regions requirements.⁵⁵ The Gold Coast desal plant was a tempting instant fix, with the added attraction of using the latest technology, just like the plants at Kurnell in Sydney and Wonthaggi in Gippsland, all promptly mothballed within months of completion. The Tugun plant proceeded without any environmental impact statement. Beattie told one local protestor, 'If we don't have desal, we're not going to have any water. If you don't have water, you're dead' (*Courier-Mail* 1 February, 2007). Such insights appeared to propel Labor Premiers nationwide to embrace the desal 'solution' (Warren 2007).

All this is the more extraordinary because both the Sunshine Coast and the Gold Coast have regular and considerable rainfalls, with the potential for householders to capture rainwater and for councils to harvest stormwater, rather than let it go into the creeks and the ocean, which it does at the moment. The Gold Coast and the Sunshine Coast received so much rain in January and February 2008 that every tank could have been filled and refilled within days.⁵⁶ Such are the ironies of knee-jerk and alarmist infrastructure developments which do not adequately address alternative options. In going down the high capital cost and high energy cost road, Queensland has committed a generation to paying through the nose – at an estimated cost of nearly \$100 million per year, even when not in use (*Gold Coast Bulletin* 3 April, 2014) – for a desal plant, when other options were not adequately explored, especially the water tank option.

The Hinze dam, with its wall raised again by 2011, now stores 310,000 ML of water, six times its capacity when first opened. If, for the sake of argument, it is at two thirds of its capacity, in the space of a few days of heavy rain it collects and stores more water than the Tugun plant can make in a year. And it collects that water without the extraordinarily high power bills and carbon emissions – from coal-fired electricity – that desalination demands.

Conclusion

After the turnaround in rainfall seasons following the drought years, and with south-east Queensland residents still reluctant to consume water at pre-drought levels, the decision was taken by the LNP state government in 2012 to leave the Tugun desal plant, along with other water grid infrastructure, in permanent 'stand-by' mode (if not shut down entirely), effectively mothballing the costly facility. As reported at the time, this was largely in response to topped up water storages and declining revenue to water utilities because of continually low household consumption:

⁵⁵ For a telling assessment of the advantages, disadvantages, costs and benefits of desalination, see H. Cooley et al, *Desalination, with a grain of salt*, 39-68 [see entry in reference list].

⁵⁶ The Sunshine Coast, with almost 500mm, and the Gold Coast, with almost 600mm falling in January and February 2008, received roughly 150mm and 230mm respectively above the average rainfall totals for those months. See Bureau of Meteorology, 2016.

A spokesman for the Minister for Energy and Water Supply [Mark McArdle] said permanent water restrictions were under review because people's water habits had changed since the water crisis. ... The Newman Government is also set to shut down the \$2.5 billion recycled water plant and associated pipelines, showpieces of the Beattie and Bligh Labor administrations. It will be a further piece of costly drought-busting infrastructure shelved amid falling demand, after the Tugun desalination plant was mothballed earlier this year (*Courier-Mail* 15 October, 2012).

But it seems there's life in the old plant yet: "The Gold Coast's increasing population is set to press the controversial \$1.2 billion Tugun desalination plant into more regular use. The plant, which has rarely been used since it was built in 2008 by the Bligh Government, was switched on yesterday and is increasing its intake before it starts providing water to more than 170,000 homes cross the city" (Moore 2015; *Gold Coast Bulletin* 31 August, 2015, 1 September, 2015). Seqwater officials claimed that, despite this recent start-up being a 'temporary revival' while overdue repairs were carried out to a water treatment plant at Mudgeeraba, the Tugun desal plant may well be reactivated permanently from 2020 to supplement residential supply during the summer months. Coincidentally, after its wall was raised in mid-2011, and even after the Newman government dispensed with compulsory water use restrictions in January 2013, the Hinze dam hasn't dropped below 80 per cent capacity at any time in the last four years (Seqwater 2016).

It is possible that the seeming lack of political criticism of and reaction to the fortunes of the Tugun desal plant, besides the odd angry outburst in state parliament by then Premier Campbell Newman (Howells 2014), reflects that Liberal and National Party politicians have been wary of offending constituents in Gold Coast electorates, which overwhelmingly are home to supporters of the conservative parties. Any suggestion that these residents should have to go without being able to fall back on the desalination plant, one that allows them greater 'licence' to continue living a lifestyle predicated partly on a relatively profligate and decidedly 'un-Brisbane-like' consumption of household water, might be too politically risky even for incumbent Gold Coast LNP members.

When you fly into the Gold Coast airport you see the multi-coloured roof of the desal plant abutting the northern end of the runway. Few people realise that it cost more to build than the runway itself.

The Hinze dam has stood the test of time, and has an informative interpretation centre open to the public, set in pleasantly landscaped grounds. It continues to provide the Gold Coast with a reliable water supply. And as long as householders continue to be careful with water use – and install tanks especially for garden and or/pools - it will continue to supply water to the coast for decades to come. It could become an icon of sustainability, a reputation that could be readily augmented if businesses and new dwellings have to install tanks. Lifting those requirements in January 2013 was a retrograde step by the Queensland state government and the water authorities, keen to encourage profligate water use to boost their revenues. Water tanks are still compulsory for new dwellings in Sydney and Adelaide and they should be on the Gold Coast and Brisbane too.

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