

**INQUIRY INTO ADEQUACY OF WATER STORAGES IN
NSW**

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SNOWY MOUNTAINS WATER AUGMENTATION SCHEME **and** **EDEN-MONARO WATER SUPPLY**

Attached is a submission to the Standing Committee on State Development, enquiring into the adequacy of water storage in NSW. This proposal is for a Scheme to build several dams in the Eden Monaro area, which are designed ultimately to supplement the Snowy Scheme and drought proof 15% of the continent.

I am an experienced Civil Engineer. My work has included major water projects such as a global city in the Phillipines, Fort Bonifacio – Bovis). I have also worked on tunnels under the ocean (Sydney Ocean Outfalls Sewer), on hydrographic prediction studies (Unit Hydrographs for Sydney Water's Dams), on ground water harvesting studies (Phillipines & Waverley Council), on micro filtration and reverse osmosis proposals (Quakers Hill WWTW Pilot Plant - Sydney Water), on reservoirs (many), dams and weirs (Warragamba, Wyangla, Burrendong, etc- State Water); and on river control systems (Lachlan, Macquarie, Gwyder and Namoi – State Water/Lands Department).

The scheme primarily provides drinking water for all the towns between Wagga, Albury-Wodonga, Mildura and Canberra allowing them to grow unimpeded. It also allows all the existing water to be used for farm irrigation and riparian flows. I have flown over the sites and the pipeline routes and have checked them out on the ground as well to be sure everything is feasible and have drawn up a set of comprehensive concept plans to detail the proposal. What I propose, is a BOO scheme encompassing all the major construction companies similar to the Fort Bonifacio Scheme, so that the Government will not have to fund the project, but a guaranteed water price will have to be set and must include an infrastructure maintenance levy on all the area affected (ie every individual and business in the Adelaide, Melbourne, Sydney and Brisbane crescent, this levy will be very much dependent on the climatic conditions prevailing at the time). The Irrigators will also have to pay more than double their current water price; I'm sure you're aware that the current price of water on this continent is unrealistically low.

Please note this scheme addresses all the problems with the current proposed Murray Darling Basin Plan. We have a huge commitment in the Snowy Scheme already and it would be disastrous to let that go to waste.

If you are interested in discussing this proposal I can be contacted on
you down to the area, at no expense to yourself, to view the proposal from the air.

Please note that I am prepared to fly

Yours faithfully

Steve Briggs.

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INTRODUCTION

This is one of four schemes to drought proof 30% of the Australian continent. These schemes are on the scale of the Man Made River in Libya and the Three Gorges Dam in China. Thus all four schemes require major investment in infrastructure and all are located in Eastern NSW. These schemes will each take between 25 to 30 years to develop and therefore represent a long term solution to the distribution of water resources around NSW, northern Victoria and Eastern South Australia. While located adjacent to the coast at Eden, Wollongong, Newcastle and near Kempsey, they store and transfer water to rivers which flow inland to the Murray Darling Basin. The key to the viability of these schemes is that not only do they store and distribute water but they also have the potential to store energy, for both the peak daily and the peak seasonal power generation needs of the entire East Coast of Australia (ie renewable energy generation).

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This submission deals only with the Eden Monaro scheme as it alone can service 15% of the continent and represents the best return on investment of the four schemes.

Benefits

The benefits of the scheme are to:-

- a) Provide off line storage for excess water in the Snowy Scheme. Often in periods of high rainfall, Snowy Hydro has to discharge water into flooded catchments in order to meet Power needs. This has caused a number of problems in the past. With this scheme it is possible to generate power by discharging to offline storages, so that the water is not lost. "No water in the Basin, no power at the Peak."
- b) There is a problem with the current Murray Darling Basin Plan (MDBP), which relies entirely on three Storages, Mindee Lakes, Burrinjuck Dam and Hume Dam to operate. It is possible that during periods of prolonged drought, that the Legal requirement to release 4,000 GL to the environment each year will result in the dangerous draw down of these storages to the point where irrigation farming will not be possible. This scheme provides additional large storages to give more flexibility to this draw down, thus better managing the environmental flows. "No water in the Basin, no food in the Bowl."
- c) The current MDBP calls for the Mindee Lakes to be a major storage for controlling the environmental flows. The problem with this is that they are shallow and have very high evaporation rates, so a large percentage of the storage is lost. This scheme provides deep water storages in a much lower evaporation zone.
- d) This scheme connects the head waters of a large number of rivers and allows the flexibility to move water by gravity around 15% of the Continent thereby reducing the effects of local droughts.
- e) This scheme allows the topping up of dams with Desalinated water during periods of severe droughts and thus reduces the wild fluctuations in farm production and thereby increases the certainty of farm income, stabilizing the economy. Stable farm production reduces social and political problems and thus reduces the threat to the environment.
- f) This scheme offers ultimately a permanent solution, with the flexibility of implementation to meet the longer term variability of the climate.

Key Elements

RL(height above sea level) 908 metres, is the key to enabling the scheme to cover 15% of the continent, and also the potential to link to the Shoalhaven Scheme and the Lachlan river and therefore enabling the drought proofing of 25% of the continent. It requires the first of the dams to be located at Green Gully on the McLaughlin River west of Nimitabel, with a series of 6 additional large storage dams all at RL 908, at Thoro on the Bombala River, Colombo on the Bega River, Wellington on Bobundara Creek, Dangelong on the Numerella River and Mokoreeka on the Brogo River, all linked by Tunnels to Lake Jindabyne, (see the attached Plans EMWS0-01 & EMWS-04). All these storages would hold in excess of 2,000 GL and be provided with hydro

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power generation facilities. These main storages would be supported by 5 transfer dams at lower RLs to manage water temperature, dissolved oxygen and off peak power generation recycling needs. This would provide the transfer storage capacity and release flexibility needed to make the Murray Darling Basin Plan palatable to Farmers, while providing the water to satisfy the Environmentalists. The problem with the MDBA plan is that there were insufficient storages to make it work in the long term. In the current version there is the potential for it to empty both Hume and Burrinjuk Dams and leave the Farmers dangerously exposed to extended droughts. There is a justified fear in communities west of the divide, that the MDBA plan will pander to the Environmentalists at the expense of their communities. The implementation of the current plan will create panic in the farming communities. This scheme has several significant advantages over the current MDBA plan, in that it has the flexibility to transfer water around 15% of the continent, the storages are located in much lower evaporation zones, especially that of the Mindee Lakes site, and they can easily be supplemented during times of drought by a Desalination plant near Eden on the south coast of New South Wales. The Eden location provides a short and easily accessible route from the coast to these storages. The Eden site also has the best access to deep water close to shore on the entire south NSW coast. The desalination plant intake would be located off Whale Spit, south of Torarago Point, and the plant itself would fit neatly in the marshland west of the highway and north of Kiah. A pump line skirting the back of Boyd Town would generally follow the Towamba River to Burragat where a storage transfer reservoir would back up the water to the outskirts of Wyndham. A pump station at Rocky Hall is needed to lift the water up to the source of the Coolumbrooka River, which would then either reticulate down the natural watercourses of the Bombala, Delegate and Snowy providing riparian flows to the Snowy, or be pumped to Thoko dam for diversion to the other river headwaters. A connection tunnel to Lake Jindabyne would allow the supplementing of the Snowy Scheme during periods of extended drought in the Riverina.

Implementation Flexibility

The plans provided, outline the ultimate scheme and advocate a five stage development process, see EMWS0-02. The order of this staging both for individual structures and the overall scheme is not fixed and can be adapted and prioritised to meet whatever environmental conditions prevail at the time. The staging philosophy presented on the attached plan is one of many possibilities and by no means necessarily the advocated one. The timing of the various stages has a minimum duration of 10 to 20 years, given current planning and construction constraints and could possibly be drawn out over 100 years depending on allocated funding priorities and drought frequencies. The main advantage of the scheme is the movement towards a permanent solution independent of climatic variations.

The suggested sizing of staging has been selected to provide meaningful beneficial increments to water availability and transfer around the entire region, with an ultimate transfer capacity of 2,500 GL per year, ie it essentially matches the minimum environmental flow requirements of the current MDBA plan. It should be noted however, that it may take as much as 50 years to fill the entire system and achieve optimal operation.

Social, Political & Demographic Issues

The current Murray Darling Basin Plan implementation will lead to social unrest, the consequences of which cannot be underestimated. While most people accept that there is a problem, and that something must be done, the current proposal to strip approximately 4,000 GL of water from Agricultural production every year, will result in the loss of 20% of the Basin's food production. Anyone who is under the misconception that this has now been reduced to 2,750 GL should carefully read page 21 of the "About the Draft Basin Plan." This food production, according to the plan's own calculations, is worth \$3b each year at the farm gate. There is nowhere else in Australia that can currently replace this production and therefore it will have to be imported. This \$3b of Agricultural production at the farm gate has a 4 to 5 times multiplying effect by the time it reaches the tables of Australian consumers, thus the result is that the Australian economy will go from a positive value added \$12b to a negative imported \$12b, a net impact of \$24b every year..

A healthy Murray Darling Basin is more than just returning 4,000 GL/year of water to the environment. The current plan only addresses part of the problem. The social impact, by far the major part of the problem, is totally ignored. Where are we going to relocate those whose lives are going to be impacted? Whatever area they are moved to, they are going to have a major impact on that area's environment, so the problem is not solved only transferred to another location. Since Australia has already invested trillions of dollars in the Murray

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Darling Basin's infrastructure, (in Towns, Roads, Dams, Hydro Power Stations and Businesses), and since that has taken 200 years to develop, it does not make sense to throw that away? Where, and how long is it going to take to develop an alternative food bowl? What happens to the people displaced in the mean time? No matter how well meaning the current plan is, it is poorly conceived and totally unrealistic.

What are the alternatives?

- a) Do nothing and let the country slip into chaos like the dust bowl in the US that caused the Great Depression.
- b) Cull the Australian Population.
- c) Institute a one child policy.
- d) Supplement the existing Snowy Scheme with additional Off Line Storages supported and boosted by Desalinated Water.

As unpalatable and expensive as the last option might at first seem, it is far less expensive than the net \$24b/year loss that is currently being proposed; its' success is far more predictable and its' risks far less catastrophic; and more importantly, it addresses all the issues that both sides of the debate promulgate.

Strategic Issues

When it was decided that our national capital should be located in the Canberra-Yass region, there were certain objectives listed, one of which, was its' strategic defensibility, ie it should be inland away from the coast. Once planning started it soon became apparent that there were other strategic issues that must also be addressed:-

- a) Water Security – the nation's capital, which was designed for 75,000 people, must have a secure water supply. It was obvious that the river flows in the region fluctuated dramatically.
- b) Power Security – there must be power generation capacity within the region.
- c) Food Security – the region must be able to grow enough food to be self sufficient.
- d) Economic Viability – in order for the city to be sustainable there had to be a range of self supporting industries with a manufacturing base, which could backup the infrastructure and defence facilities in the region.
- e) An effective and efficient administration system - to co-ordinate and facilitate this development.

To this end the Snowy Hydro scheme was developed, to directly support four of those five objectives. Farmers, Irrigators and manufacturers were encouraged to invest in the region, establishing a highly productive and efficient food bowl, which gave the nation stability and economic prosperity. While a healthy environment must be maintained to ensure the community's health and well-being, the economy must also be healthy, otherwise civil unrest will destabilise authority and everything including the environment will suffer. The current proposal to strip 4,000 GL of water from Agricultural production, (the equivalent of completely emptying Hume Dam, the second biggest Dam in Australia, every year), will given there are only a half dozen storages anywhere near this size in the entire catchment, in a ten year drought, result in the emptying of every major storage in the entire basin by the end of that period. This will not only effect the water supply but will also effect the power and food supplies. The social impact, must be safeguarded, otherwise conflict will occur and with conflict comes the breakdown of authority and the collapse of society, the consequences of which cannot be underestimated.

With the prediction of Australia's population reaching 40million by mid century there is an urgent need to understand where this population will be accommodated. Despite planning, it is most likely to be accommodated in and around the Murray Basin. Canberra's population increase alone represents a major problem for the region, it was planned for a population of 75,000, by mid century it will be at least 750,000 and possibly even as much as 1.5million. There isn't enough water currently to support this number without sacrificing all the communities downstream and if that is allowed to happen then the strategic premise upon which Canberra was based will fail.

Deficiencies in the current MDBA Plan

The Murray Darling Basin Plan in its' current draft is:-

- a) deficient in the detail it presents, ie it does not provide details of the range of environmental flows from highest to lowest and it does not explain how it is going to control the flows and particularly how the major storages will be impacted by these flows during periods of drought. There is no guarantee that the current major storages will not be drained in the legislation.

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- b) defective in the issues it attempts to address, there is no explanation of what time of year or how much the environmental flows will impact on farming, power generation or recreation flows or in fact how each is going to be accommodated;
- c) deceitful in the detail it deliberately does not disclose, ie there is no river monitoring above Burrinjuk Dam. There should be monitoring of the upper Murrumbidgee above the off take to Goolgong Dam, on the Queanbeyan River downstream of Goolgong Dam and on the Molonglo river upstream of its' junction with the Queanbeyan River;
- d) divisive, in that it pits elements of the community against each other, taking from one group to give to another;
- e) distinctly lacking in coordination of the facts it presents, which have been hastily assembled with little care taken to ensure a balanced debate, ie 'The Draft Basin Plan: Catchment by Catchment' details a table with a section devoted to the Economy in which the:-
 - i. Populations involved in the key industries are displayed differently in each catchment.
 - ii. Agricultural production and Irrigated Agricultural production are displayed suggesting but not stating that Irrigated is a subset of total Agricultural production.
 - iii. Figures given appear to be at the Farm gate but this is not stated.
 - iv. Figures given appear to be net values after costs but this is not stated.
 - v. Contribution to the National Gross Domestic Product is not given, ie the multiplying effect of the value of this produce by the time it gets to the consumers table. The value of the rice crop in the Murray & Lower Darling in 2012 is 800,000tonnes at \$250/t at the farm gate and sells for \$3/kg on the Supermarket shelf, ie is worth \$200 M to the farmer and has a contribution to the GDP greater than ten times that value, ie \$2.4 B.
 - vi. Data appears to contain errors,
 - a. There was more rice produced in 2006 than there is in 2012.
 - b. The Murrumbidgee catchment does not appear to have anyone employed in the key industries of Manufacturing or Health Care in the NSW section.
 - c. The Ovens & Kiewa catchment has no one employed in agriculture but has an agricultural production of \$208 M.
 - d. Numerous others too many to mention here.
- f) disastrous, in that it will lead to social unrest.
- g) delusional because it is impossible to return the environment to its' original state, as man has introduced so many different plant, animal and insect species to this continent that it is impossible to go back. Darwin himself said that 'it is not the strongest or the most intelligent that necessarily survive but the ones most responsive to change.'

Economic Considerations

The Off Line Storages and Transfer structures could ultimately provide as much as 9,000ML/day at a cost of about \$10 billion (PWV) including capital recovery/running costs of around \$100 per Meggalitre (PWV).

The Desalination Plant including Ocean Intake, Power Station, Pumping Station and transfer facilities could provide ultimately 6,000ML/day at a cost of \$16 to \$20 billion (PWV) including capital recovery/running costs of around \$800 to \$2,000 per Meggalitre (PWV), depending how much rain fell in the Dam catchments and the power source selected, but its' big advantage is the certainty of supply, so farmers would know there would always be water available even in the worst of droughts and therefore their incomes wouldn't fluctuate so markedly. It is certainly feasible, given the costs would be spread over 20 to 100 years, depending on the severity of the next droughts. The staging is planned to ensure there will be positive benefits from each stage to make it more palatable. Certainly the cost of water would be a lot more than people are currently paying for water, but still affordable, particularly for a guaranteed year round water supply. With Australia's population forecast to reach 40million by mid century, and the trillions of dollars already invested in the Murray Darling Basin, this ambitious scheme although expensive provides a certainty of supply unmatched by any other scheme.