The Alternative Murray Darling Basin Plan

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An Assessment of the Murray Darling Basin Plan, as proposed by the MDB Authority, 2010

The MDBA Plan has been released and without delving deeply into details, in short, the main thrust of the solution proposed by the MBDA is to severely cut water allocations to the irrigators and others reliant on water allocations from the river systems within the MDB. The prime consideration of the report was that the environmental factors were the most important and other considerations, such as the social and economic impact of the proposal were of much lesser importance.

Meetings were held throughout the MDB region and some in wider areas and major cities, and the resounding response from the community has been that the plan is fatally flawed, as it does not consider the other effects that the plan will have. The claim also is that the effects that were noted, such as the 800 people who would become unemployed as a result of the cuts, were grossly understated. This particular number was even noted by one of the authors to be low, other estimates range from 10,000 job losses to as high as 30,000 job losses, and the virtual decimation of the social fabric of towns and communities in the MDB region.

As recently as November 1, the relevant federal minister, The Hon Tony Burke, has now reconsidered and rather than an imminent implementation of the plan, has suggested that much more consultation is necessary and implementation is not likely to begin until after that consultation, more likely in 2012.

Further, Minister Burke has noted that the "Triple Bottom Line" of the MDB Plan needs to be re-examined and considered, whereas previously, the environment was the prime consideration.

Whilst this has given proponents of alternative ideas and strategies more time to prepare, there is little doubt that the originators of the radical environmental approach already suggested are clamouring for the current MDB Plan to be preserved against the defenders of irrigation and agricultural interests at all costs. I suggest that more balance be introduced and a true consideration of the triple bottom line be undertaken, with a view to creating a synergistic solution, with multiplier effects on the benefits to all parties involved in the solution to the problems of the basin, as experienced and highlighted in the recent decade-long drought.

What is the Triple Bottom Line?

The Triple Bottom Line consists of three factors which must be considered with any plan anywhere on a governance level, on how it affects the community and the nation, in these three ways.

1. **Commercially**. It must make a positive impact on the viability of the economy and not be an expense on the community, the businesses in the community or region, and the nation as a whole. The success of business is the success of the nation as a whole. Impacting on commercial viability will cause industry to withdraw and once the economic stimulus is gone, the environmental and social fabrics of the community rapidly fall apart.
2. **Environmentally**. Each commercial and governance decision will have an impact on the natural environment upon which we all rely. Whilst it can be argued that we could survive regardless, that is not what it is about. There are native species of flora and fauna which we have a responsibility to protect, there are ecosystems to protect and the big picture of the environment is that ultimately, we rely on the natural environment for our food, water and clean air, and a place to raise our families.
3. **Socially**. The people involved and affected by the decision must not be impacted negatively. Too often, people have been used as pawns in commercial and environmental games. This gave rise and rightly so, to unions to protect the rights of workers. However, it goes even further. We expect people to have a quality of life and a belief in and hope and plans for a great future for themselves and their children to look forward to. After all, without that, what reason is there to go on?

Without due consideration of all three factors, none can progress. When all are considered and integrated into a plan, synergies are created and benefits multiplied. This is not only important; it is a critical element of the plan. Unless all three areas can be enhanced, in fact all are ultimately damaged and the problems multiplied.

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The current situation:

There is little doubt that the currently proposed Murray Darling Basin Plan will decimate Australian's inland towns, especially those in the MDB area. Others will suffer also, as there has to be a critical mass of viable businesses inland for any town or region to prosper. As it is, much of Eastern Australia's inland population relies heavily on the MDB for its existence, even those people living in towns outside the MDB. The flow-on effects could be disastrous.

A point of contention is whether or not the proposed plan will actually help the Murray Darling Basin anyway. Simply cutting back the water allocations and hopefully letting more water flow through to the river mouth is not the answer – in the recent drought of 10 years, there was a natural limiting of water allocations, as when the water wasn't there, it couldn't be used! Now that the rains have returned, the rivers are in flood over almost the whole of the basin. Allocations seem pointless at least until the flood levels subside. Presently, much farmland that has a water allocation is already under water, regardless of the allocations! The cyclical nature of water and river flows and rainfall need to be harnessed, not destroyed.

As with most other problems of supply and demand in Australia and indeed around the world, the problem is not in the quantity available but in the distribution of what is available. Along the northern and eastern seaboard of Australia, we have numerous rivers that flood annually over the summer, while in the south and west, we have annual summer droughts. The rains that fall in the southern winters are generally not the torrential tropical rains that fall in the north and east and cause massive flooding through the Northern Rivers and along the Queensland Coast. Some areas of the east coast can receive more rain in a single storm than some of the southern regions of the MDB could hope for in a year. Distribution is the issue, not the available quantity of water.

However, we have seen the massive ecological and environmental problems that taking water from a river can cause, as was the case with **The Snowy River** and **The Snowy Mountain Scheme** in the 1950s in the NSW and Victorian Alps. That once mighty river now flows at under 10% of the flows it once had, but the power stations of the Snowy Scheme provide guaranteed electricity and water to the states. The hope is to increase it to 21% of former flows one day!

This is a double bottom line, not the triple bottom line that the MDB plan must provide. The economic benefits were guaranteed power and water for industry and domestic use, and water for irrigation. The social benefits were in the form of a sound regional economy, providing employment for hundreds of thousands of people directly, and contributed greatly to the power grid that guaranteed employment and a high standard of living for the national population in general.

However, environmentally it has decimated the Snowy River; the environmental section of the triple bottom line equation is sadly lacking. This has been the greatest lesson we could have in this area. This scheme has two ticks out of a possible three on the triple bottom line consideration.

By contrast, the bottom line of the current MDB plan may, and **only *may***, give ***one*** tick out of three, and that is if the starving of the population and industries relying on the MDB water are deprived of an economic allocation level, ***and if*** what is left is enough to provide a healthy river flow. There is no guarantee that natural rainfall is enough to provide that healthy flow and history tells us that the Murray River is a perennial river anyway – it has dried up and stopped flowing numerous times in recent centuries, according to geologists studying the river sediments along the river valley.

However, there is an alternative strategy, this strategy that I propose, that not only achieves a triple bottom line, but actually synergistically creates even more for each bottom line. It can contribute to increased water security in the inland for small regional centres, contribute to power security for the regions, provide a continual and more reliable river flow through the MDB, and provide a degree of flood mitigation right along the east coast of Australia, within the river basins it sources water from.

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The Value of Irrigated Agriculture to Australia.

To put this into perspective, we need to consider some facts on how much agriculture means to Australia. It was said that Australia originally rode on the sheep's back. In the 1960s and 1970s, beef and other meat production began to rival wool for GDP values to be the leading export earning commodity. Soon, as minerals exploration and then minerals exports began, they overtook agricultural produce as the leading export earners through the 1980s. Now, we are enjoying a minerals and energy export boom.

However, agriculture remains a most valuable export commodity source, and over 60% of our agricultural produce is exported.

The drought that befell Australia over the last decade highlighted the insecurities of Australian agricultural production and serves to remind us that on two levels, we must value our agricultural production more highly. For example, in the following tables, comparisons are made between the years 2001 and 2008 and the relative differences in the crop values to Australia.

Year	Crop / yield	Area Irrigated ha	Total area ha	Value $M AUD
2001		2,603,000		
2008		1,851,000 (0.45%)	417,000,000	
2001	Rice – 1,643,000 tonnes	2,141,000 ha		$1,305 m
2006	Rice			$ 933 m
2008	Rice – 2000 tonnes	2,000 ha		$ 227 m

In 2008, irrigated land accounted for only 0.44% of all agricultural land, yet yielded over 23% of all agricultural output with a value of $7.2B. (Water facts: www. ABC)

However, the loss of rice crop yields equates to an annual loss of $330 million due to drought and lack of water for irrigation, comparing 2008 with 2001. (Water facts: www. ABC)

Australia also lost over a billion dollars in annual revenue from loss of cotton crops, due to droughts and lack of water for irrigation, comparing 2008 with 2001. (Water facts: www. ABC)

Irrigation can increase the yield of an area of land by as much as 40 times over dryland farming. However, the true value of irrigation lies in knowing that there will be a crop if water is assured, rather than hoping the rains will come at the right time for a crop yield at all!

The two vulnerability fronts that became evident during the drought were:

1. If we consider the rice crop of 2008, only 2,000 tonnes was produced, not even enough to satisfy domestic demand for rice. Wheat and other crops through the MDB also suffered similar losses and yields were devastated by the drought. Without guaranteed water, we cannot even produce enough grain crops to meet our own needs for domestic consumption of many of our staple foods.
2. The cost to the nation in loss of exports is considerable also. When you consider that one crop alone in one year is one billion dollars less than possible with suitable and plentiful water allocations, the figures take on a new reality. Our export values and balance of payments can be hugely impacted by having a secure water allocation policy that not only ensures food security domestically, but guarantees an export industry as well.

When these factors are considered along with the current MDB Plan water allocation cutbacks, their threat to every aspect of life in Australia through both food security and export earnings losses becomes evident, and the need for an alternative strategy becomes obvious.

The Big Picture of the Alternative MDB Plan.

There is no single silver bullet solution to the MDB situation and this is where the current MDB Plan fails so badly, with a single focus of reducing water allocations to irrigators. Whilst that may also occur, it alone cannot solve the problems of the basin as the problems are much wider than water usage, allocation and environmental problems. There are also pre-existing social and economic stresses that must be addressed for the region to be viable regardless of the river flows.

Therefore, this Alternative MDB Plan has a multi pronged approach, addressing not only the region, but providing solutions to problems in areas adjacent to the region which can also help with issues inside the basin.

The Murray Darling Basin is a huge area, stretching from Central Queensland down through Central and Western NSW, and covering a large part of Northern and Western Victoria, before entering South Australia, taking in the areas above Adelaide, and down to the Coorongs. It is home to over a million people, the major proportion of broadacre and irrigation cropland in Australia and the majority of food and fibre production in Eastern Australia. As 60% of the food that Australia produces is exported, the Murray Darling basin also contributes greatly to export earnings. The MDB has a huge economic, social and environmental contribution to the region and to the whole country.

In addition, mineral and energy production occurs within and around the MDB and the regional towns are also the industrial centres for these operations, providing local services and facilities not only for the operations, but for the communities that these primary production enterprises of mining and agriculture rely on for expertise, labour and social needs.

It is absolutely critical that we remember that each of us, everywhere in Australia, is affected by what happens in the MDB. It's not only job losses in the basin; it's the downstream effect of those losses on the wider community. It's not only an economic impact on the towns and communities in the basin, its how that also impacts on the rest of the country, socially, commercially and environmentally. Therefore, the triple bottom line approach MUST be considered.

The goals of the new and alternative plan:

1. It must provide a sufficient flow in the Basin Rivers and wetlands to maintain the environmental health of the MBD.
2. It must maintain the economy of towns and businesses in the MDB which rely on the water supply for their economic success.
3. It must enhance the living standards of the people in the MDB.
4. In addition, it must not harm or cause damage to the environments from where the solutions are drawn, but in fact enhance the triple bottom line concept in those areas also.
5. It must be economically viable to put this plan into place and possibly even decrease costs for the recipients of the benefits of the Alternative MDB Plan, compared to the current proposals.
6. It must offer even better value for money in the short and longer terms, than any other concepts proposed and create synergies within the nation with the implementation of the plan.

Whilst sounding idealistic, this is possible. It just requires a different way of thinking about and looking at the problem. Everything the plan requires is close at hand, and we are not considering major environmental, social or economic restructuring with any of the proposed concept – simply some fine tuning of what is already happening, to increase efficiencies, and redistributing some of the waste which is causing its own problems in regions far from the MDB.

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Part One - River Flood Water Harvesting.

All Australian tropical region rivers flood annually in the summer wet season. Rivers especially of the Northern Rivers Region of NSW and in Queensland as far up the coast as Rockhampton flood annually with the advent of the usually reliable summer rain. These rivers cause considerable damage to both traffic flows through and flood destruction in the regions affected. Some proposals have been made in previous times about damming and diverting these rivers inland. However, that would only create another environmental tragedy such as that seen with the Snowy River. An alternative is to harvest the flood waters only from these rivers and direct it into suitable reservoirs, from where it can supply water for:

1. Diversion over or through the Great Dividing Range for supplemental flows into the MDB,
2. Guaranteed domestic water supply for a local community,
3. Provision of hydro-electric power from the reservoir for pumping the water across the range and for excess supply back into the national grid.

This is not suggesting that there will be a continual water flow year round. This is water that will be available only from the flood waters harvested from the rivers each “wet season”.

One of the major arguments against proposals that have been created around damming rivers such as the Tweed and Clarence are that downstream effects on the communities and regional economies would have been disastrous. I agree, although in some cases, the claims of the level of damage done are probably overstated. However, there is no doubt that putting a wall across a river does stop wildlife traversing the rivers and it would definitely impact the natural river flow.

My suggestion, as shown in Diagram 1 on the next page, has a spillway into a reservoir at the average river height, so that the river flow would need to be at least slightly above average for the river to provide any water to the reservoir, and the normal river flow would not be affected at all. Even when the river was in major flood, not all the flood water would enter the reservoir, and much would still flow down the river as it has for centuries. In addition, other tributaries and creeks flowing into the river from below this spillway would be totally unaffected. The total volume of waters from a flood rainfall event would be decreased from the levels that would normally be expected, and this would provide a flood mitigation effect, without depriving the lower reaches of the river with at least average rainfall and river volume flows.

Diagram 2 shows the siting of the reservoir adjacent to the river in a natural landform basin, with a wall across the lower end. It could be anywhere within a reasonable distance, not necessarily alongside the source river. The wall houses a turbine for generating hydroelectric power that would pump a certain amount of water across the Great Dividing Range, as shown leaving the wall. Water flowing through the turbines could be directed back into the river at a lower level along another natural watercourse which was already flowing into the river. The river itself is not touched or altered in any way, other than having a reservoir built somewhere adjacent. Note that this is a reservoir, not a dam across a watercourse.

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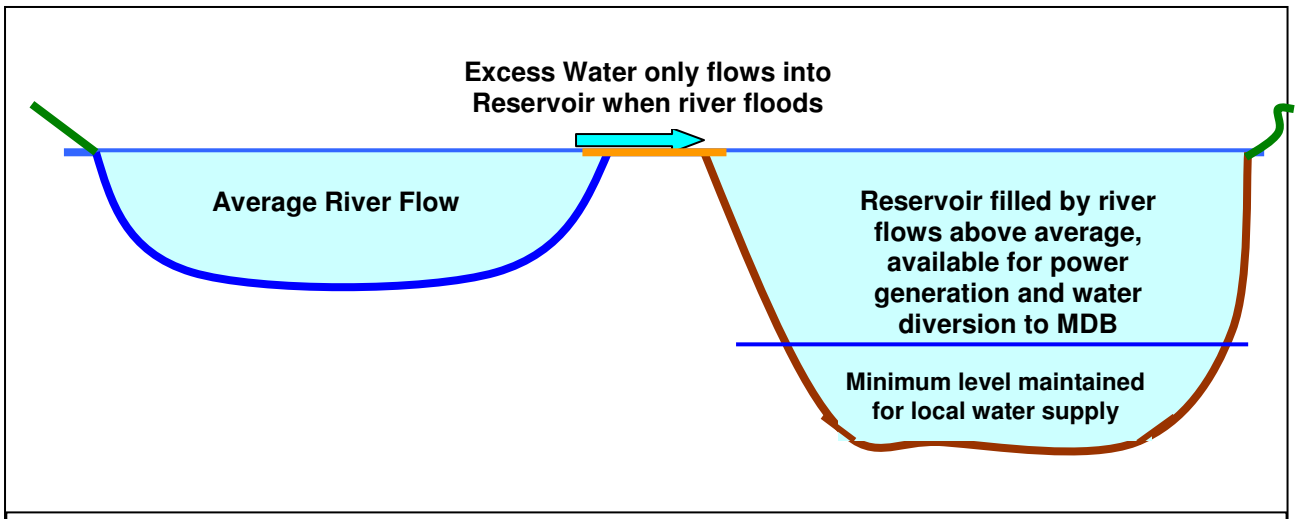

River flows downstream in the average coastal river need not be affected by a diversionary reservoir taking water only from above average flows via a spillway at that level. The water is drained off into a facility from where water flow drives a turbine before potentially passing back into the river, further downstream. Water remaining in the reservoir is available for diversion inland to the MDB in the "wet" season or for local water supply below a certain minimum level. Regular river flows and aquatic wildlife in the river is not affected at all by the works, the river bed and course is untouched.

Diagram 1

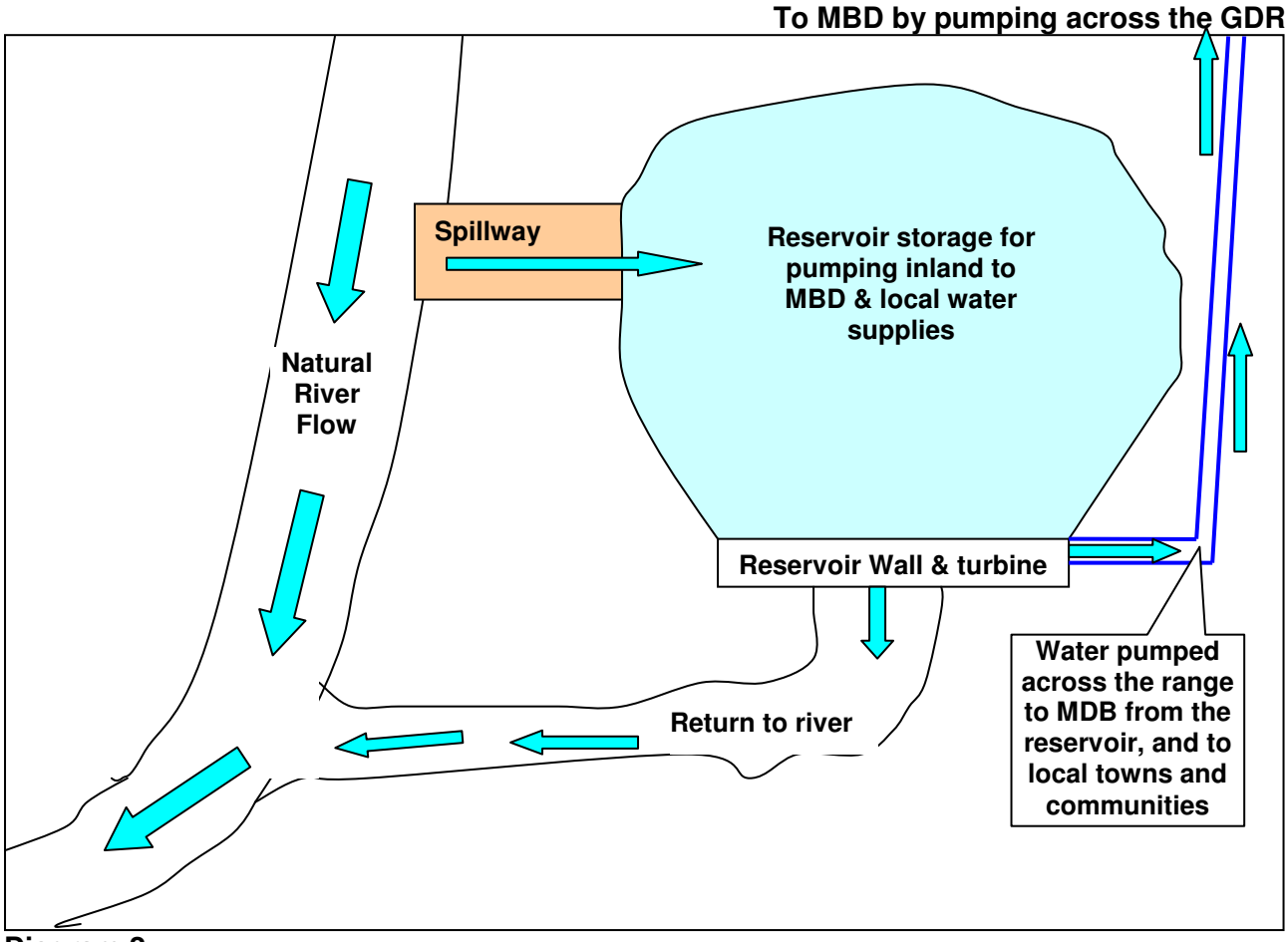

Diagram 2

Siting of the reservoirs.
Whilst some sites and suitable water pumping routes across the Great Dividing Range are already known and named in previous plans, some will have to be surveyed and engineering drawings done from scratch. When the NSW government ordered a review in 1981, it was carried out by consulting engineers Rankine & Hill. The review investigated 22 coastal catchments and multiple options for each catchment and found that while a few were physically practical, the costs were "too high to justify construction". (Rankine & Hill, 1981) However, these options were for the damming of the rivers and pumping huge volumes across the Great Dividing Range. The problems were that to get sufficient water volume, the "dam" had to be sited low on the river, and therefore required a huge amount of energy and infrastructure to move the large volume of water over the top or through the range.

That conclusion is absolutely correct, for that particular model. However, if we consider that smaller projects of the type that this alternative MDB Plan suggests, on half a dozen rivers along the Eastern Seaboard, yielding similar amounts of water volume, but requiring much less infrastructure and creating virtually no environmental damage, then it does appear feasible.

Two rivers in particular have had a lot of investigative work done on them. The Clarence River in NSW and the Fitzroy River in Queensland are rivers I'll discuss in a little more detail, before speaking generally about a number of other possible water sources.

The Clarence River:
The Clarence Scheme was elaborated by its designer, Prof. Lance Endersbee, in a speech to the CEC on November 23, 1997:

"Several factors are now combining to make it feasible and economic to divert the seaward flowing waters of the upper Clarence, Nymboida and Macleay Rivers into the Murray Darling basin. The annual flow of water available is comparable to that of the Snowy Mountain diversions.

There is the catchment of the Clarence River and it is a wonderful little cup in there and very steep country, high rainfall and one of the highest rainfall areas in Australia, and they get the summer rains from the monsoons coming down and they get the winter rains as well."

Professor Endersbee described a route by which water would be diverted inland across the range and into the headwaters of a number of local regional rivers, which form the headwaters of the Murray Darling Basin. However, his plan met with enormous opposition because it involved ***diverting*** the rivers inland from that point. I agree: that is wrong on all counts, economically it is not feasible; socially, environmentally and commercially, the effects on the communities and ecosystems downstream in the coastal rivers would be severely affected.

However, Professor Endersbee did map out the routes whereby the water could be directed to the MDB. All we need to do now is get the volumes right and I believe that with the system proposed here, it can be done economically and with little or no impact on the health of the source rivers.

The Fitzroy River:
I have quoted from the Political Guts website from a contribution by noted Geologist John Nethery:

"A quote from Geologist Mr John Nethery follows, on this topic, concerning waters from the rivers flowing into the Gulf Of Carpentaria. More information on Mr Nethery can be found on the Just Grounds Ning Community website, especially in the Climate Sceptics community, to which he is a regular contributor.

"I've considered this issue for many years and concluded that the original Bradfield concept was a bit difficult in practical terms, for example, requiring tunnels longer than those in the Snowy Mountains Scheme. However I believe there are several practical modest adaptations of Bradfield's idea, with the main problems being the volume and rate of water to be moved, and evaporation rates on the way.

Stage 1 would be a dam in the top end of the Flinders River catchment just north of the White Mountains, which would accumulate water from an area of about 2000 square kilometres, draining the Sturgeon Basalt and Nulla Basalt fields, which are well known excellent aquifers that top up in the Wet Season, and discharge throughout the year. This is to be supplemented by a weir across the Flinders River near "Glendower" Station, and a 10 kilometre diversion channel into Prairie Creek, which flows into the Thomson River.

Stage 2 would involve the existing Burdekin Dam reservoir with a pumping station near the drowned "Cranbrooke Park" and a major pipeline for 10 kilometres for an elevation of 150 metres to a reservoir on The Tableland nearby. This reservoir would gravity feed, via 200 kilometres of pipeline to Lake Galilee at 50 metres lower elevation. Lake Galilee then overflows and drains into the Thomson via the Cornish Creek system.

Having gone to that trouble the problem then diverts to the lower Thomson near Windorah where a weir and system of pipelines and channels could divert water 400 kilometres across to the Paroo River and thence into the Darling River." End of Quote.

Mr Nethery knows the area well geologically and has put much work and thought into this proposal. On the basis of his proposal, it seems sound and worthy of costing and further investigation. However, the investigations also need to consider whether the water harvesting strategy I have proposed in the Alternative MDB Plan will produce sufficient volumes of water to supplement the inland river systems, without creating the problems which environmentalists may use as grounds for objection to the plan without considering the other, obvious benefits to the MDB.

A recent "failed" river project.

The Mary River in Queensland runs through Gympie and causes incredible hardship when in flood, which is often. The Queensland Government recently (in the last 5 years) named Traveston Crossing as a dam site on this river, which would be used to create a huge reservoir from which the water supply of South East Queensland would benefit. However, a large tract of prime agricultural land was to be flooded by creating this dam, and these highly productive areas would have been lost forever. In addition, damming the river would have threatened the existence of a rare creature, the ancient "Lungfish" and another species of quite rare turtle, as they required traversing the river for breeding. The location wasn't altogether well researched, as the geology of the site was also apparently less than suitable.

However, during the years of argument which was finally lost by the government after much land had been "acquired" by them for building the dam, it was noted but not widely reported that further up the Mary River, there was already a site gazetted for a dam, with land already acquired and noted on local maps as a dam site for future development. Although I don't know the site, geologists who have reported on it suggest that it is a very suitable site, will not have environmental problems such as Traveston Crossing was definitely going to experience, impacts little agriculturally significant land, and is possibly high enough to take water inland as well!

A further question remains as to whether the site is practical for consideration of this alternative water harvesting strategy and whether the river could be allowed to flow past the reservoir that would be created, thereby maintaining the integrity of the natural ecosystem of the river. Whilst the particular location is apparently less likely to impact the species of concern in the lower reaches of the river, the environmental impact still needs to be considered. If this alternative water harvesting strategy is suitable, then it does need to be considered and costed into the list of options that will ultimately form the new MDB Plan.

Since the Traveston Dam plan was abandoned, The South East Queensland Water Grid has been completed and has approximately a decade of water storage for this region. It even has the ability to pump water, although expensive, up and over the range to Toowoomba's water supply reservoir. Prolonged drought is unlikely to be an issue in S E Queensland in the foreseeable future.

The point of this inclusion is that although sanity eventually prevailed, Governments can do incredible damage by holding a position and ignoring sound arguments from the affected communities, including the scientific, environmental, commercial and local residential communities. These form the basis of the triple bottom line approach. Had the Queensland Government listened to the arguments against their proposed Traveston Crossing Dam and relocated their attention to the upstream site, a much better dam with less impact on the communities involved would have resulted, with lower cost and greater benefits all round and it would right now be full of water.

This is precisely what was happening with the original MDB Plan and the "consultative" meetings being held throughout the basin, to explain and sell it to the local communities. However, the community outrage at the damage threatened by the cuts to the water allocations forced a reconsideration of the plan, as happened with the Traveston Dam plans.

Incidentally, that particular upstream dam site on the Mary River remains and could still be a candidate for flood water harvesting for the MDB. I doubt if the people of Gympie or the downstream residents will mind if their floods through the township are reduced! That is a serious problem that still remains for the lower reaches of the Mary River. Unfortunately, as with many such government policy failures, the debacle has made the whole idea far too politically sensitive and there is no likelihood of the suggestion ever being raised again. It is to be hoped that the same fate does not befall the MDB Plan.

Other potential river systems:
The Mann River near Glen Innes – a tributary of the Clarence River. It is a short distance through the Great Divide, almost along the Gwydir Highway Route to the headwaters of the Severn River. There are numerous potential sites in this area, amongst tributaries such as these.

The Macleay River Headwater Tributaries run close to the top of the Great Dividing Range. There may be a potential site there that could suit the spillway filled reservoir concept. There are certainly many waterfalls in the region where power generation necessary for the concept could be utilised, including Apsley Falls on the **Apsley River** near Walcha.

The Manning River runs to the ocean through Taree and floods often, causing great hardship in that region. There is potential to use this concept to send water south into the existing facilities at Lake Keepit, Lake Glenbawn, Lake St Clair and other such reservoirs in the region.

The Hunter River is next south, and the headwaters of the Hunter River are also relatively close to the above reservoirs, as well as Lakes Windermere and Burrendong. Using some of the waters from these rivers to fill these existing water supplies to capacity, then taking a portion of that when available and releasing to supplement the inland river flows would seem a sensible utilisation of existing infrastructure and water resources.

Of course, this all hinges on the water being available and much like the past decade, sometimes there will be no water anywhere on the east coast. In those times, there will be no water sent inland, while in flood years, the people on the Clarence, Manning and Richmond Rivers downstream will be praying that as much as possible is diverted over the range.

In Queensland, **the Boondoomba Dam** was built on the Burnett River which runs to the ocean near Bundaberg. Whilst the terrain in this region is not mountainous, the dam is almost on top of the Great Dividing Range, watering the local region as well as **piping water through to Tarong Power Station, a distance of over 90 kilometres**.

This shows it can be done and is already being done. If we can pump water to a coal mine from a distance of almost 100 kilometres, then we could just as easily pump it west and into another river system. There are other river systems that could be investigated and must be, for this plan to be effective. However, there is enough potential for a serious consideration of the concept.

Melbourne City and metropolitan areas – Stormwater Diversion inland.

Melbourne in Southern Victoria is a huge metropolis of around 4 million people. It has hundreds of square kilometres of metropolitan, commercial and residential space that has stormwater drainage southwards into the ocean.

However, these millions of gigalitres of storm water, using overnight pumped storage and peak generation to keep power charges to a minimum, could be transferred inland through numerous low saddles in the nearby Great Dividing Range, to add to the water being returned to the MDB.

Again, it is not enough to save the Murray River alone, but will contribute to the amounts of water entering the system and relieve the pressure on the naturally occurring waters within the Murray Darling basin.

I have not costed this proposal, as it is likely to come under a state and Melbourne City Council works program. However, much of the infrastructure is already there to take water away from the city to the ocean. It now needs to be taken away north, rather than south into Port Phillip Bay or other ocean outfalls. The further infrastructure required for this strategy may link in with the existing stormwater systems. Pumping infrastructure is already available and there is the potential to work with mitigation flood damage in common flood prone areas, to harvest that water and take it inland also.

The new infrastructure required would be for local reservoir volume increases, or creation of new suitable reservoirs if needed, and booster pumps and pipelines to take the waste and storm water over the low saddles and into the MDB catchment areas north of the range. Off peak electrical power supplies will provide the energy required for the pumping at a minimal cost to the city, further reducing the ongoing operating costs.

This is infrastructure that will not only take the waste and storm water away from the very fast growing and spreading city of Melbourne, but also reduce some of the problems of increasing urbanisation while doing so, a further benefit! Future suburbs planned with this in mind would reduce infrastructure costs even more, and contribute to the benefits for the MDB catchment area.

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Costings for Part One:
If we estimated $100M for half a dozen of the yet to be planned river sites, and $200 million each for the Fitzroy and Clarence River Projects where considerable work and costings has already been done, then we have a total cost of under one billion dollars for this part of the project. Working with the concept proposal as I have suggested here would create minimal environmental damage and possibly increase environmental habitat security with the increased water availability and flow in the regions.

The amount of water harvested would not be enough to keep the Murray River flowing all year round, nor is it designed to do so. It would provide a supplemental flow only while mitigating a certain amount of flood water control in the rivers on which the sources were based.

These costings are based on the broad estimates and comparisons with structures of similar sizes, turbines and pumps of the size I believe necessary on average to do the work, and the installation of them into the sites. The pipelines will vary in cost and complexity from site to site, and engineering costs will be readily available for these projects from major engineers to verify my own estimations, once the sites are selected.

On this basis, the estimate for Part One of the project would be in the vicinity of $1B. It would necessarily take some years for construction to be completed, and the costs would be amortized over those years.

A favourite argument against diverting northern waters inland and south.
It is said time and time again that the water from Queensland will never reach South Australia, due to evaporation and other losses along the way. And there is truth in that. However, we have to ask: SO WHAT?

If the currently available water in the system originates in Queensland, as much of it does in the Darling River Basin, then it will also suffer the same problems of evaporation and diversion for other uses. However, if more water is put into the system from higher up in the system and the total volume is increased, using the same amount of water along the way will still see more water, regardless of where it originated, end up in South Australia.

If water was diverted into the MDB from the Burdekin Dam and the Fitzroy River, but only made it as far south as the centre of NSW, it is still bonus water that wasn't previously available. It's servicing the needs of the upper reaches of the MDB, which would have to have been serviced from the previously lesser amount available from the existing sources.

Again, if more water is diverted over the ranges from the Northern Rivers Region and enters the MDB in the middle reaches of the Darling River System, then that water may all be utilised by the time it reaches the Victorian Border. That is also bonus water that wasn't previously available. Because that would then leave all of the water that was originally available in the middle and lower reaches of the MDB to be utilised for environmental, domestic, industrial and irrigation needs through the southern reaches of the basin. The fact is that regardless of how far it travels, more water would be available more reliably along the whole of the MDB system, and environmental, social and economic security would be enhanced throughout the whole of the region by utilising this concept! The argument about evaporative losses becomes irrelevant.

Arguments against this concept apparently fail to recognise the concept of increasing the size of the pie to be divided amongst a growing population's needs for water and food security, and only consider how to divide the unreliable amount that is currently available amongst the competing interests of environmental radicals, economic hardliners and social needs of communities that have already been ravaged by the loss of water flowing through the MDB for the last decade.

As stated already, there is not a shortage of water in Australia; there is a poor distribution of available water in Australia. The currency of the 21st Century shortly will shift from oil to arable land and available water. We need to be ready for that shift, as it is rapidly approaching.

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Part Two – Increasing the Irrigation Equipment Efficiency

This has already been explored and costed in great detail by engineers and economists, so I need only add the bare minimum of information and reiterate the benefits here.

It is common knowledge that many farming practices, although huge advances have been made, are using equipment in ways that are not water efficient, and even better is possible. Broadacre spray irrigation in some places and on some crops loses huge amounts to evaporation, where drip and trickle irrigation could be introduced to provide precisely metered water in the quantity and location around the specific plants and crops where it will be most valuable.

When water is freely available, it is not valued. However, when the water is not so readily available, equipment that loses a large proportion of the water to evaporation not only costs in application resources, it costs the crops which miss out of the water that is no longer available. If the same job can be done with less water, then that must be the aim.

In much the same way that the energy crisis of the early 1970s threatened that the planet would run out of oil, the efficiencies of irrigation plant and equipment will change and improve, as did the fuel consumption efficiencies if the oil users of the 1970s. With incentives comes progress.

Fuel guzzling cars with massive motors in those days have been replaced by cars with engines of half the size doing the same work, with half the fuel consumption. Governments have mandated the overall average fuel consumption of a car manufacturer's fleet of vehicles available for sale may use, and the fuel consumption trend is going down. These efficiencies have continued right throughout the industries where fuel oil is the source of energy.

It is reasonable to expect that these efficiency increases will occur and continue to trend down in the irrigation industries, probably in two major areas, equipment and plant breeding technology.

Whilst it is relatively easy to engineer a nozzle with a smaller hole in it and reduced water flow, it is much harder to breed plant strains that require less water to produce the same amount of crop yield. However, it is being done and drought resistant crops are being produced. Even irrigated crops are being researched to produce strains that require less water or water at wider intervals, and still yield economically.

Agricultural methods are changing also. An example of this is the minimum tillage methods that replaced the disc ploughs of the 1960s and 1970s. They required half a dozen workings of the agricultural plot to produce a suitable seedbed, whereas with the minimum tillage methods, that was reduced to between one and three passes with the tillage and planting equipment, and yields were improved, along with profits. This sort of research will also continue.

The estimates of the efficiency upgrade for the equipment side of the industry have been placed around $2B over the next 3-5 years. Research into plant breeding is ongoing and likely to continue indefinitely. The benefits of each are considerable and will continue to bring social and economic benefits to the industries around the planet for generations to come. The environmental benefits will impact now and continue far into the future also, wherever they are applied.

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Part Three – Irrigation Channel Efficiency

The Late Sir Richard Pratt was a great advocate of enclosing all irrigation channels and pumping water directly from the rivers and major channels to where it was needed, rather than using open irrigation drains. The evaporation cost of open channels is huge, and while covering them could be expensive initially, the long term cost benefits will also be huge.

The benefits come in a number of forms:

1. Water savings from evaporation. When used with upgraded irrigation equipment, evaporation could almost be eliminated. With water needs reduced even 25% by more efficient irrigation equipment, and evaporation reductions of a further 25%, the challenge of covering the channels or piping the water flows can be based on half the volume required. As efficiencies are improved, less and less water will need to be transported for the same outcomes.
2. Efficiency of operation – with upgraded irrigation equipment as mentioned in Part Two, less water is actually needed. With lower water requirements comes lower costs of application and lower costs for less units of water required.
3. Ability to measure and monitor water usage and flows. When water is passed through a controlled environment such as a pipe or other volume and flow measured channel, accuracy becomes possible. Open channel flows are susceptible to flow rate variations by irregularities in the channels or drains, weed growth and evaporation losses.
4. Pest control – especially with fish such as the Tilapia which have invaded many waterways already. Noxious Pests and pollution from a variety of sources has become a serious issue and only with controlled waterways can this be handled. Waterways open to the environment do not lend themselves to effective and efficient management.
5. Land availability for agriculture. With water piped and large open drains no longer needed, more of the land can be productively utilised. Currently, considerable proportions of each block of land in an agricultural region are allocated for the delivery of the water through channels and drains. Not only does this impact on the areas available for agricultural production, it also impacts on accessibility. Covering the channels or piping water underground or in concentrated areas will greatly increase the land available and greatly facilitate traffic flows across the land, perhaps even enabling more efficient land management usage.
6. The economic stimulus from the manufacturing requirements to produce the pipes and infrastructure necessary for the work involved in the operation. Much of this will require manufacturing plants located close by for economies of scale and transport, again boosting local employment and cashflow through local communities. This is not only infrastructure building, it is building communities through the employment of local people and creation and delivery of goods and services to those communities of people.

The costings for this exercise were touted at over a billion dollars by Sir Richard a number of years ago. It is probable that these costs could have increased, although materials and installation efficiencies could have also improved and maintained a similar cost. That is another engineering and costing exercise that could quite readily be done by assessing the original costings and overlaying current costs and materials into the equation.

Total Costs

Combining all three components of this plan provides a total infrastructure outlay of around $4-5B. It also increases productive capacity of the MDB and the nation overall, thereby effectively reducing the cost further. Even if the costs of the plan were much higher than this preliminary estimate, the increased earning capacity of the new MDB provides a far greater benefit than an expensive plan which cuts production and earning capacity!

Further, even if it was greater than this cost, it is an investment into Australia that, like the Snowy Mountain Scheme, the highways and railways of the nation, will be with us for a very long time. The benefits are many and varied, and extend way further than the people living within the MDB and the food production from it.

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Benefits – The Triple Bottom Line consideration:

1 – The Environment

A. Increased water flows through the MDB, mostly when the water flows would be lowest, when the summer rain falls in Northern Australia and when little rain falls in Southern Australia.
B. A more constant water habitat along rivers and streams in the MDB. This would apply to both aquatic species and flora and fauna along the watercourses in the MDB.
C. Maintenance of various wetland areas through the MDB, again increasing habitat security through the MDB.
D. Possible maintenance of more water in the Coorongs at the mouth of the Murray River, unless they were opened up to the ocean again, as they were in the relatively recent past.
E. Increased river health through more regular flows, reducing the potential for algae build-up.

2 – The Economy

A. MDB regional economies will benefit from having sufficient water for agriculture, to maintain the production of food and therefore the flow of money in all forms into the regional towns and communities.
B. The Local Economies of towns in the MDB. These towns already have a multitude of small businesses, employing thousands of local people and decentralising the Australian population. The new Alternative MDB Plan will not only maintain these businesses but enable them to expand, grow, and employ even more people in regional areas.
C. The National economy. This is the infrastructure spending we needed rather than the Plasma TV "Economic Stimulus" payments we had at $900 each twice during the Rudd era. Whilst that had the effect of circulating money in the economy, it provided a short term benefit keeping people happy and distracted and retailers in business, but most of the money was spent on items manufactured elsewhere, with short life spans and little national benefit. However, this investment will create employment by manufacturing pipes and irrigation equipment that will be installed within Australia, much with operating life spans of decades. The reservoir infrastructure will create local employment in towns and regions outside the MDB initially, while creating the pipelines that will flow water into the MDB.
D. Food security will be enhanced by both having water security, and the confidence of producers to invest into it, without fearing that their investment will be lost on a whim by a change of government policy. The fear that the current MDB Plan has put into regional economies has seen banks foreclosing on rural primary producers who otherwise would have struggled through, now that the rains have come, if only they were sure their water allocations were secure.
E. The cost of quality local food will remain competitive. Although inflation does increase prices, if we can produce food here in Australia with efficient irrigation methods and water security, we know that the quality and purity of the food will be good and the price competitive. Numerous times we have found that food imported from Asian and other Third World Countries where food standards and safety regulations are either not enforced or non-existent is either contaminated or of very low quality, or infected with bio-hazards.
F. Regional Services and Facilities. Only when local economies are healthy can they be assured that government services and infrastructure will be maintained. This means hospitals, schools, roads and railways, all of which mean jobs and quality of services.

3 – The community – social benefits.

A. Growth, not retardation, of cashflow through towns, populations, employment and services provided.
B. Local engineering works to deliver the upgraded equipment and infrastructure will provide opportunities for local engineering businesses to expand and employ more people in all aspects of their business. First will be tradespeople, welders, plumbers, and electricians etc, followed by administration and clerical staff as the businesses expand. Transport will increase as the new materials are distributed. The boost that the growth of these businesses alone will provide is considerable.

C. Agricultural production – more with less. More reliable water supplies will generally ensure better quality crops and higher production volumes. Again, this means increased cashflow through the local economies.
D. With local businesses increasing and employing more, growth of population can both secure and consolidate facilities in health and education, and increase them as demand ultimately grows. The infrastructure is permanent and the population growth is likely to be permanent too, unlike that of a power station or single structure. Those bring in construction crews for a time, and then they leave. This infrastructure is all about increasing local production and maintaining a population to handle that production.
E. Social services. With greater numbers can come greater social services such as mental health, aged care facilities, Centrelink resources and legal/justice services.
F. Indigenous care services. With a declining community economy, historically, the indigenous community has been the first to suffer, especially in smaller communities. With an expanding economy, these facilities can also be expanded; employment services can be tailored for an indigenous population also through organisations such as Generation Next, spearheaded by Twiggy Forrest.

Summary

The Murray Darling Basin Plan first submitted for discussion fails miserably on at least two counts.

Firstly, it is unlikely to provide the environmental benefits that it promises, because it doesn't and cannot address the matter of how much water will flow in the Murray and Darling River Systems.

Secondly, it decimates agriculture, industry and communities within the basin and is likely to virtually bankrupt the Australian economy with its incredibly short-sighted plan to save the Coorongs at the expense of the whole of the economy and those relying on it for their incomes.

The alternative MDB Plan solution "increases the size of the pie" for our growing population and economy, rather than dividing an ever smaller pie between ever more intensely competing interests. A creative approach and a change to long term thinking is required, to create infrastructure for the future rather than pegging our development and precipitating our decline to third world status, a mere mining colony that imports its food, as we had to do two centuries ago.

The solutions proposed here are based on having minimal impact on the environment, maximum positive effect on the economies of the regions and outside, and on the security of agricultural production from the agricultural regions within the MDB whilst being of an economic cost to the nation that is affordable and justifiable.

With a five year cost timeframe if every aspect was to be fast tracked, estimated at under $2B per year, it is certainly affordable when compared to the restrictive and contractive plans of the current MDB, costing in the region of over $10B with no economic growth prospects.

The alternative plan not only maintains agricultural production without significantly impacting environmental flows required, it also maintains and enhances regional economies with increased manufacturing and employment opportunities. Further, the plan positively impacts regions outside the immediate MDB, with water supply reservoirs and power generation infrastructure in areas currently potentially without them, and with offsite manufacturing and development of the major infrastructure in those other regions.

No doubt this plan will raise as many questions as it provides answers to questions already in the community. As the author, I will be delighted to answer questions on those areas that I can. However, much of the research work for the Alternative MDB Plan has been done by far more highly qualified people than I, over many years leading up to this point. Unfortunately, one of the leading proponents of a major aspect of the plan to take water from the Clarence River, Professor Lance Endersbee, has passed away, and only his research work remains as his legacy. However, much of the work referenced here is available for further examination and easily accessible.

Ray Jamieson – a brief Bio.

Ray Jamieson is a fourth generation Australian farmer and grazier, born onto a progressive and successful sheep, wool and grain property in Southern NSW. He moved to warmer climates in Southern Queensland in the late 1970s and created an earthmoving and construction business that operated from his farm in the South Burnett region.

A major focus of the earthmoving works was soil and water conservation, and he is a vocal advocate of the Keyline Soil and Water Conservation strategy developed by the late P A Yeomans in the 1950s in Central Western region of Sydney, near Bathurst. During his years in earthmoving, he created numerous soil and water conservation dams and structures in the region, many of which are now local landmarks.

In the late 1980s, he retired from farming and earthmoving to focus on his other passions of writing and small business, completing studies at Queensland University in Small Business and Entrepreneurship. When the share market crashed in 1987, he began in business consultancy, specialising in corporate rescue, restructuring and resurrecting small businesses devastated by the changed business environment. This evolved into corporate training and consulting, and he created The Executive Mastermind Program, a workshop designed to equip business people with top level business management strategies.

In 2007, he completed studies to become a licensed financial adviser, based in South East Queensland, working with the local community and his extensive database. In recent times, as well as working with local financial planning clients, he has been specialising in developing financial planning strategies to assist and support people in rural and regional Australia, while utilising the resources only available in the metropolitan centres.

In 2008, frustrated at the lack of progress in so many areas of policy and governance critical to the 'triple bottom line' success of the nation of Australia, he created the website Political Guts, a non-aligned website that creates and proposes solutions and strategies for the issues that the nation of Australia faces.

This document is also available on the Political Guts Website at www.politicalguts.com/id6.html and I welcome you to visit the website for more creative solutions to our national problems such as this document presents.

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