

**SAVE OUR GULF COALITION
POSITION PAPER
Version 1.0**

1. SAVE OUR GULF COALITION (SOGC) – WHO WE ARE

We are a community group concerned with environmental issues, and particularly with the sustainability of St Vincent's Gulf.

OUR AIMS are to persuade the government and the community of South Australia

- NOT TO BUILD A DESALINATION PLANT AT PORT STANVAC
- TO IMPLEMENT A COMPREHENSIVE SUSTAINABLE EFFECTIVE WATER SECURITY STRATEGY FOR ADELAIDE
- TO STOP THE DISCHARGE OF WASTEWATER, SEWAGE AND INDUSTRIAL WASTE INTO THE GULF

SOGC believes that a desalination plant on the Port Stanvac site poses significant threats to the sea off the site, to the beaches there and to the North and South – i.e. to Adelaide's much loved metropolitan beaches – and will do considerable damage to St Vincent Gulf. It poses a real threat to the fishing and tourism industries.

SOGC believes that the proposed desalination plant is ill considered, costly and environmentally damaging. We believe that there are other approaches that will deliver water security more cheaply, more securely and with additional social and environmental benefits.

There are many unanswered questions about the costs of the desalination plant, the cost and affordability of the water it will produce, and the planning process.

2. PORT STANVAC IS NOT THE PLACE FOR A DESALINATION PLANT

A desalination plant at the site of the Mobil oil refinery at Port Stanvac will draw seawater from the Gulf into the plant, process it via reverse osmosis, produce 50 GL of drinking water and discharge possibly 50 GL of double saline water containing the equivalent of 1.85 Million tonnes of pure salt back into the Gulf offshore of Port Stanvac every year.

St Vincent's Gulfs is a unique marine and coastal habitat, rich in biological diversity with a higher number of unique species than the Barrier Reef. They are also heavily used by the South Australian community – by commercial fishers, recreational fishers, for water sports, and very widely for our much-loved beach culture, with its associated local tourism.

The main risks to this environment from the desalination plant come from the need to dispose of the brine discharge. This water will be twice as salty as seawater, low in oxygen, much hotter than surrounding seawater and highly alkaline.

There is also the possibility of disturbance of already polluted layers of sediment resulting from the activities of the now decaying, defunct oil refinery.

The critical issue is being able to disperse the brine. However there are grave concerns about the ability of this discharge to disperse safely in the Gulf given its shallowness and its pattern of tidal flows and currents. There are concerns that:

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- The brine will be trapped in the near-shore zone and slowly drift northwards along the Adelaide coastline
- The brine will accumulate during the ebb tide periods (approximately every fortnight), spreading a thin layer of brine along the sea floor. This will be difficult to disperse even when stronger tides return.
- In summer there is little flushing of the Gulf, so that brine-laden water will get trapped within the Gulf, moving north, clockwise and possibly trapping more brine along the eastern side of the Gulf. (What about western currents anticlockwise movements)

There are concerns that the impact of this brine will cause:

Further loss of sea grass – and its role as a marine nursery, production of sand, and in controlling sand flows and minimising erosion;

Damage the eggs of key food species, such as squid, and damage other invertebrate species along the coast, with unknown impacts on the total marine biosphere.

It is ironic that a major habitat of the states marine emblem the leafy sea dragon will knowingly be put at risk.



Outbreaks of blooms of blue-green algae along metropolitan beaches

The Adelaide Coastal Waters Study (ACWS) (2008) identified St Vincent's Gulf as being under significant stress. It found that the decline in sea grass, with resultant sand movement and erosion, loss of marine breeding grounds and fisheries habitat. The Study made a number of recommendations designed to reduce future sea grass loss and to eventually allow some recovery. Its first recommendation was to reduce the volumes of wastewater, stormwater and industrial inputs into Adelaide's coastal environment. A desalination plant at Port Stanvac goes against this recommendation by introducing a new and very large source of pollution into the Gulf.

These impacts on St Vincent's Gulf would have major implications for the commercial fishing industry, for recreational fishers, for all users of the beaches and the waters of the Gulf – swimmers, surf lifesavers, surfers, divers, and all the people who use the beach. It would also impact on the amenity and property values of those with coastal property.

Desalination plants built interstate are located where the brine can discharge into open ocean. At Port Stanvac a plant would discharge into an enclosed, shallow slow moving marine environment, which is already suffering damage from excess storm and wastewater run-off over the past 50 or more years.

Given the possible impact of the desalination plant at Port Stanvac, it is worrying that the decision regarding the location of the Plant did not seem to take into account available knowledge about the Gulf, its currents and habitats. It appears the Government's Desalination Working Group made no proper investigation of Port Stanvac as a suitable site; and it did not consult the scientific expertise available in the Department of Environment and Heritage's Coast and Marine Branch. SA Water, in

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declaring that the brine will be disposed well offshore, does not appear to have taken account of accepted scientific understandings of Gulf currents. It is even more concerning that the Government has left the door open to increasing the size of the plant to 100 GL a year, when they have not yet identified the impacts of a 50 GL plant.

The plant has now been given Major Project Status raising further concerns that environmental impacts will not necessarily get full consideration, and that the timeframe may be too tight to allow them to be properly evaluated.

3. A DESALINATION PLANT IS NOT THE ANSWER

Cost

The budget for the proposed desalination plant is at least \$1.1 billion. \$96M has been allocated in the 2008 State budget for a pilot plant. The plan will have a sunk cost equal to around 1/3 of the State's health or education budgets for one year. There may also be the cost of pipelines from the plant to Happy Valley, and possibly from there to Hope Valley to connect with the northern distribution system.

The estimates are that the plant will produce 50 GL of water each year. This is approximately 25% of Adelaide's current average annual water consumption. It is likely that the plant will need to run continuously to ensure the capital and operating costs are covered, regardless of variations in Adelaide's water needs and it is difficult to start and stop. In addition, there are the costs of the power generation to run the plant, estimated to be at least \$30 million as well as potentially the transmission capacity to get power to the site.

Over the next 5 years there is likely to be significant increases to the cost of water to Adelaide households and businesses to cover these costs. The interest alone will be around \$90 million per annum at current rates.

The ACWS report indicates that stormwater recovery work (which will provide for Adelaide's estimated water needs) will need to be undertaken anyway to allow the Gulf to recover, so we have the option of spending \$400 million or \$1.5 billion to achieve essentially the same outcome.

In addition, the options of aquifer recharge and wastewater recycling has not been explored and evaluated as viable options. There are undoubtedly many more innovative options that have not been opened up for public debate and costing.

The most desirable option at this time is the combined reduction of stormwater discharge via recovery and recycling and the subsequent elimination of the need for a desalination plant.

Evidence from other desalination plants

There is a growing body of evidence from desalination plants elsewhere in Australia regarding:

- the amount of salt produced as a by-product
- The costs of operation
- The impact on their surrounding environments

SOGC believe it is essential that this information should be evaluated and put before both the State Government and the South Australian community before a final decision is reached.

Carbon impact

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Desalination plants have a large carbon footprint, in their construction stage and their operation. At a period when Australia is being challenged to reduce its carbon impact, and communities may be facing carbon reduction targets, this is not the right direction. If desalination proceeds, the need to include its carbon emissions in the State's totals to be reduced will require much more stringent reductions in other areas of South Australia's activities and industries.

The plant has been declared Carbon Neutral but no mechanism has been provided or carbon footprint made public.

Risks with the project

The location of this plant in the Gulf poses a number of risks to the economic well-being of the state.

The commercial fisheries of the Gulf could be threatened by ecological damage; in addition the recreational fishing industry, with the diving and associated marine recreational industries, would be at risk of ongoing destruction by both stormwater and brine.

Further impact on the seagrass and sand retention on our metropolitan beaches, creates risk for loss of quality on our beaches and associated tourism attractiveness and premium coastal housing values.

The nature of the proposed plant is that it will need to run continuously ensuring the costs both capital and operating are going to be incurred even if the Murray recovers and the rainfall improves. It will be a sunk cost and once spent is spent.

Having a number of distributed and integrated water recovery projects reduces the risk of failure of the system as opposed to one major plant that can be stopped by a fault or problem.

In addition, if the true parameters of the intake water are not well understood, there is the possibility of significant damage to the plant and a massive expense blow-out that may be a recurring expense over the life of the plant to repair the damaged filtration membranes.

The cost of energy is predicted to increase in line with increased oil prices; this will have an impact over time on the operating costs that will further add to the high cost of the water.

4. THE ALTERNATIVES

Plans have been produced including Water Proofing Adelaide, and extensive computer modelling done for a comprehensive approach to securing Adelaide's water supply, even with lower average rainfall. These focus on:

Storm water and waste water recycling

Water would be captured and filtered in wetlands, pumped into aquifers, and drawn out when needed. This uses proven technology (Report for the Adelaide and Mt Lofty Natural Resource Management Board, published by the Department of Water, Land, Biodiversity and Conservation) and is part of the Waterproofing Adelaide Strategy.

There is a model in action at Salisbury Council (Reference). Stormwater harvesting is estimated to be able to produce at least 80GL of drinkable water a year, for a cost of \$400 million – i.e. nearly double the amount water produced by the desalination plant at one-third of the cost!

This equates to a cost per K/L of one quarter of the desalinated water based on a capital and depreciation cost of total of 10% PA.

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This stormwater harvesting policy would include:

- The construction of up to 15 wetlands across Adelaide with associated injection wells.
- Expansion of the Glenelg-Adelaide pipeline. Increasing the capacity of the pipe would allow greater use of recycled water and the collection of stormwater harvested along the pipeline route.
- Improved management of flood mitigation schemes, to harvest the resultant stormwater instead of channelling it out to sea.

Apart from providing for Adelaide's water needs stormwater harvesting will reduce the outflow of pollutants into the Gulf thereby improving the marine and coastal environment.. It would also add to community amenity through the provision of wetlands throughout the metropolitan area.

Improvement of Adelaide's water infrastructure

I.e. fixing the leaky pipes to reduce significant leakage in the current system

Maximising Adelaide's water resources

I.e. encouraging reduced water use, through efficiencies, education in changed practices, and other educational and social policy measures (refer Thinkers in Residence report Cullen 2004)

5. IMPROVING THE PROCESS

There is a community perception that the decision to place a major State asset on the site of a contaminated, disused petroleum refinery has been made without reference to the community and without clear, transparent scientific and economic studies to examine the project and all the alternatives.

There remain significant questions about:

- The nature and cost of any clean-up of the site;
- The cost of operating the plant and the impact on water prices for South Australians.
- The amount of electricity required, where it is to come from, and the impact of this on the cost of electricity for South Australian users, and the availability of electricity supply for other major potential large scale users in the future.
- The nature of the arrangements with a private contractor operating the plant, and the obligations these might impose on the South Australian community.