

Save Our Gulf Coalition Submission to the Environment, Resources and Development Committee of the South Australian Parliament Enquiry into Environmental Impacts of Desalination Proposals in Spencer and St.Vincent's Gulfs.

Introduction : Save Our Gulf Coalition

The Coalition has been formed to oppose the building of a desalination plant at Port Stanvac in St.Vincent's Gulf; to stop the dumping of polluted stormwater, wastewater and industrial effluent in the Gulf; and to get the South Australian Government to implement a Sustainable Water Policy.

Executive Summary

The decision to build a desalination plant to augment Adelaide's potable water supply was made without proper consideration of the environmental impacts it may cause to Gulf St.Vincent. The Premier committed to the project before the Desalination Working Group had finished its report. The Working Group's investigation of environmental issues was cursory and constrained by political pressure for a quick response. It also failed to adequately analyse the costs and benefits of a range of possible responses to the water crisis.

A valid risk assessment is required to decide whether the project is a good idea or not. On the basis of the best local scientific expertise, and extensive investigations of the sensitivity and values of coast and marine habitats in the Gulf, it is clear that going ahead with the project will constitute a major threat to the integrity of Gulf ecosystems, with potentially severe consequences for commercial and recreational fisheries, Adelaide's beaches, reefs and seagrasses, and unknown long term effects.

The Environmental Impact Statement will not address whether or not the project should proceed, only how to minimise its impacts. It will not address the impacts from doubling the size of the project to 100 GL, preparations for which are already in train, and an upgrading of the project could be announced at any time. The EIS is further compromised by the fact that it will be the Government itself that decides on its adequacy or not.

1. The decision to build a desalination plant at Port Stanvac was badly made.

When the South Australian Government decided in November of 2007 to build a desalination plant at Port Stanvac, it did so without adequate consideration of the potential environmental impacts on Gulf St. Vincent.

It relied on the recommendation of the Desalination Working Group it established earlier in the year that “the Port Stanvac site was the preferred location for a seawater desalination plant in Adelaide based on proximity to existing infrastructure, ease of integration into the water supply system and the depth of seawater off the Port Stanvac coast.” (p.41 Summary Report). The “depth of seawater” refers to the decreasing depth of the Gulf at the sites further north of Port Stanvac that were considered. Sites further south, such as at Myponga were ruled out on the grounds of increasing costs of bringing the desalinated water to Adelaide, and the presence of local currents there that would inhibit dispersion of brine.

However no comprehensive investigations were made of potential impacts of brine discharge, even though an SA Water scientist, Tim Kildea, had earlier in the year published a review of the literature that suggested anywhere in a gulf would be a bad location because of the difficulty of dispersing brine (“Desalination - a topical issue” in Australian Marine Sciences Association Bulletin, #175, Winter 2007).

While the Desalination Working Group commissioned a series of investigations early on in their work, particularly with regard to likely reduced future inflows to Adelaide Hills and Murray Darling Basin catchments, it was not till late in their discussions, presumably when they had decided to recommend an Adelaide desalination plant be built, that a series of studies were commissioned into potential environmental impacts on Gulf marine life.

These were not concluded, however, *before* a recommendation was made, because the Government was demanding a conclusion be reached forthwith. In the event these studies - hydrodynamic brine dispersion modelling, marine ecological characteristics, eco-toxicological analysis - are now forming the basis of the “environmental baseline studies” being undertaken this year, in preparation for developing an Environmental Impact Statement.

There is also doubt as to how serious the Desalination Working Group was about finding out what was already known about the characteristics of the Gulf's oceanography and biology. One of the Committee's members, Hon. Mark Parnell MLC, requested under Freedom of Information what liaison the Working Group had had with expertise in the Department of Environment and Heritage, only to be told that there had been none.

In reaching its recommendation the Desalination Working Group also failed to conduct any comprehensive review of the other options for supplying Adelaide with water, such as stormwater reuse, wastewater reuse and demand reduction. It relied on the very conservative conclusions reached by the Waterproofing Adelaide Strategy two years earlier, which had failed to recognise the possibility of ongoing drought within its forecast scenarios. Nevertheless, the Desalination Working Group did admit that these other options were cheaper and less energy intensive than desalination (p.35 Summary Report).

What was required was a proper cost-benefit analysis of all the options, including environmental impacts and benefits. This has been begun in the recent work of Jake Bugden and Richard Clark, Sustainable Water Options for Adelaide (Sustainable Focus/Richard Clark Associates, September 08), which builds on the proven technology in operation in Salisbury Council, and extensive expertise located in private industry and academic institutions in South Australia.

It should be noted that one of the Terms of Reference of the Desalination Working Group was "Environmental implications of constructing and operating a desalination plant, including consideration in the context of climate change". The Government was told, in effect, that Port Stanvac was the cheapest, least problematic site, not that it was a suitable site.

The pressure the Desalination Working Group was working under was in large part politically motivated. The Government had resisted calls by the Liberal Opposition for several years to build a desalination plant. As the drought deepened, and with other states committing to desalination, the South Australian Government initiated the Desalination Working Group.

However, by the time the report was due, with a Federal Election in the offing, and Prime Minister Howard and Opposition Leader Kevin Rudd

promising financial support, and the plight of Adelaide's gardens getting lots of airplay on talkback radio, the Premier found the lure of desalination irresistible. While Minister Maywald was still considering the final report of the Working Group, and before Cabinet had considered the issue, the Premier announced at a press conference that the government was going to go ahead with the project ("Rann commits to Adelaide desal plant", Nick Harmsen, ABC September 11, 2007).

This atmosphere of panic was earlier evident when Minister Maywald had eased water restrictions at the first sign of spring rains, even though there was no indication that the drought had broken. Again this should be attributed to fear of a voter backlash.

The Desalination Working Group was well aware of "the politics of the front and back garden" ("Water could shape political landscape", Rex Jory, The Advertiser, 15th September 2008) in its assessment of how much water Adelaide actually needs. While the Waterproofing Adelaide initiatives were seen as capable of meeting the needs of a growing population, the Working Group pointed out that, "There are clear signals that the people of Adelaide are seeking a higher level of reliability for their water supply system **such that water restrictions should never need to go beyond level 3**" (p.37, Summary Report, emphasis added).

In fact, the Report continues, "The additional 50GL of desalination water is equivalent to the savings made from the introduction of level 5 water restrictions"(ibid), the kind of restrictions that most other Australian cities are already familiar with, though ours is the driest state!

The conclusion that the Committee needs to draw is that there was no adequate evaluation of potential environmental impacts made either by the Desalination Working Group, or by the Government, prior to deciding to build a plant at Port Stanvac.

Recommendation 1. That the ERDC calls for a fresh investigation of how Adelaide can meet its needs for water that takes full account of the options for sustainably achieving this goal.

2. What is already known of the risks to the Gulf environment is sufficient to reject Port Stanvac as a suitable location for a desalination plant.

There are currently two stories being told about the impacts that desalination discharge might have on the Gulf environment, and there is such a difference between them that it appears the public is being seriously misled.

The story being told by the Government and SA Water is that “the brine is disposed of well offshore where it is safely dispersed into the sea and dissolves back into the ocean. Brine is discharged at a location that allows it to be quickly dispersed and specially designed diffuser(sic) also ensures adequate mixing occurs with the seawater” (“Community Newsletter - Adelaide Desalination Plant”, SA Water, September 08). Note the abstraction involved in the present-tense description - there is no reference to the future, to location, or to uncertainties. “She’s apples”!

Further on, the same public information brochure continues, “Port Stanvac has been chosen as our preferred site due to the accessibility of relatively deep seawater [and] **optimal marine dispersion characteristics** (ibid, emphasis added). Quite simply, this is an excellent location for a desalination plant!

The other story being told by independent scientists, with extensive knowledge of the values of Gulf St. Vincent’s coast and marine environments, is that there are serious grounds for not proceeding with the proposal.

Drs. Kirsten Benkendorff, Ian Dyson and Jochen Kaempf will be giving their own testimony to the Committee, which Save Our Gulf, as a community group trying to make sense of the pros and cons, finds disturbing and compelling. The potential impacts to the biodiversity of the Gulf, the particular characteristics of the Gulf currents, and the possibility of altering marine chemistry add up to a very alarming story.

Over the 6 months or so that these scientists have been speaking in public meetings, sometimes on the same platform as Government or SA Water representatives, there have never been any arguments put forward to discount these concerns. Rather, the public is given considerable detail about what the environmental studies are investigating, with the unspoken assumption that “everything will be OK, we can manage the impacts, the impacts won’t be significant, trust us”.

However, under questioning, John Ringham, Chief Operating Officer for SA Water, has conceded that the environmental studies could indicate that impacts can't be known for sure, or managed, or limited (at Onkaparinga Council, 18th March 2008 and to Adelaide University's Water Research Cluster "Water Wednesday" 2nd July 2008). If so, he suggested, the Government would have to reconsider whether to go ahead with the proposal.

It needs to be understood that the process of deciding whether a desalination plant at Port Stanvac is a good thing or not for the Gulf depends on undertaking a valid assessment of the risks entailed. We cannot know for sure what the outcomes will be, since operating a plant in the real world is different from examining the potential outcomes, whether through modelling the predicted conditions as accurately as possible, or through understanding what might happen, given what we know from laboratory or field studies about the actual circumstances existing in the coast and marine environment.

This element of uncertainty forces us to consider in advance what the chances are of things going wrong, or to try to establish the likelihood of things being more complex, interconnected, or different from what our existing scientific understanding imagines to be the case.

What needs to be avoided is clear : undertaking a giant experiment in the Gulf that might backfire, by altering basic ecosystem mechanisms, or by threatening valuable biodiversity and commercial fisheries, or by degrading the aesthetic, amenity and recreational values that South Australians derive from a healthily functioning Gulf St.Vincent.

So what do we know already about the biodiversity values of Gulf marine and coastal life, and what do we know already about the sensitivity of these plants and animals to anthropogenic influences?

In fact quite a lot. We know that the Gulf is home to a unique assemblage of creatures that have evolved over millennia to cope with the particular challenges of living in cool temperate waters, with little freshwater input from terrestrial landscapes, and low levels of nutrients from the terrestrial ecosystems. The two Gulfs provide relatively sheltered waters in which a huge array of species exist, greater than the diversity of the Great Barrier Reef, and many of which exist nowhere else in the world.

In recognition of the values of these habitats and the ecosystem services they perform, the South Australian Government is about to initiate a series of Marine Protected Areas, or Marine Parks, which will seek to ensure that threatening processes undertaken by humans do not impinge on the fundamental functioning of the habitats. By the end of the year the Government has promised to outline the boundaries of these Marine Parks. Within these boundaries there will be a hierarchy of protection from human interference, depending on the degree of uniqueness or importance of the particular area.

We also know a great deal about the susceptibility of these ecosystems to human-induced impacts, through the pioneering and painstaking work over 6 years of the Adelaide Coastal Waters Study. The ACWS undertook to identify the extent of decline in seagrass communities off Adelaide's beaches, the causes of this decline, and what might be done to remediate the situation.

The Study concluded that the three major contributing factors are the deposition of extensive nutrients from wastewater treatment plants at Christies Beach, Glenelg and Bolivar; the discharge of large volumes of stormwater laden with sediment and biomass from Adelaide's streets; and the outfall of nutrients from Penrice Soda's operation on Le Fevre Peninsula.

The Study also made clear the connections between seagrass loss, mobilisation of sand northwards along the Adelaide coastline, and the resulting threats to coastal housing and infrastructure from reduced protection from storm surges and erosion. The effort and cost in mitigating and remediating these effects are huge, and well known.

Consequently the recommendations of the Study call on the Government to drastically reduce these inputs, and to institute actions which will give the seagrasses a chance to recover.

In addition, the South Australian Research and Development Institute undertook a complementary "Reef Health Survey", which examined, in part, the impacts on the subtidal reefs of the Gulf from human activities. These reefs are critical biodiversity "hotspots", providing important habitat and nursery for many species.

The Survey reached parallel conclusions to the Adelaide Coastal Waters Study, in particular that reef health has been seriously impacted off Adelaide's central beaches, that the reefs in the vicinity of Port Stanvac are showing signs of stress or degradation, and that further south, where urban development is not yet complete, reefs are in much better health.

Professor Anthony Cheshire, former director of SARDI, led the Christies Creek Taskforce for the Adelaide and Mount Lofty Ranges Natural Resources Management Board investigation into the impacts of Christie Creek sediments and pollution on the reefs north of Port Noarlunga. He called in 2006 for the Government to cease dumping all wastewater, contaminated stormwater and industrial effluent in the Gulf by 2015.

In terms, then, of assessing the risks to Gulf St. Vincent from a large new source of contamination, namely brine and associated chemicals, we know that we are talking about highly valuable marine environments, and we know that these environments are highly susceptible to human interference. We seem to be at risk of repeating the mistakes of the past 50 or more years, where we have regarded the Gulf as a dumping ground for unwanted industrial or urban outputs. We have looked out at the Gulf, seen this large mass of water, and imagined that it can absorb very large amounts of pollutants, and we have suffered the consequences of our lack of understanding.

Now however, through trial and error, we can see what went wrong. We have a much more developed understanding of what in fact is going on in that large mass of water, how finely it differentiates itself into different temperature, density and oxygen layers, how it is flushed and renewed by the Southern Ocean, how slowly its currents operate at different times of year, and how uniquely its tidal movements cease every fortnight or so.

We also have a much greater appreciation of the life forms and the food webs this body of water supports, and the interconnections between their wellbeing and ours as humans.

It would seem, then, to be a very high risk activity to commit to building a desalination plant at Port Stanvac, when there appears to be no satisfactory way of safely discharging the brine and chemicals into the peculiar marine environment that is the Gulf.

From the way the decision was made (as outlined above), it appears that the Government was much more concerned about the risk to its own survival than that of the Gulf. When the risk to the State's finances from such a huge capital project, in times of economic turmoil, are taken into account; and the risk to householders from not being able to afford the exorbitant cost of this water; and the lost opportunity of eliminating stormwater and wastewater pollution to the Gulf, while at the same time putting Adelaide on a secure footing water-wise and eliminating our dependence on increasingly saline Murray water - when the whole picture is looked at together, it is difficult not to conclude that the combined risks are far higher than the alternative options.

Recommendation 2 : That the Committee recognises that a full risk assessment leads to the conclusion that the Port Stanvac site is inappropriate for a desalination plant.

3. Proper environmental assessment will be compromised by the State Government's determination to build a desalination plant at Port Stanvac, no matter what.

When the Government announced earlier this year that the Port Stanvac proposal would be treated as a Major Project under the Development Act, it argued that this would provide the highest level of environmental assessment possible, an Environmental Impact Statement.

However the frequent statements by the Premier, before and since, that nothing would stop a desalination plant being built at Port Stanvac, severely compromise an objective assessment of the risks to the environment. The EIS becomes instead a way to show that the Government is taking environmental problems seriously, rather than a judgement on whether the problems warrant **not** proceeding with the proposal.

The EIS process itself is designed in such a way that it is difficult for the public to give it credence. The "proponent", in this case SA Water, is required to show how it will deal with the risks. The Terms of Reference are laid out by the independent Development Assessment Commission, and they appear to be very searching in the questions that SA Water has been asked to deal with. Once the EIS has been prepared it is up to the Minister for Planning to decide whether to approve the project or not, and, if approved, with what conditions. Clearly, the Government makes the call on a project it

has decided to undertake, and writes the EIS that will promote this happening smoothly. What legitimacy can such a procedure have in the eyes of the public? What hope is there of an objective assessment taking place?

The approval process has been further compromised by the fact that the Premier has decided to fast-track construction. The timeline originally announced, for completion by the end of 2011, has been revised to completion by the end of 2010. Again this has been influenced by pressure from the Liberal Opposition calling for faster development.

It is unknown what bearing the new timetable will have on evaluation of environmental risks, but it's likely to limit the time available for gathering information and making adequate assessments. This is of particular concern given the need for collection of data through seasonal changes, let alone over more than a one year time-frame.

There are other pressures which will further erode the possibility of objective assessment of the risks. Provision has been made from the beginning to double the size of the plant to 100 GL per annum if circumstances warranted. At a public forum on 3rd November 2008, the Minister for Water Security admitted that work is already underway to proceed with the second stage of development (at the Edge Church, Reynella). What validity does an EIS have for a 50GL plant when in fact a 100GL plant is being planned? This will effectively double the amount of brine discharge in the Gulf. Is the public being hoodwinked by the Government, which will suddenly announce, when the successful tenderer is announced in the first half of 2009, that the plant will be 100 GL?

The Government is currently running a fear campaign with the public, claiming that desalination is necessary to provide Adelaide with water security, with the Treasurer dismissing the very attractive alternative sources as something he considered and "discarded", even though they are much cheaper, less energy intensive, and ready to be used. One aspect of this campaign is to talk about water for "critical human needs" being in short supply from the Murray Darling Basin, when in fact these needs form only a small part of the still very large amount of water Adelaide is consuming. However, an increase in level of water restrictions, which very efficiently sorts out real needs from imagined ones, and a restructuring of the pricing

system, which penalises wasteful use, could very quickly establish a baseline for sustainability, and it would be much lower than the 200 GL a year the Government is assuming.

In fact, contrary to the expectations of the Desalination Working Group, that “demand hardening” would limit people’s willingness to reduce consumption, and which played a significant role in the Working Group backing a desalination plant at Port Stanvac, the people of Adelaide have responded with great enthusiasm to the new realities of water shortages and crisis in the Murray Darling region, by consuming at much lower levels than the Government targeted for under Level 3 restrictions.

In conclusion, as South Australians we are confronted with a fait accompli. The Government has never consulted the public about a project which will have a major impact on the ecological integrity of the state, nor about the cumulative impact that a series of desalination plants around Gulf St. Vincent and Spencer Gulf will have. The only chance we will get to have a say, at the moment, will be at the 2010 election, when construction will be well underway.

The assessment process in place will not provide the necessary objective assessment that projects of this scale, with a range of ramifications, require. The ERDC is to be commended for conducting this enquiry to make up in part for the short-comings of the approval process.

Recommendation 3 : That the ERDC calls for a moratorium on the building of a desalination plant at Port Stanvac until independent assessment establishes that there will be no significant impacts to the health of St. Vincent’s Gulf.