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The MBDA's Environmental Claims

A brief analysis of the MBDA's environmental outcome claims and the computer modelling used to arrive at the MDBA's assertions.

By

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"Redrafting of the Basin Plan will likely be performed with the MDBA's questionable use of a unifying Modified Bayesian computer modelling engine with an unsound level of hierarchical bias. A redraft will inherit its parent's flawed design genes"

Version 1.4

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Summary

The Basin Plan 2010 document claims the primacy of the MDBA and its plans for the Basin environment but despite extensive cataloguing the environmental assets of the Basin, these assets are reduced to 18 icon sites that are to be artificially managed in a yet to be determined way with only embryonic skill sets available for the task. Environmental modelling that was handled so as to reflect the direct preferences of scenarios from dogmatic experts and factional interests.

Further to this The Basin Plan 2010 makes large, sweeping claims to outcomes without clearly referencing its methodology and showing coherent construction of the final unifying probability based modelling used; more information than logic diagrams is needed. This reveals an MDBA focus on the forcing of wide ranging water reform using the Basin Plan 2101 and the Water Act 2007 as the path on which to do so.

There are flaws are in the attempts to use pre-existing modelling of various forms, along with disparate data sets, and then combine these all into a Unifying Modified Bayesian mathematical model of probability that is unique to the MDBA. When the outputs of the Unifying Modified Bayesian modelling did not produce consistent, coherent results, data was skew and re-rated to produce the desired results.

Further suspicions of flawed environmental claims are in complete lack of peer review information and detail that he document frequently speaks of but does not provide evidence for in any meaningful way, shape or form for such an overarching, authoritative Body and far reaching Plan.

The Plan 2010 makes frequent reference to and uses the Ramsar Convention many times as another assertion to the MDBA's authority over all aspects of the Basin. Under the guise of legislated environmental care the environmental water will be used to artificially protect just 18 sites, 16 of which are Ramsar Convention included sites. The current Basin Plan will amount to the creation of artificially regulated environmental museums by the reduction of the Basin to these 18 icon sites.

In any event, the modellers have not set out to seek quality, hard science, interpret such science and empirically determine the most suitable outcomes for the Basin as a whole. The over-use of a technique or a possibly an error called Hierarchal Bias plus the creation of an Unifying Modelling tool based on Modified Bayesian Networks is unproven in this form of usage and is not acknowledged as best practice in producing macro policy framework that is to be translatable to mid and micro scales of management. Environmentally, the Basin Plan 2010 is as a blunt instrument to fine tune a constantly changing, interlinked set of environments, each possessing sub sets of unbelievable complexity and interdependence. It is also a blunt instrument because environmental stabilisation and reclamation is not is primary purpose. The primary purpose of the Plan 2010 is an agenda of Water Reform.

This MDBA Plan 2010 will fail our Basin environment and likely not meet the correct requirements of the Water Act 2007 because the MDBA selectively chose what environmental elements of the Water Act 2007 it wanted to meet. Even the Australian Government Solicitors published advice details extensively our Ramsar Convention requirements in relation to the Water Act 2007 and minimises the wider basin Environment into vague terms.

Rohan Collins-Roe April 2011

Redrafting of the Basin Plan will likely be performed with the MDBA's questionable use of a unifying Modified Bayesian computer modelling engine with an unsound level of hierarchical bias. A redraft will inherit its parent's flawed design genes.

Points that this Document Raises:

1) How much of the Overview is about the environment compared to other topics?
2) Introduction to Environmental Modelling.
3) Why did the MDBA use the principles of Modified Bayesian networks and attempt to create a Unified Bayesian model for its Plan?
4) What were the preconditions, academic inputs, assumptions and informational mishandling by the MDBA modellers?
5) How were dissimilar or incompatible sets of information handled by the modellers?
6) What establishes the 18 icon environments as being that such that require intervention by Act or Regulation?
7) What are intervention options for the 18 icon environments?
8) How does the Plan treat other non-icon environmental areas?
9) Has The Plan begun to be implemented by stealth?
10) Authors Analysis; Is it likely that the MDBA's environmental claims are trustworthy?
11) Limitations of this document.
12) Position statement by the Author.

1) How much of the Overview is about the environment compared to other topics? How are environmental topics structured?

Measured was the print area that specifically discusses the Environment; measurement's, claims, outcomes and modelling were counted and measured by area in the Overview document.

Given that the driver for the Basin Plan is the MDBA's compliance with the Water Act 2007 and the Water Act 2007's primary concern for the Basin environment's health, total print area of all subject matter compared to environmental subject matter could be a useful ratio to know. The print area counted does not include picture, graphs, graphics or title pages and captions.

The total print area of the Overview Guide from the beginning of the Executive Summary on page xi to Chapter 14, "Delivering Outcomes" that ends on page 192, is:

34,487 cm2 of print.

The total print area of the Overview Guide that mention the environment in some form:

8,645 cm2 of print.

This gives a ratio of 4:1 for subjects other than Environment claims, outcomes and guidelines.

2) Introduction to Environmental Modelling

The MDBA primary tool for calculating the final outcomes of the Plan are sets or "networks" as they are called, of mathematical formulae based on what is called Modified Bayesian Analysis. Great effort was made by the Plan's writers to talk up the strength of various imported modelling for instance. The modelling to create a Unifying Modified Bayesian model that drew together the outputs of other forms of modelling is identified by the MDBA only obscurely in their documentation and not in such a way as to make it open to examination.[1] The CSIRO itself has objected to the MDBA's manipulation of its data in manners it consider not appropriate for the data.[2]

The use of mathematical models is used to calculate the probabilities of an outcome. The answers given are not a singularity of objectiveness (a single right answer) as the MDBA models give different answers dependent on the inputs, preconfigured biases or assumptions and variables introduced at various stages of the networks of calculations[3]. Analyses are not performed once; many runs of analyses occur with variations of these input conditions being introduced to give ranges of results that can be plotted by likelihood of occurrences. Often these plots can be graphed in terms of probability of occurrence and such plots may have a bell curve like appearance.

Modified Bayesian, the basic mathematical formula that these predictive Bayesian Networks are predicated on is the work of a mathematician, Thomas Bayes (1702-1761). He proposed the mathematical formula to solve not only simple probability puzzles such as the odds of drawing black or white balls from a bag but also the converse probabilities; what are the probabilities of drawing remaining colours mid-way through a set of draws. There are many other works and theorems on probability management, such as Utility Management, but the term "Bayesian" has become common in usage to cover these kinds of probability calculations since the 1950's onwards.[4]

The use of and dependence on the results of predictions produced by Bayesian Networks are increasing in natural resource management (NRM) generally; meteorology and anthropogenic (man-made) global warming modelling for example. However the MDBA admits that modelling on this scale and complexity has never been done anywhere else at any time before[5]. The attempting of such as task does not flaw the task; it is inappropriate use to force a computerised tool to perform in ways that are inherently outside of the tools capability. This is not a programming skill issue; but a limit of this kind of methodology.

So the MBDA has not engaged a definition of "best practice[6]" (which the Plan 2010 alludes to being such while maintaining plausible deniability) but more a definition of the word "experimental"[7]. The experimental description comes from the attempt to produce not a Modified Bayesian model but a

[1] Technical background to Proposed Basin Plan pp76, pp77, pp80
[2] Letter from Ian Prosser (CSIRO) to Rob Freeman (MDBA), 17 December 2010.
[3] Landscape Logic, Technical Report #14, http://www.landscapelogicproducts.org.au.
[4] http://en.wikipedia.org/wiki/Thomas_Bayes
[5] Guide to Proposed Basin Plan – Overview - pp.37.
[6] " Methods and techniques that have consistently shown results superior than those achieved with other means, and which are used as benchmarks to strive for..." - http://www.businessdictionary.com.
[7] INTEGRATED CATCHMENT ASSESSMENT AND MANAGEMENT CENTRE, "BAYESIAN NETWORK MODELS IN NATURAL RESOURCE MANAGEMENT" by Carmel A. Pollino (ICAM1) and Barry T. Hart (Monash Uni) available at http://icam.anu.edu.au/downloads/iCAM_BDNBrochure.pdf.

Unifying Modified Bayesian model under which to unite vastly different data types many of which have only the barest of statistical relationship with each other, some with no common ground at all.

General advantages of Bayesian Network Modelling in Natural Resource Management (NRM[8]) are:

1) Prioritisation of objectives through cost benefits analysis.
2) Communication of outputs visually, graphs and the easy creation of new graphical outputs.
3) Can cope with uncertainties in inputs as the basis for the modelling is probabilities.
4) Allow for multiple" what" if" output scenarios once reliable base data has been secured.

General disadvantages of Bayesian network modelling in NRM are:

1) Causal Inference; Inferring, sometimes in a biased manner, the initial causes and ongoing causes of modifications piece of or sets of data[9].
2) The inability to incorporate feedbacks or loops[10].
3) Difficulties associated with producing expert person derived knowledge and evaluating the means by which these experts arrive at their position[11].
4) Very poor at representing dynamic processes that are variable in an ongoing basis.

3) Why did the MDBA use the principles of Modified Bayesian Networks and then attempt to create a Unified Bayesian model for its Plan?

Models are useful for clearly articulating and documenting both the thinking and assumptions behind the understanding of a problem and approaches for managing a problem. A particular advantage of Bayesian Network models is that they can incorporate quantitative information (obtained from existing models, monitoring and from site-specific investigations) and, where data is missing, qualitative(and opposed to quantitative) information (obtained mostly from expert opinion).[12] This is an idealised description.

There were a number of separate types of modelling events occurring and being prepared for importing prior to their conscription into the final Unified Modified Bayesian computer engine of the MDBA's 2010 Plan. The primary modelling combined surface water flow, consumption records, historical weather records, climate change allowances, environmental water needs, earth science and economic data; the MDBA labelled these to be the so called "high confidence" inputs[13]. These data sets are standardised or able to be standardised with each other and rarely outright conflict

[8] Landscape Logic, technical report #14, March 2010. http://www.landscapelogicproducts.org.au
[9] Statistics and Causal Inference, Paul W Holland, Journal of the American Statistical Association, Vol 81, #386,
[10] INTEGRATED CATCHMENT ASSESSMENT AND MANAGEMENT CENTRE, "BAYESIAN NETWORK MODELS IN NATURAL RESOURCE MANAGEMENT" by Carmel A. Pollino (iCAM1) and Barry T. Hart (Monash Uni) available at http://icam.anu.edu.au/downloads/iCAM_BDNBrochure.pdf.
[11] INTEGRATED CATCHMENT ASSESSMENT AND MANAGEMENT CENTRE, "BAYESIAN NETWORK MODELS IN NATURAL RESOURCE MANAGEMENT" by Carmel A. Pollino (iCAM1) and Barry T. Hart (Monash Uni) available at http://icam.anu.edu.au/downloads/iCAM_BDNBrochure.pdf.
[12] http://icam.anu.edu.au/downloads/iCAM_BDNBrochure.pdf
[13] Guide to Proposed Basin Plan – Overview -pp.38.

with each other. The "high confidence" inputs originate from peak level Federal Government organisations and are spoken of in The Basin Plan in terms so that they considered above criticism. [14]

At the time of the preparation for the Basin Plan there was no unified modelling capable of producing accurate outcomes in a Basin wide complex anywhere in the world and the tools with which to manage The Basin in its breadth. A useful parallel here is the futile attempts at reconciliation of Einstein's Theory of General Relativity with Quantum Mechanics. There is no Grand Unifying Theory[15] there despite decades of work. In common with the above example, attempts at forced Bayesian Unification lead to increasingly complex distortions in an attempt to force a coherent synthesis (or linked and workable outcomes). The same problem exists in broadly environmental science when Modified Bayesian has been used to attempt the unification of wildly differing data sets[16]. There are no unifying environmental models available to combine the probabilistic nature of water scenarios with the broader terms of Basin health or river health, let alone agreement on what these terms actually mean[17]in a practical sense. The MDBA attempted to use an overall Modified Bayesian modelling under which to unify various other subordinate modelling results. Finally, outputs of the MDBA's Modified Bayesian modelling being framed within the constraints of the Water Act 2007 meant that calls for the MDBA to reconsider the "triple bottom line" are another case in point of this unification attempts failures.[18]

The MDBA has attempted to distance itself from these management issues[19], yet writes at length of the quality of its investigations, data sets and peer reviews[20] [21] but provides mentions of but almost no detail on the reviewers, methodology and environmental watering plan guidelines and implementation.

The Water Act 2007, Part 1, Section 3 - Object (of the Act) says:

b) To give effect to relevant international agreements (to the extent to which those agreements are relevant to the use and management of the Basin water resources) and, in particular, to provide for special measures, In accordance with those agreements, to address the threats to the Basin water resources; and

(c) In giving effect to those agreements, to promote the use and management of the Basin water resources in a way that optimises economic, social and environmental outcomes...

This section is not a broad "environ/socio/economic" triple bottom line often spoken of in the general media and community as well as Parliamentarians[22]. Section 3 (c) relates only to making

[14] Guide to Proposed Basin Plan – Overview -pp.37.
[15] http://en.wikipedia.org/wiki/Grand_Unified_Theory
[16] Why a Grand Unified Theory Is Neither Feasible nor Desirable, From Populations to Ecosystems Theoretical Foundations for a New Ecological Synthesis by Michel Loreau Princeton University Press, Princeton, NJ, 2010.
[17] Question directed to Michael Taylor, Rob Freeman and Fraser McLeod, MDBA meeting, Sofitel, Melbourne 28 October 2010.
[18] Murray Darling Boss resigns - http://www.abc.net.au/news/stories/2010/12/07/3086516.htm
[19] Guide to Proposed Basin Plan – Overview - pp.193.
[20] Guide to the proposed Basin Plan – Overview – Executive Summary pp.xvi and pp. xix
[21] Guide to the proposed Basin Plan – Overview – pp69
[22] Example #1 Blog - http://jennifermarohasy.com/blog/2011/02/parliament-to-finally-admit-water-act-unbalanced/
Example#2 Senator's web site - http://www.barnabyjoyce.com.au

those environments subject to International Agreements (the 18 icon sites) in (b) be optimised regarding their economic, social and environmental performance outcomes.

For example this may mean regional income from the employment of rangers, royalty's payable by eco-tourism operators, and the "non-economic value" of perceived social amenity from having a (subjective) pleasing environment that supports migrating water birds. The MBDA via the Water Act 2007 have decided that 18 of these icon sites are to be artificially regulated as a matter of national commitment[23].

The very real possibility exists that political and agenda manipulation can be also cloaked in the apparent mandatory provision of water to the environment since no coherent policy oversight currently exists that could act as a check and balance against misuse of the MDBA's powers[24].

4) What were the preconditions, academic inputs, assumptions and informational mishandling by the MDBA modellers?

Despite the objectives and outcomes listed on page 7 of The Guide, the Unified Bayesian modelling pivot point is Hydrology[25] with these data sets giving birth to the major error of the MDBA; that of an eventual Hierarchy Bias (see below) introduced so that the modelling will meet the MDBA's own internal (and as yet untested at law) interpretations Water Act 2007.

Not all uses of the forms of Bayesian Modelling were used inappropriately in the Basin Plan 2010. The Risk Assessment Approach[26] is a legitimate use for this type of modelling. Risk assessment is about probabilities and ranges of risk aversion.

Hierarchal Bias can be either an unintentional error a specific tool used in some other forms of modelling that use Monte Carlo methodology[27] that has application in business areas such as calculating levels of cost overrun, failure probability and scheduling or even determining the Basin's groundwater requirements[28]. However, in this case, broad Hierarchical Bias[29] appears to reflect a pre-conditional partiality and not an attempt to secure a scientifically sound set of scenarios, then meet the Water Act 2007 with the best sets of outcomes.

This is an understandable error in logic to treat the Basin as a primarily hydrological and other Basin areas as subordinate components, given the subject is after all the Murray Darling Basin waterways.

However, at the outset this means parameters are set to treat the Basin as a hydrology system first and foremost, with divisible, optional, plug in, plug out environments and functions attached to it. The Basin Plan 2010 starting point is a catastrophe of drought and uses a simplistic solution that water and water alone is the key to Basin health because the Basin Plan 2010 is largely wetlands

[23] Guide to the proposed Basin Plan – Overview - pp.123, pp.124.
[24] Guide to the proposed Basin Plan – Overview – Executive Summary pp.xi
[25] Guide to Proposed Basin Plan – Overview - pp.41
[26] Guide to Proposed Basin Plan – Technical Background Part 1, pp75, 76
[27] http://en.wikipedia.org/wiki/Monte_Carlo_method
[28] Guide to the Proposed Basin Plan - Overview, pp.76, pp.77, pp.78
[29] Guide to the Proposed Basin Plan - Overview, pp29.

biased; hence the final distilling of the Basin to 18 icon Sites. What appears to be a useful flow chart in the Technical Background, Part 1, page 361, shows how the MDBA drifts into error of logic by chunking off sections of the Basin environment that eventually become the 18 icon sites or "Environmental Museums" . Under this MDBA logic, the environment is no different to a large irrigating landholder who has 18 farm sites in various locations in the Basin. The same mental preconceptions gives rise to ideological and policy attitudes that varying individual environmental sites, rural communities, farmers and irrigators are easily detached to and from the whole of the Basin's riverine ecosystems[30]. The mindset of the MDBA towards our non-icon environments and communities is that they are expendable. An example of an MDBA mindset is this:

"Given the favourable labour market conditions across Australia...it could be expected that labour displaced by changes in agricultural output should have less difficulty gaining employment in other sectors or regions..."[31]

Another telling statement from the MDBA is:

"However, the Basin is most understood at a community level...Therefore, to enable the proposed Basin Plan to be more relevant to regional communities, the Authority has been divided the Basin into 19 regions."[32]

However, the 19 regions are the basis for SDL (re) allocations and are not a significant sectioning of the Basin for environmental management purposes other than from where to draw environmental water from to water the 18 Icon sites. This does not fit with claims of returning the Basin to health or recognising the community's understanding of the Basin at localised levels.

The MDBA assumptions also fail at a regional level with the massive brain trusts that reside in the local Catchment Management Authorities and like Bodies, the very organisations that the MDBA rated as having "low confidence" in their data.[33] See page 10, paragraph 5 of this document for an expansion of this. The MDBA appears to dispense credibility with one hand and withdraws it with the other as suits its situational agendas[34] [35].

A drift away from a view of balance begins at the very outset and errors of magnification begin to compound. The implications of these errors on the economic and social aspects are beyond this document but the skewing of results began early in the birth of the MDBA modelling. For instance Green activists were publically calling for 4,000 Giga litres per year (GL/y) environmental flows in 2007 and early 2008 before the MDBA "officially" report this number as being in their preferred range of environmental sustainable diversion limits (SDL) in The Plan's release in 2010.[36]

The MDBA itself is aware that the task it has undertaken is at the edge of feasibility and is unproven[37]. Forms of due diligence were claimed to be undertaken[38][39] but the lack of ability to

[30] Guide to the Proposed Basin Plan – Overview - Executive Summary, pp. xiv
[31] Guide to Proposed Basin Plan - Technical Volume 1, pp220.
[32] Guide to the Proposed Basin Plan - Overview, pp15
[33] Guide to the Proposed Basin Plan, - Overview - Executive Summary pp. xxxii
[34] Guide to Proposed Basin Plan – Overview-, pp37
[35] Guide to Proposed Basin Plan – Overview- pp191
[36] GetUp! Fact sheet, 2008. http://www.getup.org.au/files/campaigns/murray_factsheet.pdf
[37] Guide to the Basin Plan - Executive Summary - ppxi, and pp37.

integrate hard quantitative science is an acknowledged limitation by the MDBA[40]. This dilemma was resolved by the modellers rating information as having in their opinion a high, medium or low "confidence"[41]. A fuller explanation of "MDBA "confidence" ratings are in Section 5, page 10 of this document.

The term "confidence" is misleading, implying inherent and misrepresentative defects in the levels, or content of data itself, thus shifting focus away from the modeller's ability or lack of to integrate evidence into the modelling. Such is the biasing of information that volumes of hard (or quantitative) science are rated as so low in "confidence' that it can have little or no impact on modelling that produced The Plan's outcomes.[42]

Evidence of this is the MDBA itself identified some 30,000[43] environmental sites across the Basin. This number was reduced to 2,442[44] "key assets" the majority of which reside in just 18[45] sites. There are 88[46] monitoring points across all the waterways in the Basin serve to fill the knowledge gaps.

An example of a non-icon environment is Billabong Creek, revered in pioneer history and written lore as well as a poorly understood river system has no status as an Icon environmental asset or hydrological function.[47] While the Billabong Creek is listed in various tables as an asset, clearly no regard was taken for the kilometres wide ephemeral wetlands, depressions and hydrology links to Lake Urana, which is a unique perched lunette lake linked by shallow aquifers that is associated with the Billabong system. Further to this, Billabong Creek has no upstream dams, and therefore is unable to store environmental water, making this system useless in the eyes of the MDBA for the purposes of environmental watering even though parts of it carry have been engineered for inter-valley water transfers from the Murrumbidgee to the Murray.

Further academic assumptions supporting the economic value of 3,000-4,000 GL/y SDL environmental flows are similarly imprecise in their construction. [48] [49]

For instance, earlier versions of supporting documents were sought from the MDBA and supply refused; the use of the "draft"[50] label gives public deniability but still allows use of such material as a supporting information for the Plan. For instance the economics report by Professor Mark

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[38] Guide to Proposed Basin Plan – Overview-, pp35 and pp37
[39] Guide to Proposed Basin Plan – Overview - pp58
[40] Guide to Proposed Basin Plan – Overview - pp38.
[41] Guide to Proposed Basin Plan – Overview - pp37.
[42] Guide to Proposed Basin Plan- Overview - pp37, paragraph 1 &2. Dot points, pp38
[43] Michael Taylor, MDBA Meeting, Deniliquin, NSW, 13 October 2010 and MDBA Meeting, Sofitel Hotel, Melbourne 28 October 2010.
[44] Guide to Proposed Basin Plan – Overview - pp67 and chart pp70.
[45] Guide to Proposed Basin Plan – Overview - chart pp70
[46] Guide to Proposed Basin Plan – Overview - pp69 and chart pp70.
[47] Guide to Proposed Basin Plan – Overview - chart pp70
[48] Engineering a Crisis in a Ramsar Wetland: the Coorong, Lower Lakes and Murray Mouth, Australia. Richard Kingsford
[49] Using Environmental Valuation to Inform the Setting of SDLs for the Murray-Darling Basin Plan (DRAFT 10) August 2010 Professor Mark Morrison, Institute for Land, Water and Society, Charles Sturt University and Dr Darla Hatton MacDonald, CSIRO Ecosystem
[50] Using Environmental Valuation to Inform the Setting of SDLs for the Murray-Darling Basin Plan (DRAFT 10) August 2010, Professor Mark Morrison, Institute for Land, Water and Society, Charles Sturt University and Dr Darla Hatton MacDonald, CSIRO Ecosystem

Morrison, Institute for Land, Water and Society, Charles Sturt University and Dr Darla Hatton MacDonald, CSIRO Ecosystem Sciences is another case in point; the report title page reveals such an example of draft labelling and post-plan support creationism for the Environmental benefits of the MBDA's Plan. The date on Professor Morrison and Doctor Hatton's document in October 2010, only three weeks at best before the Basin Plan 2010 was released.

Professor Mark Morrison then released a press statement on Friday 19 November while the storm of the MDBA Plan was still publically raging. He said that *"we've done work over the years, valuing wetlands and we've never seen such high values before...but admittedly we've never done the Murray before...people had seen the degradation on the telly for such a long time, people were really prepared to fork out quite a lot of money and much more than in previous studies*[51]*"*

The wording in much of The Guide extensively uses the words "River Murray", which is a uniquely South Australian centric term, such that it is unheard of in Victoria, New South Wales and Queensland. This phraseology may well speak to the initial directions given by the Federal Water Minister in origins of the 2010 Plan[52] [53]. Further South Australian centric bias occurs frequently in the Plan 2010. For example, Impact Assessment for the SA River Murray below Lock 1 community profile reads like a brief for a tourism brochure.[54] No other non-South Australian community or non-icon environment receives such board post Plan positive valuation when this evaluation is compared to other Basin communities listed in this section of the Overview.[55]

The recently released correspondence from the CSIRO to Rob Freeman of the MDBA detailing the CSIRO's concerns with the manipulation of data and cherry picking of assumptions are further evidence of the undue haste and bias within the MDBA.[56] [57]

5) How were dissimilar or incompatible sets of information handled by the modellers?

Sources are the inputs to the Modified Bayesian modelling used by the MDBA. These inputs were rated at three levels[58]:

1) High Confidence
2) Medium Confidence
3) Low Confidence

[51] Professor Mark Morrison, ABC News, 19 November 2010.
[52] Penny Wong wants River Murray Federal Election debate with Barnaby Joyce - http://www.adelaidenow.com.au/news/
[53] http://www.climatechange.gov.au/~/media/Files/minister/previous%20minister/wong/2008/Media%20Releases/February/mr20080220.pdf - Media Release, Senator, the Honourable Penny Wong – Penny Wong launches children's book about River Murray
[54] Guide to Proposed Basin Plan - Technical Background - Part 3, pp1083
[55] Guide to Proposed Basin Plan – Overview - pp98
[56] Letter by Ian Prosser (CSIRO) to Rob Freeman (MDBA) 17 December 2010.
[57] Deniliquin Pastoral Times, Tuesday March 22. Volume 152 -#23 on pp10
[58] Guide to Proposed Basin Plan – Overview - pp38, paragraph 6 (dot points)

The simplest way in a Bayesian Network model is to rate the data sets with a multiplying figure to configure their impacts on the model. The actual rating methodology has not been released by the MDBA and given the extent of Unified Bayesian modelling used by the MDBA is unique (if flawed), it also represents a commercial potential for the MBDA. The MBDA has its own commercial interests at play here.

So, by way of example, High Confidence data sets could be said to be multiplied a 1.0, Medium Confidence datasets are multiplied by 0.5 and Low Confidence data by 0.1.

The MDBA readily recognises "high confidence" data and modelling tools borrowed from The CSIRO, Bureau of Meteorology, Australian Bureau of Agricultural and Resource Economics (ABARE), Australian Bureau of Statistics, Geoscience Australia, Department of Sustainability, Water, Environment, Water, Population and Communities. The reputation or reliability of these organisations is not questioned by this document; it is the application of their information by the MDBA into an unproven method of using a Unifying Modified Bayesian modelling and the over-reliance on statistical probability to arrive at its recommendations.

The "evidences" given pre-eminence or "High Confidence" is that which are scholarly articles; published and peer reviewed from and by academia[59][60]. However, the academic bias is affected by funding and ideology; what is written will reflect those funding submissions so worded as to be attractive to the politico/academic focus of the day.

However the Plan itself mentions much of the evidences from which practical management and hard data comes from State Government departments, like the Catchment Management Authorities in NSW. However since such data is for on the ground, practical management and not provided as a scholarly or as a Bayesian modelling resource, it is rated only of medium to low confidence and as such information's ability to affect the Plan's outcomes are deliberately hobbled by the MDBA's modellers. Once again, the MDBA plays a double sided hand; it rates regional data and evidences "medium" or "low" confidence, yet uses huge volumes of such information in its Technical Background volumes to fill pages, giving the appearance of inclusion into its Unified Modelling. Biased weighting assures this information cannot affect the Basin Plan's recommendations.

The MDBA pays lip service to this conundrum in the last paragraph of page 38 of The Guide[61] but continued to press ahead with its original timeline for production of the Plan. It is worth noting that the Technical Volumes were not available in hard print or electronically at the time of the Basin Plan Overview or for some weeks, it was November before an electronic version was available and December 2010 before print copies became available.

Datasets were rated by ease of insertion into the model. Troublesome datasets were discounted, with little consideration to the value of content and where small or no information existed, an MDBA approved expert was consulted for their opinion that did not have to be backed up with hard or "quantitative" science.

[59] Guide to Proposed Basin Plan – Overview - pp38
[60] Guide to Proposed Basin Plan – Overview - pp35
[61] Guide to Proposed Basin Plan – Overview - pp38, paragraph 7

6) What establishes the 18 icon environments as being that such that require intervention by Act or Regulation?

The first 16 of the 18 sites are places that are subject to the Ramsar Convention 1971[62]. This establishes these sites as those which must have intervention; not acting is not an option under the Water Act 2007[63].

The remaining two sites were identified as being at risk and are so mandated for protection by the Water Act 2007 under Part 1, Section 3, d (i & ii).

A map showing the icon sites is found on page 70 and a list of the Ramsar Convention sites is found on page 17 of The Guide to the Basin Plan.

No other sites or waterways are identified for protection and resource allocation under the MDBA's interpretation of the Water Act 2007 by way of the Basin Plan of 2010.

7) What are intervention options for the 18 identified environments?

The Guide to the Proposed Basin Plan, Technical Background, Part 2 devotes two and one quarter pages to this subject, pages 494 to 496.

It speaks of works without specifying what they are but the language implicit is diversion weirs because of the simple chart on page 495 that lists inundation reaches. When the Author asked the Chairman, Michael Taylor directly in question time at the MDBA Sofitel meeting for a further explanation, he did not refer to diversion weirs even then and spoke of "engineering works" that could be used as a socio/economic "bridge" for affected local communities in the Plan's transition phases in the Deniliquin community[64]. When it was pointed out that there are no local civil constructions firms of sufficient size and skill for these projects, Mr Taylor referred to local flow on benefits of accommodation and increased local spending.

As an example, the current Stevens Weir fish ladder project uses a drive/fly in workforce of 10 days on, 4 days off that is not entirely dissimilar to mining company practices. This kind of economics and logistics and the nature of these benefits accruable to recipient community is often called into question[65].

The diversion weirs and control works will serve to further alienate river sections from each other, disrupt migration of native fish and promote the breeding of undesirable aquatic pest species both fish and vegetative. Black water events will likely increase and native species in these 18 icon sites

[62] Guide to Proposed Basin Plan – Overview - pp17 & pp18
[63] Water Act 2007, part, Section 3, b.
[64] Authors own handwritten notes and voice recordings from that meeting.
[65] ABC News: Lucas meets resident groups over fly-in, fly-out workforce, :http://www.abc.net.au/news/stories/2011/03/18/3167475.htm

will be at high risk of receiving flows that are not synchronised with prevailing long term weather patterns. This de-coupling and picking of environmental water beneficiaries, therefore winners by species, risks the long term viability of the icon sites holistic longevity and fitness of purpose as mandated by The Water Act 2007.

There are further question regarding the long term environmental impacts of another 18 weirs on the Murray Darling system.

8) How does the Plan treat other non-icon environmental areas?

The Basin's non-icon environmental sites and statistics are[66]:

1) 30,000 wetlands for an area of 25,000 square kilometres.
2) 440,000 kilometres of rivers and creeks.
3) Total floodplain area of 60,000 square kilometres.
4) 78 groundwater systems.

These sites are in places covered by The MDBA's Plan but the large volumes of charts and information, especially in the Technical Volumes but listing there does not directly mean these sites needs are directly factored into management and modelling. In the Basin there are 88 "function" sites where river parameters are measured and the Plan assumes that these function sites will be sufficient to monitor the health of the rest of the Basin.

The MDBA has provided undertakings that no environmental flows will be allowed to go overbank or contribute to an overbank flow[67]. These area will be left unwatered unless by natural rainfall and flood occurrence. In fact the very weirs created for the icon sites may harm the non-icon sites as high water events will be subject to flood mitigation control attempts. It is quite possible no State or Federal Government will risk the wrath of widespread public opinion in a time of crisis that these weirs must be used for flood mitigation and management[68] [69] such as in a time of flooding crisis such as existed in Northern Victoria in the first quarter of 2011. By doing such mitigation, this may place the operators of the icon weirs and sites affected in breach of the Water Act 2007. The opposite scenario is possible; to comply with the Water Act 2007, the Icon site and weir operators may refuse entry of floodwater by citing unacceptable damage to a Ramsar Convention site.

Regarding riverbed incision and increased flow rates, tree measurements at the Edward River, Deniliquin indicate a river bed incise (cutting in) depth of around 2.5 metres since European

[66] Guide to the Proposed Basin Plan 2010 – Overview -, pp59 & pp60
[67] Michael Taylor, Rob Freeman, MDBA Community Meeting, Deniliquin, NSW, 13 October 2010 and Michael Taylor, ,MDBA Meeting, Sofitel Hotel, Melbourne 28 October 2010.(From Authors meeting notes and recordings of these meetings).
[68] Growcom concerned about Wivenhoe Dam releases - http://www.abc.net.au/news/stories/2011/02/15/3139050.htm
[69] ABC News: Queensland opens floods inquiry - http://www.abc.net.au/news/stories/2011/02/10/3135100.htm

settlement[70]. This means secondary creeklines and floodplains where significant river impacts are generated will be left needing a next level of flooding to reach earlier lower level overbank events. There are a number of useful pictures in the Guides: Overview, page 7 and Technical Background, Part 1, page 122 are classic visual textbook cases of river bank retreat and incision. For instance, this in turn will contribute to further blackwater events, threatening our native fish and causing erosion of the very "non-economic values" that the MDBA proposes will eventuate from adoption of its 2010 Plan.

With the MBDA treating the Basin assets in simplistic terms of hydrological function and flow, environmental degradations of these sorts cannot be addressed, let alone "health" restored on a wide scale.

There are other impacts of lessened flooding regimes to flood land outside of the icon sites. For example significant vegetation renewal, dispersal of debris, soil transfers and fish breeding events occurred in Brick Kiln Creek, Deniliquin as a result of the December 2010 flood[71] was vital to this secondary creek line on a riverine flood plain. There are thousands of kilometres of such waterways.

Sites where reliable flow data has been previously recorded in regulated parts of the Basin have been chosen to contribute the greatest of the reductions for water diversion to environmental use[72]. The 18 Icon sites are the beneficiaries of this water; although these non-icon contributors from widespread other parts of the Basin's environment also require this water, their water will be regulated away to use for the 18 icon sites only. The Water Act 2007 legislates this action.

In short, the MDBA Plan leaves the majority of the Basin that contain vast quantities of important environments high and dry and the smaller, difficult areas to local managements that cannot survive under the macro focused MDBA policy.

9) Has the Plan begun to be implemented by stealth?

Public evidence of stealth implementation is hard to come by. The level of partisan feeling generated by the Plan, the MDBA's poor public relations history and changing political fortunes has limited evidence collection.

There are two instances that can be offered:

1) The Bureau of Meteorology began to use the language of the Plan to describe river level heights in it bulletins. Flow heights were described as being at "equivalent to environmental flows..." after a number of usages such wording was removed from further releases[73].

[70] Authors ongoing research for academic studies.
[71] Report: "Brick Kiln Creek – A Conservation and Land Management Overview" 2010.
[72] Basin Plan, Technical Background Part 1, pp103
[73] Bureau of Meteorology - Minor Flood warning for the Murray River at Corowa, Issued at 11:56 am 23rd November 2010.

2) There are anecdotal indications that a number of civil engineering firms with suitable experience have already been approached to assemble costing for the building of the icon site's diversion weirs and are preparing these costing's at this time[74].

10) Authors Analysis: Is it likely that the MDBA's environmental claims are trustworthy?

The MDBA's claims for delivering wide environmental outcomes such as "return to basin health" and the inclusive environmental claims for the Basin as a whole are unlikely to be trustworthy. Even the 18 Icon sites and the water to be directed towards them and used in an artificial watering plan leave these sites at long term risk of failure, except for the picking of winners for certain select species. At best this is cause for disquiet. The points below are summary of the reasons for rating the environmental claims as **untrustworthy**:

1) The Basin Plan 2010 is a huge probability calculator, pivoting on hydrology only and reducing the entire Basin to component blocks as if they are options to be selected or discarded.
2) The Unified Bayesian modelling of the MDBA was used in ways that are unproven for such a complex subject. The model building process was likely rushed and then included only easily incorporated data sets.
3) The peer review process was limited to sections or windows of the Plan. The reviewer was likely not in possession of the fuller scope and range of the MDBA's analytical techniques.
4) The Water Act of 2007 is poorly written to be able to deliver positive Basin wide environmental outcomes.
5) Some classes of scientific data were rated so as to skew down their outcomes of the modelling.
6) Other classes of scientific data were interpreted in ways outside the data provider's recommendations.
7) The MDBA did not and still does not understand the scientific and environmental implications of their attempts to develop a unified strategy for Basin wide management based on probability and statistical likelihoods.
8) Large areas of the Basin's environment were effectively ignored by the MDBA modelling despite the MDBA claiming primacy as" the statutory agency that prepares and oversees a legally enforceable management plan[75]"
9) Water quality management is overly reliant on flow rates alone and simplistic calculations of base flow water quantities to calculate the Environmental Watering requirements of the Basin and linked 19 regional SDL reductions.
10) The Basin Plan 2010 appears to have elements of a "disaster plan[76]" level of environmental merit; at the point in a fourteen year drought in which it was written there are some justifications for its use as a last stand position. Environmental relevance and usefulness of the Basin Plan 2010 retreats quickly as conditions (have) changed.

[74] Source: conversations with civil contractor employees.
[75] Rear pages of MDBA Regional Summary(s) Volumes 3 to 21. Highlighted text boxes.
[76] Guide to the Proposed Basin Plan 2010 – Overview –Executive Summary pp. xiv

11) The MDBA is increasingly being shown to have had biased preconceptions and partisanism in various public statements and actions by the MDBA itself and its political directors.
12) The public advice by the Australian Government Solicitor refers frequently to Australia's international treaty obligations such as Ramsar and Bonn convention on migratory waterbirds in detail. However this interpretation of the water Act 2007 is vague and non-committal as to the how the Act as applies to the wider basin environments. Although the paper is titled "The Role of Social and Economic Factors in the Basin Plan", it spends an inordinate amount of space defending the reasons for water reform and the rationale for the 18 icon sites. This direction and format from the Solicitor reveals in hidden and biased agenda of the Act and the Basin Plan 2010 – environmental protection a for the 18 Icon sites as a first and foremost objective[77]; all else is a divisible, optional components that can be expendable if required. How can the Water Act 2007 and the Basin Plan 2010 claim to restore the basin to health with such limited focus and understanding?

13) Limitations of this document.

The Author does not possess the resources to more fully investigate and support the claims and conclusions arrived at in this document.

The MBDA has withheld access to much of its supporting documentation.

The Author does not intend this document to be a scholarly document for review in that sense.

This documents intention is to formalise the Author's opinions that were formed through public discussions and information exchanges at open meetings, private discussions with individuals, reading of MDBA's Guides and Technical Volumes as well as contributions of information discovered by some parts of the Authors own academic studies.

14) Position Statement by the Author

At the time of this document's preparation, the Author is a member of the Ecological Society of Australia and a (student) Member of the Environmental Institute of Australia and New Zealand.

The Author has no membership of or formal affiliation with any political party, special action interest group or commercial enterprise that has direct involvement in supporting or opposing the MDBA Basin Plan 2010.

The Author received no funding to produce this document or inducements to arrive at the conclusions and opinions expressed in this document. This document is the Authors original work and intellectual property rights and copyrights are reserved.

[77] Released advice from the Australian Commonwealth Solicitor, " The Role of Economic and Social Factors in the Basin Plan" Released 04 April 2011 via ABC online news: http://www.abc.net.au/news/documents/scribd.htm?id=40202825&key=key-10jhzy5h167m71kear8j