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Submission on Proposed Murray Darling Basin Plan ---- by K.W. Banbury

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My submission covers two separate scenarios.

The first “**Upgrading the Snowy Mountain Hydro-Electric system**” is aimed at gaining more water for the Murray/Murrumbidgee rivers by using desalinated sea water from the NSW coast and also providing a large increase of (carbon-free) power to the NSW grid.

The second “**Australia’s Rain Profile – Effect on Murray Darling Basin System**” looks at the decline in rainfall since the 1990’s and the cause and suggests steps to greatly increase rainfall and transfers of water from coastal areas thus, inter alia, providing increased flow in its rivers.

1) Upgrading the Snowy Mountain Hydro-Electric system.

Many years ago our forefathers saw the problem then building up due to increased expansion of irrigation along the Murray & Murrumbidgee and designed and built the present system gaining extra water from the Snowy snowfields and Snowy River,

We, as a Nation, have to follow their lead and find other means to do the same: that is continue to provide more water to the system as the population and the agriculture industry expands in the Murray Darling Basin area

The Basin Plan hasn't "got a snowball's chance in Hell" of satisfying any of the 3 participants (irrigators, conservationists/Greens, Coorong community) and, whatever the end result is for the current plan, it will keep coming back time and time again for further reviews as population increases and climate changes.

My proposal is to use desalinated water obtained on the lower NSW coast and pump it up to Lake Eucumbene and/or more directly across the Great Dividing Range at a lower point to be fed into the inland rivers.

I have requested information from the MDBA engagement team and they advise that there will be a delay in meeting my request, so pending further advice from the MDBA engagement team of basically the amount of water the irrigators will lose under the proposed Basin Plan, I have used in my calculations the figure of 1500 gegalitres p.a. as was used in the "Living Murray" proposal.

Firstly desalination ~

Nations, world-wide, are turning more and more to large scale desalination to solve their water worries and the plants are becoming larger. The plant in the following example (refer attachment MDB1 for more detail) giving a daily output of 1 gegalitre.

"Doosan to build world's biggest desal plant in Saudi

South Korean firm Doosan Heavy Industries and Construction has won a \$1.46bn deal to build the Ras Al Zour water desalination plant, set to be the world's biggest.

The plant, on Saudi Arabia's Gulf coast, will provide drinking water to the capital Riyadh via a vast water transmission system, and will produce one million tonnes a day.

The integrated facility – worth an estimated \$5.5bn – will also provide 2,400 megawatts of power."

5 of these integrated plants could increase the Murray/Murrumbidgee flows by 1,825 gegalitres p.a. thus meeting the "Living Murray" need of 1,500 gegalitres as well as 325 gegalitres for the Coorong – all without disturbing the present allocations and usage for irrigation and farming.

Accordingly there would be no job loss or disadvantaged towns as is the case if the tabled plan is approved.

In addition these plants will each generate 2400 megawatts giving an increased 12000 megawatts (less losses due to desalination processing and pumping) to be added to the Snowy Hydro (formerly SMHEA) grid of 3800 MW capacity **thus adding substantially to carbon-free sources of energy if fuelled by hydrogen** and probably more than tripling the present output from the Snowy Hydro network.

Such a large carbon-free source of electricity could largely solve Australia's CO2/electricity generation problem.

To supply the hydrogen fuel it is proposed to install a further integrated plant which will produce desalinated water for boiler water for itself and the other 5 units but in addition to that it will generate sufficient hydrogen to fuel the main desalination plants. Refer to Attachment MDB2 which gives details of such a system using nuclear provision of heat for the process but in Australia's case with our non-nuclear policy this unit can be run conventionally using gas supplied from Bass Strait fields and delivered by (ocean) tanker. Attachment MDB 2A gives information on India's aim on production of hydrogen.

The overall "ballpark" cost based on the Doosan figures would be about \$US25bn and about the same in \$A at current conversion rates.

You are servicing a \$10bn p.a. industry and it is well worthwhile to keep that industry on an upward path rather than sliding backwards if the current Murray Darling Basin proposal proceeds.

As to Funding

I believe that this desalination cum electricity project has a much higher cost-benefit value than the NBN and should take priority in funding.

Failing supply of funding from the NBN I suggest the following steps :-

Superannuation funds of all types (private, commercial, industry, government and the like), are receiving massive amounts of money derived from 9% of salaries, wages superannuation levy upon employers and from other sources. These funds then invest in various interest bearing or capital gain projects to amplify their clients retirement portfolio.

The Federal Government could well do with a share of this "gravity" as for most fund organizations it is a "goldmine"..

Create a Major Infrastructure Investment Fund run by the Federal Treasury.

This fund would provide both interest bearing and capital gain investment fund streams.

Legislate to require all funds (of all types) to invest 25% of their income from this source in the Major Infrastructure Investment Fund.

The fund will pay a reasonable rate of interest and apply a reasonable capital gain increment. The interest rate, for example, might be the Reserve Fund Cash Rate (present 4.75%) plus say 3% giving 7.75%. But, as a sweetener, the income from the Major Infrastructure Investment Fund would be made tax-free or tax-reduced depending on the contributor's level of income. A similar sweetener would be applied to a capital gains structure. It could be that industry could likewise invest in such funds encouraged by similar tax sweeteners.

Funding for the Snowy Mountain Hydro-Electric system upgrade would be recovered over time by both electricity and water sales..

2) Australia's Rain Profile – Effect on Murray Darling Basin System

The second part of this submission discusses the need to raise Australia's rain profile which would also go a long way to meet the Murray Darling Basin's future water needs for irrigation as well as improve farming and grazing outcomes.

Letter Structure etc.

I have endeavoured to put into this letter only relative information for the submission's aims that is available in the supporting 7 letters and their attachments so as to make this letter less convoluted than it otherwise would be. The supporting letters can be read and you will find there information and statements repeated from earlier to later letters but they can provide additional information than in this submission to round-out your knowledge.

Any extracts, shown in this document, from supporting letters and documentation are "bound" by asterisks at the start and end of the extraction to differentiate them from text in the main letter. All attachments to this submission are identified by MDB plus a number e.g, MDB 2.

A list of the 7 supporting files is on Attachment MDB0 with a brief statement as to their contents and the need to read or otherwise.

The other point I want to raise is that I use the term "evaporation" fairly extensively in my letters when according to the purists I should use "evapotranspiration". Would you be good enough to apply the mental correction as you read the data supplied.

You will wonder why, when the subject matter of importance to you is increased rainfall in the Murray Darling Basin area, I refer to coastal cities water supplies and also to Lake Eyre –

Cities use large amounts of water and what they do (or don't do) can badly affect rainfall in inland areas.

Lake Eyre

As for Lake Eyre -- it holds a tremendous amount of water when full or near full. It was full in 1974. Most of that would have evaporated over the following 3 years and there was a 50 year record cloud cover over Australia in the years around that happening. As well there were serious floodings in NSW and elsewhere. I noted that a reference was made in the recent floods that the flood level in Wagga? was equal to the flood level in 1974.

We have the same situation now (refer Attachment MDB3) with Lake Eyre receiving serious inflows in 2009 and now in 2010 with the expectation of its level going close to the record level of 1974.

Also compare the Warragamba inflows (Attachment MDB5) against the dates when Lake Eyre had significant volumes of water viz. 1956, 1971, 1974, 1976, 1989, 1997 (refer Attachment MDB4). I think this is very significant in that it appears that if we can maintain the water level in Lake Eyre to a significant height (not necessarily record height) then this will have a significant beneficial impact on rainfall in the Murray Darling Basin and possibly extend this benefit into the Sydney water area and Melbourne.

Some may say that the above correlations are coincidence - I do not think so!

Reasons for our 10 year drought

In the 1990's and early 2000's we were bombarded by advice from overseas advocates from the Kyoto Group that (fresh/potable) water was scarce and precious and we must conserve our use and furthermore told the capital cities should have permanent restrictions. This was acted upon by the States and applied not only to cities but to other places where the existing water supply was deficient.

The Australian climate's reaction to this policy was the "droughts" we have experienced over the past 10 years.

This creed was not only applied in Australia but through a large number of other countries e.g. California, U.S.A. generally, U.K., France, Spain, Italy, Greece and Russia plus other European areas and possibly areas of South America. These countries have been suffering as we have – drought conditions and extensive bushfires and lately as well, in the Northern Hemisphere, extremely cold conditions (ice/snow and freezing conditions in winter).

I might point out here that earlier generations in Australia increased the amount of water available by building dams in line with population demands. For example for Sydney -- smaller dams followed by Cataract, Cordeaux & Avon (1927) and then Warragamba (1957) but since then no major dam even though Sydney Water area population has doubled since 1950.

A further large dam for Sydney supply was proposed for the Upper Shoalhaven but this was quashed by the Carr government following the Kyoto line of permanent restrictions in Capital cities. However there is still water taken from the Shoalhaven in high river flows but this is far below what a large dam would supply.

Drought Arguments

To provide meaningful arguments it is necessary to "hammer" you with the workings of The "Natural Water Cycle" or "Hydrological Cycle" as it is more correctly known and this detail is attached as Attachment MDB3-A to this submission and is also included as Attachment A in the letter of 8/12/2006 to John Howard (Letter W4-1)..

From the hydrological cycle :-

“the continuous movement of water between the earth and the atmosphere is known as the hydrological cycle”

“water is evaporated from both water and land surfaces and is transpired from living cells” (viz. plants).

My letter (8/12/2006) to John Howard (Letter W4-1) strongly criticised the use of permanent restrictions and using the results of statistics gathered for the Gosford-Wyong W.S. (NSW Central Coast) said this policy was the cause of “droughts” in capital cities and the impact extended to adjacent and further water supply areas.

A major extract from that letter follows bounded by ****

“Drought” in Coastal Capital Cities

The result of permanent restrictions in the coastal capital cities coupled with the requirement of tanks in new residential homes has been **a monumental disaster** – in all cases their dam storage has dropped substantially – Sydney’s Warragamba Dam level has dropped from about 60% to now less than 40%. Premier Bracks had concerns the other week because storage there was down to about 40% - Brisbane doesn’t know where to turn although the very recent rain may temporarily ease the problem – Adelaide is increasing restrictions and Perth who also had/has problems is installing a desalination plant to permanently solve its problems.

Added to these is the NSW Central Coast where I live and I have attached parts of an (unfinished) letter ([Letter W4-1-]Attachment B) to the local water authority which area has now gone to level 4 restrictions and where the major dam (Mangrove Creek) is now down to 12½% capacity and could be down to below 10% by the middle of next year. The figures thereon show how Nature’s recycling or recirculation of rainfall in this area has been inhibited by the changes in water usage over the past century with the imposition of severe outside-use restrictions the last straw.

It highlights that, in the push to meet water requirements in these coastal city areas where the expanding population’s full needs could not be met, rather than provide additional traditional infrastructure (dams etc. or, these days, desalination) that a policy of reducing usage, particularly by the imposition of restrictions on “outside” watering activities and rain tanks on coastal area homes, has been undertaken.

This is a policy advanced by the Kyoto Protocol advocates and avidly taken up by the States and Australia is now “reaping the whirlwind “.

This policy is not succeeding – it has catastrophically reduced the local generation of cloud cover/rain and thus the amount of rainfall falling in their catchment areas.

And the effect goes further --- Goulburn as well as Warragamba is the victim of the application of this policy in the Sydney Water area. Likewise Toowoomba as well as the Brisbane catchment areas is the victim of application of these policies in the Brisbane Water areas.

And the reduction in cloud cover extends even further inland to cause drought n inland Queensland and inland NSW and elsewhere in inland Australia”

I suggested in that letter that certain statistics (as detailed on page 6 of letter W4-1) be taken out for capital cities by the States to prove my argument.

I was never advised of the result or even if these figures were obtained at all but there was action in this period that suggests this was so.

The letter prompted some remedial actions (large desalination plants) in various States (Sydney, Brisbane and Melbourne water areas commencing 2007 and later a second desalination plant for Perth and a contract underway for a desalination plant for Adelaide).

The letter also triggered a study by an independent working group of the Prime Minister's Science, Engineering and Innovation Council and that group produced a report "Water in Our Cities".

Attachments MDB5 and MDB6 from the presentation lecture of the “Water in Our Cities” report clearly show that storage levels in city water supplies were in a sorry state in 2006 and had dropped dramatically in 2007. The Warragamba inflows between 1993 and 2006 were poor in the extreme.

To me, the Report findings and suggestions “missed the boat” – while saying that desalination was necessary they said as an immediate measure only and said harsh restrictions were unacceptable to the public.

They seem to deny restrictions had produced drought symptoms and their opinion was aided by a) a research publication (a theory on the cause of the recent drought particularly in Victoria) issued by the University of NSW and b) **my letter to the UNSW refuting the claim made in that publication**. Refer to **Attachment W7-1 and W7-2 for more detail**.

Apart from desalination installation all other recommendations in that report basically relate to savings of water use by various means. Cities are still applying restrictions on outside usage (**our most beneficial use for rainmaking purposes**) instead of a complete lifting of all restrictions on outside use.

If cities don't remove restrictions altogether after they bring their desalination plants operational they will find themselves, once this surfeit of rain we currently have wears off, moving back towards a drought situation.

I suggest you read Attachments W7-1 and W7-2 and form a complete opinion on the cause of our droughts as I see it as essential that we don't slip back to the Kyoto system – **I see it as essential that future shortages of water caused by population increases are met by new dams and/or desalination plants (and no restrictions whatsoever).**

Summary of Part 2 – Raising Rainfall

I hope the earlier arguments, emphasizing that the (large scale) application of restrictions on external watering were the trigger for the drought, will gain your acceptance to some of the recommended steps that follow that I see we need to raise Australia's rain profile.

Refer to attachment MDB7 paragraph 1 viz. “Wherever there are reductions in average levels of rainfall, the frequency of drought is highly likely – indeed virtually certain – to increase. The severity of droughts is also generally likely to increase”.

I see that the level of rainfall an area receives from a rain cloud mass moving into that area is determined by the degree of moisture in the local atmosphere – in effect the rain received is the sum of moisture in the cloud plus moisture from the local atmosphere. (refer to letter W7-2).

Thus lowering the water content (humidity) in your local atmosphere by restrictions on external usage reduces the area's (previous) average level of rainfall.

Also note the projected lower rainfall for the Murray Darling Basin on the map on attachment MDB7. This makes the need to raise rainfall even more important.

We need to increase the use of desalination to bring extremely large volumes of water to coastal areas to allow coastal storages to be fed into inland rivers and we also need to bring water from high rainfall areas to areas of low rainfall e.g. Queensland northern rivers into the Darling.

On top of these aims we have to increase the country's “wetness” (humidity level) to increase average rain to push back drought – by increasing flow in inland rivers and maintaining good levels in water supply dams (and we may need additional dams or raise dam heights to catch more flood waters) we can provide enough to country towns to lift any restrictions they might now have and the citizens become “rainmakers” rather than their present role of “watersavers”.

Also in that sphere we very much need the Lake Eyre scheme – it does play a vital role in years when it is full or has a good volume of water - refer pages 4/5.

I am also concerned with the lack of enthusiasm to go and get more water as needed as our forefathers did.

I don't see that any of these current schemes of reducing home usage of water and electricity will have any lasting effect on the increase in both water and electricity needed to adequately meet the needs of a rising population.

We have a group these days who oppose any infrastructure – they say “we don’t want a dam here’ or “don’t touch that river” or “it affects the environment” or “no desalination here” or “the Basix system will solve all our current and future problems of water and electricity”.

This determination to “do nothing” and “I’m alright Jack’ attitudes will inhibit the necessary steps I set out below and they will not provide the necessary co-operation needed between the Federal Government, the States and Territories, Councils and Water Supply Authorities. This opposition has to be overcome if Australia is not to be hit with increased level of droughts in future years.

We must ensure we get a lot more water (rain and surface water) to less advantaged areas in the future.

Before going on to recommendations have a read of Attachment MDB8. This gives some basic “snippets of information” on volumes of water gains and losses through differing water practices.

Recommendations on raising rainfall and providing more water to rivers in the Murray Darling Basin area (and elsewhere in Australia).

1) Lake Eyre See map on Attachment MDB 9

Take action to permanently maintain a sufficiently high water level in Lake Eyre to raise atmosphere moisture levels (i.e. cloud cover) across inland areas of Australia by:-

- a) Pipeline – surplus water from Lake Argyle diverted to Lake Eyre
- b) Diversion of water from northern inland Queensland rivers in high rainfall areas to the Darling and to the Diamantina (thence to Lake Eyre)

(Refer to Letter W1-1 for more detail on Lake Eyre)

2) Coastal Cities

Coastal cities to fully desalinate to fully drought-proof city water areas.

Then remove all restrictions on water use so as to raise the area’s rain profile to ensure their present storages remain full or near full

Push water from their major storages inland (see 3 below)

3) Turn rivers inland

As an example:-

“Further 2 desalination plants for Sydney water allowing for 90% of customers to be supplied with desalinated water and practically the whole of supply from Warragamba Dam diverted into inland rivers.”

The above action on Warragamba would add 1 to 1.5 gigalitres a day to inland river flows.

“ If similar processes were put in place (e.g. Shoalhaven, Hunter, Clarence, Brisbane supply etc. etc) where we have large coastal reservoirs situated towards the Great Dividing Range (or can construct one) and the greater part of their present (coastal) customers able to be "fed" from desalinated supplies then such schemes to divert a large proportion of their flows inland could effectively double the present East Coast inland river flows.”

Note :- The North South pipeline project in Victoria is on these lines taking surplus water from the Melbourne storage into the Goulburn River when Melbourne's desalination plant goes into production this year. There have been statements that the new Victorian government may cancel this project --- **this would be a serious mistake and should not happen.**

4) Disposal of treated wastewater/sewerage on land where possible

The practice of returning treated wastewater/sewerage to rivers (or ocean), when practicable, should be replaced by disposing of these waters on land (e.g. wetlands, forested areas etc.) to enhance the “wetness” of the area and increase its “cloud cover/rain” potential.

5) Coastal Cities/Country Cities and Towns – widespread use of water externally.

Contrary to views expressed elsewhere it is not a sin to water around your house – gardens & lawns and hard surfaces (house, paths, patios, driveways etc), and swimming pool. In fact it is very good for the maintenance of your property and provides a ready source of evaporation and transpiration. Also Councils should use plenty of water on maintenance of parks and playing fields and fountains where appropriate.

So in areas where the water storage volume is sufficient all present restrictions should be lifted – it is not only of benefit to the residents and to the town/city generally but also increases revenue to the local water authority

Also reversing the edict on covering swimming pools to reduce evaporation would help to enhance the “wetness” of the area.