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Submission from Mrs Liz Penfold MP Member for Flinders regarding the proposed sites for a desalination plant on Eyre Peninsula.

SA Water's Long Term Plan for Eyre Region – Eyre Peninsula Desalination

*'Through initial investigations, SA Water has identified five potential locations, including the upper north west coast location **near Ceduna**, mid west coast **near Elliston**, lower west coast **near Cathedral Rocks**, a **southern coast option** and an east coast location **south of Tumby Bay**.'*

Desalination is the only long term viable option to sustainably increase water supply on Eyre Peninsula. Reverse osmosis (RO) is one of at least five different methods of large-scale desalination however this method chemically contaminates the discharge, making it unsuitable for harvesting salt. Other methods should be assessed and, if viable, should be used so salt can be harvested and brine disposal and possible contamination minimised.

The optimum site for the long awaited water desalination plant needs to be chosen now for the best long term environmental, economic and social outcomes for the region and its people. Another short sighted, short term solution will cost the State, the Nation and communities on Eyre Peninsula dearly well into the future.

The potential of this region continues to be limited by lack of water. Accordingly mining, as the biggest new water-using customer for the SA Water business, potentially providing the greatest economic and social opportunity and having the greatest environmental impact, must be taken into consideration when this decision is made. It will be a devastatingly poor commercial decision not to provide water for **all** customers in the future.

Eyre Peninsula currently uses approximately 9 gigalitres of water annually from the system. However it is anticipated that BHP will to use ten times that amount when its

expansion is completed, not taking into consideration the many other mines in the region that will also need water. The desalination plant on Eyre Peninsula should supply BHP's increased water needs which would negate the need for a desalination plant at Point Lowly where possible long term environmental concerns have been identified.

Therefore it is imperative that planning is undertaken now for at least 100 gigalitres of potable desalinated water to be supplied into an upgraded and expanded Eyre Peninsula pipeline system.

This will require SA Water and the government to have the kind of vision our forefathers had when from 1918 to 1922 they built the Tod reservoir and trunk main from Port Lincoln to Ceduna, which was the longest gravity fed main in the world at the time.

The Eyre Peninsula region already has a significant pipeline system that can be fully utilised to provide water across the region for diversifying industries, value adding products and minerals, as well as providing water for existing and expanding communities. Utilising existing pipelines has the advantage of enabling a quick start-up and use of the existing corridor would not require departmental clearances for future expansion of capacity.

The long term plan should include incorporating two or possibly three desalination plants to reduce pumping costs and to ensure the current capacity of the pipes is not exceeded by additional water requirements.

However, the priority must initially be one plant that will cover the immediate needs of the communities and of BHP and other smaller mining companies in the region.

Logically the first desalination plant needs to be located as close as environmentally possible to BHP (for the expansion) and to people living in the north (Ceduna, Streaky Bay, Wurrulla etc). Presently people living in these areas are being provided with appalling quality, barely potable water.

Point Brown located between Streaky Bay and Ceduna is the closest point on the west coast to the biggest potential user, BHP and other mine sites. A desalination plant located there would be able to intersect the existing pipeline to provide water through to Ceduna with access possible for a new pipeline along the Wurrulla to Glendambo road. **I believe this option should be considered however it appears it is not.**

In support of this option, an upgraded road network from Wurrulla to Kingoonya or Glendambo has already been flagged and this route could also be used as a corridor for power supplies through to BHP and other mines in the north.

However after speaking to former BHP engineer Tom Cheeseman and reading his submissions, **the optimum location of those currently proposed for a desalination plant, is at Elliston.**

His calculations indicate that this location has the potential to host a large scale (up to 100 gigalitre and expandable) Reverse Osmosis desalination plant at the lowest environmental risk. The plant could use wind and wave power from the region and possibly gasified coal from the coal deposit close by as base load power. If BHP build a 600MW onsite combined cycle gas (CCGT) power plant as they are currently proposing, it will be more than enough to take out any fluctuations in the wind energy supply. The hot rocks power source being developed close by will also overcome this problem if there is one!

Water from a desalination plant at Elliston can be pumped initially to the existing pump station and 375mm pipelines at Polda and transported to Lock. Water can then be sent north-west towards Ceduna through 500 to 675mm pipes and/or north east to Kimba through 300 to 375mm pipes. The latter would enable the new \$48.6 million pipeline from Kimba to Iron Knob to be used to send water to Whyalla. A calculation to provide the optimum size desalination plant to fill the capacity of the existing pipes pending the building of larger ones would be ideal. However the current Polda to Lock pipeline section would have to be immediately replaced with a larger one or duplicated to be able to feed the two pipes leading off from Lock.

The main southern pipe could possibly be cut at Lock so only southern Eyre Peninsula would be taking water from the underground basins which would enable them to recover with natural recharge.

The Polda Basin at Lock and the Robinson Basin at Streaky Bay are seriously overdrawn. A desalination plant at Elliston would initially provide new water supplies urgently required by these communities and would improve the quality of water for everyone.

It may be possible to use the Polda aquifer for storage of any excess water during times of low water usage however demineralised desalinated water may be a problem. I understand that water will have to be mineralised to travel through metal pipes and possibly shandyng it with existing supplies of non potable water from Polda basin may be a way of overcoming this problem.

Another desalination plant to feed into the Uley pumping station south of Port Lincoln should be planned for the future when basins are again put under pressure from increased usage by communities and mines in the region.

Yet another smaller desalination plant at Streaky Bay should be planned to supply the community and provide the 3 gigalitres of water needed by the proposed kaolin mine and other mines in the vicinity. The kaolin clay should be cleaned to get the benefit of value adding and reduced freight costs. This desalination plant would enable the Robinson Basin to recharge naturally and any excess water would be put back into

the overdrawn basin. It is currently being recharged from the overdrawn Uley Basins.

BHP has an indenture agreement, giving legal rights for extraction **for free** of up to 42 Ml/day (15.33 gigalitres per year) of fossil Great Artesian basin water every day for the next 40 years. I believe an amendment to the indenture was made without public scrutiny and commits South Australians to supplying GAB water for at least another 100 years while BHP continues to mine. Coincidentally, I understand that the Federal diesel rebate received is more than what BHP pays in reduced royalties to the State government each year. These significant benefits will not be provided to other companies or individuals in the future. BHP, in my view, has responsibility to assist with funding the proposed desalination plant and pipes to provide for its own future water requirements and take it off the current fossil supplies.

If a desalination plant is allowed at Point Lowly, pressure will eventually be applied to expand it at that site in the future, further exacerbating the problem. Therefore desalination plants must be placed on the West Coast of Eyre Peninsula right from the start so that the current requirements and future expansions occur with no environmental risks to Spencer Gulf which is a significant marine habitat and solves only BHP's water problems.

Additional considerations:

In support of the Elliston site existing wind energy from the Mount Millar and Cathedral Rocks wind farms on Eyre Peninsula can be used in the first instance as there is excess wind energy not being used because the current 132 KV line is inadequate.

This wind energy can be accessed with a new line from the Port Lincoln substation through to Poldia pumping station where it will connect to the existing grid at Wudinna. A new line would triangulate power enabling it to come from two directions down to Port Lincoln. This will prevent major power failures if the old 132 KV line to Port Augusta fails. The stand by generators that are presently costing more than \$2 million a year can be disposed of and the funding saved put into providing the new line.

A power ring main, roughly running from Port Augusta to Roxby Downs, down to Wudinna then across to Port Augusta, with an input line for wind power from Elliston would provide the most secure and environmentally sound power supply for the north. This would protect Olympic Dam from a break in power caused by line breakdowns or other causes and would also provide reliable power to the many mines that are being developed along the way. Details of this can be located on my web site in my recent submission to ETSA utilities.

<http://www.lizpenfold.com/PDF/submission%20etsa%20directions.pdf>

The Premier has recently engaged consultants at a cost of \$1million to undertake a feasibility study to look at a transmission line to take 5,000 MV of wind energy from sites near Elliston into the grid.

One of the wind energy companies has already spent millions of dollars in the region and indicated that they will build the wind turbines, power line and the desalination plant **at no cost to the government** if they are provided with off take agreements to ensure a reliable future income from the water and wind energy supplied. The original Port Augusta coal fired power station is considered one of oldest and dirtiest polluters in Australia and could be shut down under greenhouse gas abatement measures.

Summary

- the long term benefits not the lowest cost option should be the deciding factor.
- Maximising the use of existing pipeline infrastructure in the first instance.
- Elliston is the optimum location of the current proposed sites because of strategic location, however Point Brown should be considered
- Eyre Peninsula desalination plant must include supply of BHP's future water needs
- BHP contribution towards cost of desalination plant
- Advantages of 'green' (particularly wind) energy and private partnerships should be considered to tie in with current State Government's transmission feasibility study
- Future mining operations must also be taken into consideration

Thank you for the opportunity of commenting. I sincerely hope for the generations of South Australians to come, the concerns raised by the people into the location of the proposed desalination plant are truly taken into account.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Liz Penfold". The signature is written in a cursive, flowing style.

Mrs. Liz Penfold MP
Member for Flinders