

INQUIRY INTO WATER AUGMENTATION

Name: Mr Peter Millington

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Inquiry into the Augmentation of Water Supply for Rural and Regional NSW.

A Submission by Peter Millington - Who am I

- Previously **Director General, NSW Department of Water Resources** (1987 to 1995), and **Commissioner on the Murray Darling Basin Commission** (1987 to 1996); involved in water resources/river basin management at the highest level for the last 25 years,
- Since 1996, **river basin/water resources/natural resources management consultant** to the World Bank, Asian Development bank and many international aid agencies, working on major water resources/river basin planning and management projects in twelve countries.

This submission is in two sections. **The first part** addresses the overarching part of the Committee's Terms of Reference – the *'performance and effectiveness of NSW government agencies responsible for the augmentation of water supplies for rural and regional NSW'*. **The second part** addresses the nine particular parts of the TOR, or at least those which I am still close enough to make informed comment.

A Summary of conclusions is on Pages 9 and 10.

1. Effectiveness of NSW Water Resources Agencies.

a) Some Background Comment.

From the General Purpose Standing Committee's Terms of Reference (TOR) for this inquiry, the overall aim is to *'report on the performance or effectiveness of the NSW government agencies that are responsible for the augmentation of water supply for rural and regional NSW'*.

The concept of 'effective water planning, management and augmentation' in NSW – and economic and timely augmentation of rural/regional water supply - has been a fundamental role of government agencies since as far back as the early 1900's. About 1912, a specific agency was created to focus on NSW regional water planning/development and management needs (the Water Conservation and Irrigation Commission) and specific legislation created (the Water Act, 1912) to ensure proper and fair water use and development. That Commission built dams and operated irrigation areas, and later, managed the quality and quantity issues of all rivers in rural/regional NSW. It continued until the mid-1970's when a series of name/organisation changes occurred (Water Resources Commission, Department of Water Resources, Department of Land and Water Conservation). But the central role of water planning, development and management always remained and in fact was strengthened through to the late 1990's.

The point of this 'historical' journey through the different phases of NSW regional water management agencies is to illustrate and emphasise that for more than 80 years we had a strong and widely accepted government agency managing existing water use and planning for future developments. Many dams were built during the 50's, 60's and 70's, and this stimulated much regional development such as a new cotton industry in the NW of the State. Planning for future water needs was always a central role for the water resources agency in whatever form it has taken over the years – during the 'life' of the Department of Water Resources (1985 to 1996) it employed many engineers and scientists within directorates covering engineering investigations and planning, hydrology, hydro-geology/groundwater, economics etc., and maintained a network of regional offices that focused on water user/community participation and consultation.

This long-maintained and excellent role in water planning and management (which was acknowledged by the World Bank as ‘world best practice’) has been allowed to fall away and there is now just a shell of a water resources agency with very small and continually dwindling expertise, with the particular result that no work is undertaken on long term water needs or scenario assessments, over say the next 20, 30 or 50 years. These planning scenarios should look at possible/likely demands from both domestic issues and from the impacts of international markets and their possible impact on water resource availability. No-one would think of making government investments in transport, health or education without considering future trends and needs over medium to long periods – why should water resources use and development be any different?. This is not a criticism of those experts remaining in the present very much smaller ‘water resources agency’ (NSW Office of Water, or DPI Water, as it is now called); most of those experts know what needs to be done but expertise is now so limited that ***it must be questionable whether effective water resources planning/management in NSW can now occur.***

b) What Other Reviews of Water Management are Relevant to this Inquiry?

The most recent ‘event’ in NSW water planning/management by which to gauge ‘effectiveness’ would be the NSW response/approach to the development of the Murray Darling Basin Plan. This plan, developed by the MDB Authority, has led to large volumes of water being re-allocated from consumptive use (basically irrigation) to the riverine environment, and has been widely criticised by rural/regional communities and agriculture/irrigation industry groups.

There have been a number of recent inquiries relating to the MDB plan and all have a relation as to how NSW has managed its input to the plan, and how it has involved the rural/regional communities in this work. I have made submissions to three of these, as below

* **House Standing Committee on Regional Australia - Inquiry into the Impact of the Murray Darling Basin Plan in Regional Australia** (Submission made in November 2010),

* **Murray Darling Basin Authority** - A Submission made in January 2012 as part of the Plan consultation process.

* **Senate Select Committee on the Murray Darling Basin** – A submission made in 2014

A summary of the main points from these submissions is below in so far as they relate to the **‘performance and effectiveness of NSW government agencies responsible for the augmentation of water supplies for rural and regional NSW’.**

- **The House Standing Committee enquiry** specifically relate to the socio-economic impacts of the Murray Darling Basin Authority’s ‘Guide to the Proposed Basin Plan’. This was a narrow reference in that the Committee could not scrutinise how the Authority used the hydrology and the related simulation models, and the available science, to make assumptions on ‘river and catchment health’ and reach conclusions. Yet these are the fundamental concerns of the regional communities, which argued that the Authority’s process is deeply flawed and without the scrutiny of the basin communities,
- The Commonwealth Water Act that specified how water planning was to occur is framed in such a way that it prevents ‘integrated river basin management’ in a way that is consistent with international ‘best practice’. The Act requires the MDBA to first determine the volume of water required to maintain and restore environmental assets, using best available science and the principles of ecologically sustainable development, and then subsequently (that is, with whatever water is left) the Authority should address the optimisation of other environmental issues and social and economic outcomes.
- This approach doesn’t address the varying long term national and state objectives and goals across all disciplines and sector areas, and does not allow the seeking of some agreed ‘balancing

point' between environmental, social and economic outcomes for the basin – an approach that is internationally recognised as 'best practice' for integrated river basin planning,

- Virtually all countries now follow approaches that seek to determine an 'agreed balance' between environmental, social and economic outcomes – not give a 'first up' priority to any one of these - and to do this through open and transparent participation and consultation with all basin stakeholders, and to consider short, medium and long term issues and scenarios. The present basin plan is really producing an '**environmental watering plan**' with the socio-economic impacts just added on at the end, and was developed **with no real consultation with basin communities**.
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- ***To summarise, the MDB Plan comes from an inappropriate piece of legislation that expressly prevents integrated river basin planning, a planning process that has not opened up the science and hydrology to scrutiny and public discussion and debate, a complete lack of meaningful consultation and participation, a lack of consideration of the long term socio-economic objectives for the basin and for each State, and a lack of consideration of food security and food and fibre productivity issues over the short, medium and long term***

From the Submission to MDBA on the MDB plan;

- again it was emphasised that the Draft Basin Plan does not provide a 'balance' between social, economic and environmental factors, nor does it allow for any meaningful consultation/participation with the basin communities in each valley (NSW has eight major valleys/sub-valleys within the MD basin).
- Claims are made about 'environmental good and improvements' but the plan is unable to detail exactly what it is that is currently wrong, what needs to be righted and how it is planned to do that. *"The fact that you have left out any serious consideration of the many options relating to how to better manage the lower lakes in South Australia creates questions about fairness and a balanced approach"*. The lower Lakes consume, or receive, a very large volume of water which upstream communities argue is being unfairly taken from them and re-distributed downstream, with resulting severe socio-economic impacts. How can the basin plan have credibility when such a large 'water user' as the lower lakes – the largest 'environmental use' in the basin – is not considered in the same extent or detail as other environmental assets.
- *'The absence of an Environmental Watering Plan is a complete puzzle. How can you possibly claim a volume of water must be removed from productive use without being able to specify when, where and how it will be used'?*
- *You have been unable to identify an environmental water delivery plan. The Murray-Darling system is a complex hydraulic system with many natural constraints and it will not be a simple matter of moving water from one place to another at specified times. Why have you not considered and detailed the delivery constraints? What impact will environmental water have on existing delivery constraints? Will there be further economic impact as environmental users compete for delivery capacity with productive users.*

From the submission to the Senate Enquiry on the Murray Darling Plan;

- whilst the present basin plan is fundamentally flawed and has diverged widely from what is considered 'world best practice' in river basin planning, the fact is that **we do need a good basin plan** that, after wide consultation, achieves the best balanced and most acceptable allocation of water and natural resources between all uses and users in the basin.
- The most beneficial outcome right now would be for there to be a 'pause' in the MDBA activities on plan implementation and instead, a concentration on 'where are we at, what wasn't done effectively in the recent past, what needs to be changed, and what scenarios are out there for the next '10, 25 and 50 years,' and how might the present plan impact on them' – in a sense a

mid-term review, re-assessment and credibility check, and a sensible peek into the future to see if we are making bad decisions now that will impact later on. This should be done through a very wide consultation process – meetings held in all valleys within the basin and with the upper, mid and lower communities in these valleys.

c) What can be Taken from the Submissions to these Earlier Inquiries – how do they relate to the ‘performance and effectiveness of NSW government agencies responsible for the augmentation of water supplies for rural and regional NSW’?

Firstly, by agreeing to the MDB plan as it now stands – which basically says ‘no more water development’ - NSW now is constrained in regard to future regional water development and in any augmentation of water supplies from within the MD basin. Yet this was agreed upon without any of the medium and longer term water scenario assessments for NSW mentioned earlier – ***that is we have agreed on a present and very constricting basin plan which limits water extraction/development without any idea as to how this might impact on future needs. This is a fundamental failure of a key element of water resources planning/management.***

Secondly, with the MDBA not undertaking meaningful consultation throughout the basin on all the main parts of the planning process (that is, what is the present health of the river/catchment systems, what are the key aspects that need improving, how might we go about this, what does the modelling tell us about the pluses and minuses of environmental improvements and socio-economic negative impacts, etc.,) it should have fallen back on NSW agencies to firstly assess the present health of the systems and then undertake this community consultation, in every major valley, and take on board all the community concerns for further evaluation. ***This did not occur and again is a failure of an essential part of water resources management.***

Water resources planning/management (which obviously includes the water augmentation issues related to this Inquiry) starts with sensible and rational management of ***‘what we have got now’***, then making continual assessment of ***‘how we are going and are we meeting needs’***, then ***‘what future domestic and international needs and trends are emerging’*** (what scenarios are possible over the medium to long term), and then ***‘what are the options that could possibly meet these future water needs over the medium to longer term’***. It is the water resources agency performance against these components or areas of water resources management that determines whether ‘effectiveness’ is high or low – and to be fair, it needs a detailed review of all aspects of an organisation’s performance to reach proper conclusions; ***but based on the views of many water user ‘customers’, on information from senior people within the water bureaucracy, and my personal observations, the overall NSW input to the MDB planning process - the ‘effectiveness’ of water resources management - cannot be given a high rating.***

d) What Needs to be Done to Improve NSW Water Resources Planning/Management

Three key areas;

- **Re-skilling the ‘water manager/planner’,**
- **Better ‘managing what we now have’,**
- **Managing/planning for the Future.**

i) Re-skilling; providing essential technical/scientific expertise for Effective WR Management.

DPI Water is now the ‘water resources planning/management agency for NSW’. From information released when it was formed, its role has been stated as;

- a) focusing on water planning and policy in urban and rural areas, and ensuring our State’s interests are progressed at the national level,

- b) covering the traditional government functions of policy, planning, regulation and water program administration
- c) overseeing government-funded water infrastructure programs and developing more information on water for the community.

Well, in general terms this sounds about 'right' for a WR planner/manager. But point a) – the two issues of proper water planning and progressing/protecting the State's water interests at national level are exactly the two areas where many experts and rural/regional peak bodies would argue that 'failure' has occurred. Point b) is basically all about present water management – 'managing what we now have' – and again it is argued earlier in this submission that there has been neglect in understanding the health and main issues effecting water management in each valley in the state and in consulting with the communities and peak industry/commerce/council bodies in these valleys. If there are to be major water cut-backs to give more to the environment – and communities still want to openly question all of this - then each valley needs to be right in the middle of all this, and ultimately 10 or 20 year 'strategic business plans' need to be developed for each valley that plot a path through a transition period of 'less water for production'.

DPI Water is 'new' so can it be expected to perform better? It really is just the 'Office of Water' under a new name for the roles a), b) and c). There is further 're-organisation' going on at present, which involves a further reduction in key skills that are needed for roles a), b) and c) ; skills in engineering/water resource investigations, assessments and planning, and in socio-economic planning, hydrology/groundwater assessments and modelling, water quantity assessments and the science of water and catchment quality management etc., So if there were deficiencies over the last 5 years they can only get worse with more reductions of expertise. As well, some so-called operational functions are being moved to Water NSW which is probably OK for some functions, and not for others – ***this needs some further thinking so that the full range of 'policy/planning/management functions' remain with the 'water manager/planner' and only 'operational activities' go to Water NSW.***

So basically there needs to be a proper review of all aspects of water management and administration in NSW to ensure that the right functions are with DPI Water, Water NSW and the major urban water authorities and the essential skills are maintained/recruited – at present there is overlap and confusion and inadequate skills to manage and plan the state's water resources. Even if consultants are used to do some water assessment/planning work one must still have core expertise (both width and breadth) to set consultant briefs, to manage the consultants and critically review results – expertise in planning scenarios/project evaluation but particularly in hydrology and groundwater assessments and modelling. These last two 'skills' are the fundamental skills (the 'engine room of planning and management') that an organisation must have to test policies, operational changes and planning scenarios as to likely impacts. Yet these are the very skills that are being further eroded at present!! This makes no sense.

ii) **Managing what we now Have.**

There is a lot of aggravation in rural communities that they are being asked to 'give up' a lot of water from irrigation etc., based on poor or at least uncontested science – that is they have never been able to question the health assessments of the rivers, the science or the modelling used to determine the water that is to be re-distribution to the riverine environment. NSW needs to address this urgently and this can be done by basically undertaking a mid-term review of the basin plan in so far as it effects NSW (the plan has a 'life' through to 2019 so now is a good time for a review). Assessments should be made in each valley as to the present 'health' of the river and catchment systems, what gains have occurred over the last 5 or so years, what are the targets for longer term improvements, are they realistic and what are the socio-economic impacts etc., and all of this discussed with the communities in each valley in an open and meaningful way – this might mean up to 15 or so 1 or 2 day meetings.

An expert, independent panel (say 2 to 3 people with high level water and natural resource planning/management expertise)) should oversight/control the community consultations to give some

confidence to the community that this work is 'genuine and meaningful'. It could be chaired by a prominent person, such as a former NSW water Minister, to give the panel 'standing and profile'. The agencies would provide the technical input. This may lead to the need for more evaluation work by the agencies and then more consultations but this is all essential if some trust and confidence is to be restored in NSW water resources management. At the end of this process, NSW will be in a much stronger position to argue, if needed, for changes in the MDB plan when this next occurs.

iii) **Managing/planning for the Future.**

There needs to be an immediate start on undertaking future scenario assessments covering, say, the next '10, 25 and 50 years,'- this is a fundamental role of a water resources planning/management agency – so that we can see what might be needed in the future, and by when. Only then can we sensibly look at a range of options that could meet these future demands. This should be priority work required by the NSW Minister responsible for water resources management; it is hard to see how a minister can meet his/her responsibilities if such planning work is not done.

Some might say that this scenario work is not necessary as we now use all the water we can sensibly divert in the MD basin and any further development must come from water obtained from efficiency gains or from a re-direction of current development. This really seems a 'back to front' approach – we need to first look at what might happen with water needs well into the future (just as you would with transport, health, education planning work) and then see what this might mean for the existing water availability and whether any new sources can be found that will create sustainable options.

Both international and domestic studies on the future of agriculture and water all highlight a rapidly expanding food and fibre need across the developing world and a big increase in water availability to power agriculture expansion. **The attach to this submission** summarises key points raised by groups such as FAO (Food and Agriculture Organisation), Australian Academy of Science ('Australia 2050 Project'), Commonwealth Government, 2010 (*Intergenerational Report*), the NSW *Intergenerational Report 2011-12*, and ABARES ('Food Demand to 2050: Opportunities for Australian Agriculture').

The clear message from all the above reports is that world demand for food will greatly increase over the next 30 or so years, it will be spread across both the poor developing countries, and the expanding economies of China and India, and that all this creates obligations on Australia to 'do its part' on meeting world food demands as well as presenting big economic opportunities. Water policies now in place for the MD basin are reducing available water for production just at a time when we need more water to capitalise on these emerging export market opportunities. And in a NSW context, with a population increase by 2051 projected to be 50% on present levels, water planning scenarios to look at ways of meeting population, food and lifestyle pressures should be fundamental work of the water management agency.

It is inconceivable, from the trends in this literature, to assume that NSW will not need 'more water' in 20 to 50 years time. We now urgently need to take these projections and create water planning scenarios – that is, really do some solid future planning work that will identify a range of possible and realistic 'pictures' or 'scenarios' against which new schemes to increase our water supplies can be evaluated. And this likely means 'new water' transferring into the MDB - so that we can 'power' agriculture to capture these emerging trade opportunities.

To illustrate how managing the present water resources and planning for possible future demands, have always been fundamental and priority issues for the water planning/management agency, the Corporate Plan (1992 – 1995) of the then NSW Department of Water Resources specifies 5 'key performance areas', as spelt out below,

1. **State Resource Planning** – to provide long term strategies for guiding decision-making on the management of the State's water resources.
2. **Water Sharing** – to provide ways of sharing water among various uses to promote maximum economic development, consistent with environmental protection and social needs.
3. **Supplying Water** – to develop ways to improve water availability that will increase the productive use of the State's water resources.

4. **Environmental Management**- to mitigate the effects of flooding on the community, property and land productivity.
5. **Water Quality** – to manage the quality of the State’s water resources to meet agreed needs for all users of water.

The Department reported each year on progress made in these 5 areas. These are still directly relevant today but it is very doubtful that the level of work and ‘effectiveness’ in the first three of these ‘fundamental and priority areas’ above, and probably in all five, is even close to acceptable.

e) How to Start Work on these Water Scenarios of Future Needs?

It is unlikely that this planning work will, or could, be initiated by the agency responsible for NSW water resources planning/management – these days, as DPI Water, it doesn’t seem to have the width and depth of technical staff to undertake proper management of the existing water resources let alone embark on extensive future planning scenarios; others may argue differently.

An expert panel approach (mentioned above in relation to sorting out present issues re the MDB plan) is probably the most appropriate way forward. An expert group of maybe 5 people with skills/high level experience across disciplines like water resources and catchment management, agriculture, economics, rural industries, environment etc., could consult widely throughout regional NSW and scope out what scenarios should be studied to give a broad picture of what might be the future water needs of NSW. The water agency would then do the detailed investigations – or contract out this work – and report back to the expert panel which would then rank the most likely scenarios and consider what might be the best water augmentation options to study in detail to meet future needs.

The importance of this scenario planning work can be seen right now. There are numerous groups who are promoting the idea/concept of new dams or more water for agriculture but there are no long term water demand estimates or planning framework or picture against which to judge these possible projects. Are they a way to meet future demands? Will they answer some of the competing demands from environment and agriculture? Will they be a smart answer to the expanding international food and fibre markets? **It is very hard to answer these questions for a particular project, or package of projects, if this long term framework is not available.**

An example is the work being developed by a private consortium, Australian Water Exploration Company (AWEC), on the concept of inland diversion of water from coastal valleys (the **East-West Water Project**). This group has built on the earlier departmental and private work 20 years ago on inland diversions but taken it further with some high quality work. The group estimates that, averaged over the long term, between about 1,000,000 and 1,200,000 megalitres of ‘new water’ could be brought into the MD basin from the Clarence River catchment producing \$1,316,000,000 of farm-gate production and \$2,856,000,000 of flow-on activity plus 10,400 new jobs. There would also be agriculture production and flood mitigation benefits within the Clarence valley and it is argued that other environmental impacts are manageable and acceptable. When considered together with the information about future water needs from domestic and international trends (Attach 1) this inland diversion project makes compelling logic. But where are the long term planning scenarios against which to make initial judgements that could lead to 5 or so years of detailed work to properly evaluate this concept? ***Unfortunately not available due to lack of water planning work by NSW water resources agencies!!***

2. Comment on TOR Components 1 to 9.

i) **Component 1 – Investigate the requirement of a Water equation (Supply and Demand).**

This basically is the ‘water planning scenario’ work covered earlier in this submission. It is a major failure of water resources planning/management in NSW that this water equation work – the medium and long term water planning scenarios – is not being done. Up until about the last 10 to 15 years, starting way back in the early 1900’s,

it has always been a key activity of the water resources agency and led to about 12 major large dams being built, many smaller ones plus about 4 major storage lake projects such as Menindee Lakes. Now, just when there are prominent world and national agencies identifying food and fibre pressures over coming decades with consequential water demand issues, there is no water scenario planning that tests how Australia/NSW might need to respond and what this might mean for future water planning – for the future ‘water equation’.

The need is real and urgent to undertake water planning work that develops this NSW water demand and supply equation.

ii) Component 2 – Suitability of Existing Storages, and Future Schemes for Augmentation.

This reference is much the same as No.1 i) above in that to develop medium and long term planning scenarios (demand and supply water equations) it would be normal to assess what we now have (existing storages and annual yield from all regulated, or dammed rivers, is this water adequate for all needs, if not how can it be managed differently to give a better result and so on. How best to overcome perceived weaknesses in present water management (which relates to existing storages) is covered in section 1 ii) above; existing storages and their operation are not the issue – it is more whether the water sharing plans in each valley, which determine when and how water is released, are appropriate and whether the balance between environment and consumptive use in these plans is valid and broadly acceptable. These questions would be part of the ‘expert panel’ approach mentioned earlier as a way of involving regional communities in sorting out existing water management issues.

As to future water augmentation schemes, the planning scenario work in No. 1 ii) above is the underpinning work needed to be able to consider what options should be considered for more water, by when, and where it might come from. If the ‘future projections’ of various agencies and groups detailed in Attach 1 is accepted, then there is already a case for an expansion of water resources conservation (more dams??) over the next decade or so and the work of Australian Water Exploration Company (AWEC) on inland diversions which brings ‘new water’ into the upper part of the MD basin seems a priority study as it does not face the contentious debate of trying to use more water from within the basin when the environment is already seeking more.

iii) Components 4 and 5 - Flood History and present Flood Mitigation/Management.

My comments relate mainly to flood management on the large flood plains of the major western river of the State.

But first a comment on the value of diversion schemes to reduce flood damage in the valley or catchment that is the source of the diverted water. The work done by the AWEC on the east-west diversion scheme (water from the Clarence valley diverted inland to Copeton Dam, and others), highlights some compelling statistics. According to the published brochures, major floods in the Clarence can generate over 10,000,000 ML (megalitres) of runoff. Each year it is said that usage in the valley for consumptive, environmental and recreational needs is about 60,000 ML although a lot more work would be needed, particularly on environmental/riverine/ecological needs, to firm up this figure – but it is small compared to the flood volume. A network of dams in the catchment would be capable of catching/storing 6,555,000 ML, if it was available, and diverting annually about 1,200,000 ML. So even in the absence of detailed studies on impacts in the Clarence (the costs of flood damage and the reduction created by diversion schemes) and benefits to the inland catchments, ***there is enough information to say that there would be significant flood mitigation benefits to the Clarence valley and more studies should occur by the water resources agency as part of the future planning scenario work.***

To return to flood management on the western flood plains. Following the very severe floods in western NSW in 1971, 1974 and 1976, the water agency (the Water Resources Commission, then the Department of Water Resources) has managed legislation that controls what structures, particularly levee banks and above-ground water supply channels, can be built on flood plains with the aim of ensuring these works do not force, or re-distribute floodwaters onto surrounding land or into/toward towns. The department (and subsequent versions of the water agency) has studied all the major floodplains of the western rivers and identified where all major flood runners, and fast flowing waters, exist and must be kept open/not obstructed by development. Landholders must obtain a license for any of these works across a floodplain which is only granted if adverse effects are within acceptable limits.

This comprehensive program of floodplain management is only effective if both parts are addressed;

- the floodplains studies to produce the knowledge of flood behaviour,
- then the licensing part that ensures actual works on the ground comply with the flood studies.

The concern is the second licensing phase. I am not close to the actual issue these days but information from many people – both landholder groups and departmental staff – suggests that there is a very much reduced effort made on the licensing work due largely to reduced staff numbers and the fact that we have not had big floods for some-time (staff get diverted to other things when flood memories fade). This can be a critical issue when the next big floods come – unlicensed levees and channels can force water into towns, villages or even create increased flood heights that could breach existing levee protection around towns. In many cases landholders have already applied for a license but little happens in processing the applications. ***Flood management in NSW needs to be urgently reviewed so that the Minister can judge what increased effort is needed to properly safeguard rural communities when the next flood events occur.***

iv) **Component 6 – social, economic and environmental aspects of water management.**

This is covered by No.1 ii) – ‘Managing what we now Have’. The water sharing plans in each valley define how water is released from dams and used for productive and environmental use. There are various rules and procedures that control when and how releases are made, how irrigators can use their allocations, how they may be able to carry-over unused water, transfer water and so on. There are supposed to be ‘customer committees’ set up by Water NSW to allow users to better understand these rules and procedures. Users along some of the rivers, particularly the Murray, have strongly stated that these committees are not working properly; information is not made available and contentious rules not discussed. If so, then the Minister needs to intervene; it is essential for users and the agency to work together in an open way. And as mentioned in the earlier sections, water users have no confidence – actual distrust – in the MDB plan and the agencies responsible for it, and how it effects water sharing in NSW valleys. So the basic need here is to independently review the present water sharing plans, using the expert panel approach, with the full participation of the rural communities.

3. Summary – Effective Water Management for NSW, or Not?.

Managing what we now Have. *A low rating.*

- There is a lot of aggravation in rural communities; they have never been able to question the health assessments of the rivers, the science or the modelling used to determine the water re-distribution volumes that are to go to the basin environment.
- NSW should have been protecting its interests better (not just relying on the MDBA to do all the planning work) and should have been consulting widely with its rural communities.
- Now need mid-term review of the basin plan for the NSW parts of the basin, oversights by an expert, independent panel that holds extensive meetings with the communities in all the NSW western river valleys.

Managing/planning for the Future. *A low rating; nothing has occurred in recent times.*

- There needs to be an immediate start on undertaking future water scenario assessments covering, say, the next ‘10, 25 and 50 years’. This should be priority work; it is done for the transport, electricity, health sectors etc., then why not for water resources?
- An expert panel approach is probably the most appropriate way forward. An expert group of maybe 5 people with skills/high level experience could consult widely throughout regional NSW and scope out what scenarios should be studied to give a broad picture of what might be the future water needs of NSW. The water agency would then do the detailed investigations.
- This scenario planning work would then provide the framework, or ‘measure’ against which to judge the value and appropriateness of any new water augmentation schemes - there are numerous groups who are promoting the idea/concept of new dams or more water for agriculture – ***and in particular, AWEC and the inland diversion ‘east-west’ project*** - but there is no long term water demand estimates or planning framework or picture against which to judge these possible projects.

Loss of Expertise – the Need to ‘re-skill’ to provide essential technical/scientific expertise for ‘Effective WR Management’.

- **DPI Water** is now the ‘water resources planning/management agency for NSW’. Its role has been stated as;
 - a) focusing on water planning and policy in urban and rural areas, and ensuring our State’s interests are progressed at the national level,
 - b) covering the traditional government functions of policy, planning, regulation and water program administration
 - c) overseeing government-funded water infrastructure programs and developing more information on water for the community.
- Whilst this sounds about ‘right’ for a WR planner/manager, this submission has pointed out that Point a) – the issues of proper water planning and progressing/protecting the State’s water interests at national level, and Point b) basically all about present water management –are exactly the two areas where many experts and rural/regional peak bodies would argue that ‘failure’ has occurred.
- There needs to be a proper review of all aspects of water management and administration in NSW to ensure that the right functions are with DPI Water, Water NSW and the major urban water authorities, and **that the essential skills needed by a water resources planner/manager are maintained/recruited.**
- Skills must cover core expertise (both width and breadth) to set consultant briefs, to manage the consultants and critically review results; particularly in project planning/assessment/economics, and in hydrology and groundwater assessments and modelling which are the fundamental skills (the ‘engine room of planning and management’) that an organisation must have to test policies, operational changes and planning scenarios as to likely impacts. Yet these are the very skills that are being further eroded at present!! This makes no sense.

Possible Scenarios for Agriculture and Water in 2050 – Domestic and International Influences

From FAO (UN Food and Agriculture Organisation), 'How to Feed the World', October 2009.

- Agriculture in the 21st century faces multiple challenges: it has to produce more food and fibre to feed a growing population with a smaller rural labour force, more feedstocks for a potentially huge bioenergy market, contribute to overall development in the many agriculture-dependent developing countries, adopt more efficient and sustainable production methods and adapt to climate change.
- World population is expected to grow by over a third, or 2.3 billion people, by 2050.
- Nearly all of this growth is forecast to take place in the developing countries, yet many of these are the areas least likely to be able to produce adequate food supplies,
- While the projected global economic growth of about 2.9 percent annually would lead to a significant reduction of absolute “economic” poverty in the developing countries, nevertheless, even in 2050 the world will still be far from solving the problem of economic deprivation and malnutrition of significant parts of the population.
- These trends mean that market demand for food would continue to grow. Demand for cereals, for both food and animal feed uses is projected to reach some 3 billion tonnes by 2050, up from today’s nearly 2.1 billion tonnes. The advent of biofuels has the potential to change some of the projected trends and cause world demand to be higher.
- The demand for other food products that are more responsive to higher incomes in the developing countries (such as livestock and dairy products, vegetable oils, high quality fruit and vegetables – both fresh and processed) will grow much faster than that for cereals.
- Feeding the world population adequately would also mean producing the kinds of foods that are lacking in the developing countries, to ensure nutrition security.
- While crop yields would continue to grow (improved seed stock and cropping/managing efficiencies) it will be at a slower rate than in the past and overall yields will not meet expanding demands.

From 'Australia 2050 Project', Australian Academy of Science.

- Economic growth is forecast to continue over 2011-2050 at around 2.5% per year and, overall, to shift towards services and away from primary and secondary industries (like agriculture and manufacturing).
- There will be an expected 13% increase in trade as Australia’s trade partnerships restructure - with the proportion of Australia’s total exports going to China, India and Indonesia projected to rise from 14% to 40% by 2100. *Note that whilst agriculture trends are predicted to drop overall to 2050, other sources that are studying particular agriculture markets predict rises in supplies to China and India),*
- While Australia will be food secure, agricultural trade is projected to drop by 10-80% due to a drop in output (based on reduced water availability from government policies and climate change).
- Climate change will reduce the water yield from the Murray-Darling potentially by 55%,

From the 'Intergenerational Report', Commonwealth Government, 2010

- Without global action on climate change, more extreme weather events would threaten our lives, health and infrastructure, ***nearly all irrigated agriculture in the Murray-Darling Basin could cease, water supplies would be at risk;***

From 'Food Demand to 2050: Opportunities for Australian Agriculture'; ABARES

- The UN Food and Agriculture Organisation (FAO) projections indicate that world food demand may increase by 70 per cent by 2050,
- Most responses to these projections have mainly focused on the challenge of increasing world food production to meet increases in world food demand. Few implications have been drawn for individual food exporting countries; the increase in world demand is likely to create commercial opportunities for food exporters, including Australia.

- Australia is in a good position to meet some of this higher demand; it has a comparative advantage in the production of several agricultural products and its geographical location means lower transport costs in exporting to Asia.
- The real value of Australia's agrifood exports in 2050 is projected to be 140 per cent higher than in 2007—an annual average increase of 2.1 per cent. This is driven by substantial increases in the real value of exports of beef, wheat, dairy products, sheep meat and sugar.
- China is driving the projected higher global import demand for beef, wheat, sheep meat and sugar, while India accounts for over 60 per cent of the projected increase in global import demand for dairy products.
- Australian agriculture is facing land and water constraints. It will therefore be increasingly important to maintain productivity growth through ongoing investment in research and development so that Australia is well positioned to take advantage of growth in global food demand. (**Note from AWEC** – this highlights the need for work not only on agriculture research and development but on addressing the 'water constraints' issue).

From ABARES press release, 4 March, 2014 - China tops list of global opportunities for Australian Agriculture

- China will account for close to half of the global increase in food demand by 2050, presenting opportunities for Australian agricultural exports.
- ABARES projects global food consumption to increase by 75 per cent between 2007 and 2050, with very significant market opportunities emerging in Asia,
- China will be the country with the most significant growth in food consumption toward 2050, and domestic production increases in China will not be sufficient to meet new demand, which will be driven by consumption of high-value products, such as beef, sheep and goat meat, as well as dairy products and high quality fruit and vegetables.

From NSW government "Intergenerational Report 2011-12"

- NSW 'Population Projection Scenarios' to 2051 are the basis of the report,
- Present NSW population is 7.2 million with the 2051 figure reaching 10.6 million (the mid-point estimate),
- The budget will be under heavy 'stress' unless major policy changes occur to stimulate income and reduce expenditure,
- Largest demands on the budget will be Health, Education and social Security/Welfare and Education.

The clear messages from all the above reports;

***The world demand for food will greatly increase over the next 30 or so years, it will be mostly spread across both the poor developing countries, and the expanding economies of China and India, and that all this presents big economic opportunities for Australia,**

***Yet we now find government policies are reducing available water for production throughout the MDB just at a time when we need more water to capitalise on these emerging export market opportunities,**

***In the NSW context, there will likely be almost a 50% increase in population by 2051 and whilst Treasury has made predictions as to long term budget impacts, no-one has taken this work and said 'what does this mean for water availability in urban, rural and regional areas?'**

***Presumably planning agencies have made predictions as to where the increased population will live and what might be their lifestyle needs. But no water planning scenario work has been done to identify how future water needs might be met.**

We now urgently need to explore what are the likely water scenarios for 2030 through to 2050 – it seems virtually impossible for the present level of water conservation to meet whatever are the demands of 2050; new options and schemes to increase our water supplies would seem inevitable, and this really means 'new water' into the MDB - so that we meet the needs and lifestyles of an expanded population, and can 'power' agriculture to capture these emerging trade opportunities.