



# Finding the balance

Final report of the Northern Basin Advisory Committee

9<sup>th</sup> October 2016

NBAC would like to acknowledge Ross Krebs, advisor to NBAC and a gentleman, whose passion for water and fairness shone through. His wise counsel, delivered with the customary calm demeanour, always hit the mark. He is sadly missed, fondly remembered.



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7-10-2016

Dear Neil

I have much pleasure submitting the Northern Basin Advisory Committee final report.

The committee are a highly respected group of people with varying perspectives on basin reform from throughout the Basin and have worked diligently throughout the last four years trying to find positive solutions to what has been a difficult Northern Basin Review.

The Authority has a much better understanding of the Northern basin but much work still needs to be done before we can say we have a complete understanding of the intricacies of the river systems in the north.

After two former water reform processes in the Northern basin the committee trust your Board will decide on an outcome that will prevent future Governments starting reform number four.

It has become clear to deliver the Basin plan objectives the Authority will need to implement the Committees tool kit and establish valley based committees to combine local knowledge, environmental expertise, adaptive management and broader natural resource management objectives.

The committee have delivered a unanimous report which required significant negotiation to achieve and I thank the committee for their perseverance.

Thank you

A handwritten signature in dark ink, appearing to read 'Mal Peters', is written over a light blue horizontal line.

Mal Peters

Chairman Northern Basin Advisory Committee



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## INTRODUCTION

This report documents why the Northern Basin Advisory Committee (NBAC) was set up, what we were asked to do, and our resulting advice and recommendations to the Murray-Darling Basin Authority (MDBA), governments and communities.

The Executive Summary of this document lists our key messages and high priority recommendations. One of NBAC's most important recommendations is implementing a Toolkit of complementary measures. The Toolkit section of this document provides a detailed list of measures and guidelines for building and implementing the Toolkit, including the use of adaptive management and facilitation of local Toolkit Implementation Committees (TICs). The final section contains a full list of NBACs recommendations and the detailed rationale for them.



## EXECUTIVE SUMMARY

The impact of the Murray-Darling Basin Plan on Northern Basin communities is the primary concern of the Northern Basin Advisory Committee (NBAC).

*(See Appendix I NBAC membership and Appendix II Terms of Reference).*

Governments have a duty of care to ensure that the Murray-Darling Basin is managed to achieve an improved balance between river health and socioeconomic needs, and that agricultural productivity and associated value-adding are maintained by intelligent water management. In conjunction, town water supplies, stock and domestic water, and recreational, industrial, commercial, Aboriginal, cultural and aesthetic outcomes should also be improved by the Basin Plan.

The Murray-Darling Basin Authority (MDBA) Northern Basin Review has involved investigation and analysis of environmental science, modelling and socioeconomic impacts. NBAC has worked to enhance the results of the Review by providing detailed community input and considered advice to MDBA and governments over the past four years.

The improved knowledge base has established that the current Basin Plan cannot by itself achieve a viable future for Northern Basin communities. Therefore, NBAC contends that ***the Basin Plan will succeed only if:***

1. **The Toolkit is implemented.** We know that the extreme variability of the Northern Basin means that 'just adding water' is insufficient to maintain river, wetland and floodplain health. Some of the flow targets in the Plan cannot be met through water recovery alone: a more intelligent, holistic approach to environmental management is required. NBAC has developed a Toolkit of complementary measures that must be adopted, informed by a transparent triple bottom line assessment of water recovery scenarios. Environmental outcomes will be undermined unless additional tools and investment are provided and implementation is guided by local Toolkit Implementation Committees (TICs).
2. **Structural adjustment** is provided. Some communities in the Northern Basin have suffered significant economic impacts from water buyback. Job-restoring structural adjustment is essential. Recognising that most structural adjustment to date has not provided real jobs, an innovative new approach must be employed involving local people developing local solutions.
3. The **hydrologic models** are correct, fit for purpose and produce numbers that are credible and defensible. If NBAC lacks confidence that risks have been quantified and subsequent results qualified in determining sustainable diversion limits (SDLs), communities are unlikely to be supportive of the Basin Plan. A 2013 auditor's assessment of CAP model against recorded data identified a standard error of 380 GL in the five Northern Basin valleys<sup>1</sup>. This is in the same order as the 390 GL initially proposed to be recovered.
4. **The link between flow regimes and ecological outcomes is fully explained.** Current scientific evidence does not convincingly support a direct relationship, with uncertainties and limitations that

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<sup>1</sup> Barwon-Darling Valley Independent Audit of Cap model draft report, Brewsher, January 2013



need to be explained. This relationship is a fundamental underpinning of the Basin Plan. It is the most common science-related question asked by communities.

5. **The passage of environmental flows preserves their integrity.** Under current rules, environmental water leaving one catchment is then subject to the rules of its receiving catchment, which compromises the achievement of environmental outcomes downstream. A solution to this problem must be found, ideally through the negotiation of 'give and take' arrangements by water users including CEW, coordinated by TICs.
6. **The rationale for water recovery is convincingly explained.** Water recovery is a critical issue. The model assumptions for within catchment recovery are not transparent. The apportionment of the shared reduction by catchment and sub-catchment is still uncertain. At this stage it is not clear how the socioeconomic research has been factored into the locations, volumes and classes of water to be recovered. Water purchases to date have not been strategic or guided by socioeconomic considerations.
7. **There is genuine cooperation and commitment from Basin governments** in implementing the Basin Plan. Communities expect governments to work together to implement water reform. Throughout history we have seen repeated announcements from governments about cooperation, yet in practice this is rarely realised. The result is missed opportunities, inadequate resourcing and blame shifting. This ultimately puts at risk the ability to achieve the objectives of reform. NBAC recommends that the Basin Plan be treated as an excellent opportunity for a new collaborative framework with MDBA in a lead coordinating role.
8. **Compliance is strictly enforced.** Current compliance regimes are poorly resourced and ineffective. Non-compliance directly affects the ability to achieve environmental outcomes and fails to provide accountability for taxpayer funds. There is no indication from the responsible government agencies that positive change is imminent, or even being considered. The potential to derail the Basin Plan is glaringly obvious.
9. **There is a framework for local decision-making.** The concept of localism must be put into practice and resourced in the implementation phase. Effective implementation of the Plan is dependent on genuine cooperation and collaboration between community groups and governments. NBAC knows that different tools will be applicable in different valleys and that local knowledge is the best way to determine which tools to apply and where. NBAC recommends government facilitation and support for local decision-making via Toolkit Implementation Committees (TICs) rather than government regulation or control. In this way the community can be confident that the Plan has the best chance of delivering its intended outcomes.

It is imperative that this **third stage of the water reform process**, as initiated by COAG, is successful. For two decades the security and reliability of rural water has been mired by uncertainty, eroding confidence and stifling investment. NBAC recommends that the matters outlined above are resolved by our politicians and all responsible government agencies in partnership with Northern Basin communities.



## KEY RECOMMENDATIONS

In the early stages NBAC established its goals as:

- Positive socioeconomic impacts
- Best environmental science
- Sensitive water recovery and efficient use
- Aboriginal cultural flows
- Effective monitoring and evaluation
- Confident communities

NBAC makes the following key recommendations about how to achieve these goals through good water policy and management. A full list of recommendations, and the rationale for them, is included in a later section of this report.

### HIGH PRIORITY, DO NOW (HN)

HN1 NBAC recommends that MDBA develops and implements a Toolkit of complementary measures to ensure that the Basin plan delivers the best mix of environmental, economic and social outcomes. The Toolkit, based on the NBAC model, should:

- address the limitations of water recovery as identified in the Northern Basin Review (NBR)
- enhance environmental outcomes especially with regard to low flows in the distributary system in the Lower Balonne, the Barwon-Darling and the Bogan Rivers
- be based on an adaptive management approach
- have its environmental outcomes and potential savings quantified in determining sustainable diversion limits (SDLs)
- be supported by all levels of government

HN2 NBAC recommends that priorities for water recovery be:

1. works and measures
2. on farm water use efficiency
3. adaptive flow management
4. market based mechanisms
5. purchases from willing sellers

Infrastructure programs should:

- be continued for as long as possible
- have increased flexibility in their value per megalitre
- have all funds originally allocated to them retained for that purpose

HN3 NBAC recommends that:

- the Commonwealth revises its water recovery strategy to take into consideration the new social and economic information at a community level
- in catchments where further buyback may be required, the Commonwealth water recovery strategy should target locations, classes and volumes of water that have the least negative social and economic impacts





- buyback in highly vulnerable communities should be minimised until the hierarchy set out in Recommendation HN2 is properly resourced and exhausted, and Recommendation HN4 accompanies any buy back
- HN 4 NBAC recommends that further investment in structural adjustment be targeted to communities that have been identified as impacted by water recovery by the social and economic work, focusing on:
- assistance for individuals to re-skill, relocate and find new work
  - assistance for businesses to build capacity and diversify
  - low interest loans to restructure and adapt
  - exit strategies and relocation costs
- HN5 NBAC recommends that MDBA facilitates and supports permanent local Toolkit Implementation Committees (TICs) with community and government representation in each catchment across the Northern Basin. The establishment of a Northern Basin Plan Implementation Oversight Committee with community representation for liaising with all government jurisdictions is also recommended.
- HN6 NBAC recommends that MDBA uses a robust, transparent, publicly available and defensible methodology to explain to the community how a triple-bottom line decision will be made.
- HN 7 NBAC recommends that the Authority clarifies how it intends to incorporate Indigenous peoples' values and use of water in the outcomes of the Northern Basin Review and the decision about SDLs.
- NBAC urgently requests the MDBA to advise the results and any subsequent recommendations from the National Cultural Flows Research Project and where and how these will fit with the NBR.
- HN8 Due to the disparity in cap factor (28 GL) application to water recovery assessments, huge doubt and uncertainty over recovery targets exists. NBAC recommends that the issue be dealt with immediately through MDBA's adoption of a conversion factor that is consistent with water plan assumptions.
- HN9 NBAC recommends that MDBA finalizes and publishes cap audit reports from 2012, 2013 and 2014 as a matter of urgency to increase community confidence in water plan performance.
- HN10 NBAC recommends that:
- the NSW floodplain harvesting policy implementation process be completed as soon as possible so that reliable information can be incorporated in the modelling
  - MDBA improves estimates of BDLs and corrects any errors identified
- HN11 NBAC recommends that MDBA co-ordinates a whole-of-government integrated monitoring, evaluation, reporting and improvement (MERI) framework that includes monitoring and



evaluation that is sufficiently detailed and continuous at the catchment level to measure whether the objectives of the Basin plan are being achieved.

## HIGH PRIORITY, DO SOON (HS)

- HS1 NBAC recommends that the terms of reference of the Murray-Darling Basin Authority (MDBA), as defined in the Water Act 2007, be amended to enable it to engage in the coordination of much broader natural resource management than just water recovery.
- HS2 NBAC recommends that CEW investigates options to maximize its delivery of environmental water by implementing a flexible trading regime, including the purchase and sale of temporary water and other appropriate market mechanisms.
- HS3 NBAC recommends that governments establish a committee of review to identify and understand local impacts of past policy decisions, such as those affecting Collarenebri, so that they can be avoided in the future. This committee must meet at least once in Collarenebri.
- HS4 NBAC recommends that there be a review of and increases to the strategic gauging station network, and greater strategic use of telemetry to gain a better understanding of inflows, river flows, transmission losses and extractions. This process should be conducted in collaboration with the TICs.
- HS5 NBAC recommends that Water Sharing Plan, Water Resource Plan/Resource Operations Plan and Basin Plan objectives and environmental water requirements at the catchment level be aligned as part of the accreditation process.
- HS6 NBAC recommends that the Productivity Commission is adequately resourced and has acquired appropriate water expertise to fulfil its role in auditing the implementation of the Basin Plan, including the review of state water plans to ensure they are accredited according to proper process.



## THE REASONS FOR THE NORTHERN BASIN REVIEW

Irrigation in the Murray-Darling Basin was promoted by governments as an economic development initiative. The result was unequally distributed over-allocation of a limited and highly variable resource, gradually spreading North from the earliest developments in the Southern Connected Basin. From 1994, the focus changed to achieving an environmentally sustainable future. Progress was slow until the 'big dry' of 1997 to 2009 brought the deteriorating condition of the Basin into sharp focus. This resulted in bipartisan support for the largest river restoration program in Australian history.

The Northern Basin is fundamentally different from the Southern Connected Basin in these respects:

- Rainfall is more variable and summer dominated, with no reversal of seasonality as in the South
- Evaporation is much higher and flows are unpredictable, with long periods of little or no flow
- There are fewer and smaller headwaters storages, more unregulated rivers, and much greater investment in private off-stream storages on farms
- There is a relative lack of peer-reviewed science for the Northern Basin rivers, wetlands, vegetation communities and floodplains

Therefore, Southern-focused science does not readily or accurately transfer to the Northern Basin. The post-Guide Chairman of MDBA, Craig Knowles, gave a commitment that the Basin Plan will reflect and accommodate this and other important differences. He introduced the concept of localism to ensure genuine community engagement, and established NBAC as a conduit between MDBA and Northern Basin communities. Craig Knowles also committed the MDBA to a Northern Basin Review (NBR) as an alternative to the Southern-focused sustainable development limit (SDL) adjustment process and as a way of ensuring that relevant new science informs the final Northern Basin SDLs.

### Northern Basin communities

The rivers in the Northern Basin and the landscapes through which they flow are important for the jobs, businesses and lifestyles of the people who live along them. We need to know how healthy they are, whether they are getting better or worse, and what we should be doing about any problems. Communities with a range of sizes and characteristics are located along the rivers of the Condamine-Balonne, Border Rivers, Gwydir, Namoi, Macquarie and Barwon-Darling valleys. They respond to change in a variety of ways.

Agricultural production dominates local economies, with significant contributions from grazing, dryland farming and irrigation. Typically, irrigation uses less than 2% of agricultural land and produces about one third of farm gate income and about half of the profit from farming overall. This has significant flow-on effects for local economies. In general terms, the smaller the town and district, the larger the contribution of irrigated agriculture to its economy and social structure. Headwaters cities like Toowoomba have well diversified economies, whereas small towns such as Dirranbandi and Collarenebri are highly irrigation-dependent. Many others lie somewhere in between.

Northern Basin communities do not respond immediately to declines in the value of irrigated production. Rather, there is a gradual adjustment, often with quite a long lag factor. Irrigators who are compensated and non-irrigators who aren't have differing abilities to adjust to changes in circumstances. Business owners



impacted by sale of water to the government have no means of replacing that lost income, and can easily reach a tipping point. A skilled worker in a sought-after occupation who is renting accommodation and has no children at the local school is much more able to relocate than a semi-skilled or unskilled worker with children and a house they own or are paying off but cannot sell. For such people, living in a declining rural community has particular challenges.

The Northern Basin has a very high population of Aboriginal people who have a strong cultural connections to water. While the Basin Plan will result in increased flows, there are also potential negative impacts from reduced mainstream employment opportunities and subsequent longer term declines in services, health, social wellbeing and future prospects in highly irrigation dependent communities affected by the Plan.

Different community sectors, including Aboriginals, floodplain graziers and others such as bird watchers, fisherman and tourist groups who are reliant on or concerned about catchment condition, are looking to the Basin Plan to improve river health so they can continue to enjoy satisfying lifestyles and the values that healthy rivers provide.

The Northern Basin Review (NBR) has identified that there is still pain in some community sectors as a result of development in terms of reduced opportunity and reliability. The Basin Plan creates a perfect opportunity to establish strong local input through TICs to work on improving the full range of outcomes for all community sectors with a material interest in the Northern Basin's water.

Based on NBAC's goals, listed on page 4 of this document, the following Toolkit of additional measures has been developed as a fundamental requirement for a successful Basin Plan.

## THE TOOLKIT

The Northern Basin Toolkit is a *collection of measures in addition to water recovery under the Basin Plan* that can contribute to the environmental objectives of the Plan while minimising negative economic and social impacts. A partnership between a range of Commonwealth and state agencies, local governments and industry and community groups is required for the effective implementation of the Toolkit.

*NBAC recommends that the terms of reference of the Murray-Darling Basin Authority (MDBA) be amended to enable it to engage in the coordination of broader natural resource management than just water recovery.*

### Background

The Northern Basin Review research projects show conclusively that *the objectives of the Basin Plan cannot be met solely by setting sustainable diversion limits (SDLs)*. There is not enough water to meet the Northern Basin's environmental and cultural water needs without major adverse social and economic impacts on its people. In addition, rules and patterns of extraction make it hard to achieve some environmental targets no matter how much water is recovered. A much broader approach than water recovery only is required – hence this Northern Basin Toolkit.

The Toolkit is intended to efficiently maximise environmental outcomes while minimising the need to recover more high impact water from consumptive users. The efficiency principle applies equally to environmental and consumptive water.





While the Commonwealth is the lead agency, the states are responsible for many natural resource management programs and projects. It is crucial that they are informed by community engagement and advice, leading to serious consideration of the inclusion of non-flow related measures in the state water plans as they are revised and submitted for accreditation. Where possible, shortfalls that the Basin Plan does not address should also be considered. Failure in this regard would see many millions of dollars wasted.

The Toolkit is also intended to enable a confident Northern Basin community by incorporating local solutions through catchment-based Toolkit Implementation Committees (TICs) that local residents know will work. It is widely recognised that genuine community engagement (localism):

- taps into practical knowledge and experience that enhances planning processes and operational delivery; and
- improves community confidence in the processes and reduces the opposition that makes it more difficult to implement plans effectively

*Understanding and acceptance of the Basin Plan by Northern Basin communities is in the best interests of governments and should be a key goal for everyone involved.*

## The Toolkit

*Note: some measures will suit individual valleys and sub-catchments better than others; particular circumstances may require a tailored combination of one or more of the measures below.*

## MARKET BASED MECHANISMS

- 1.1. Enhance real time event-based flow management
  - 1.1.1. Empower TICs to oversee the decision-making process
  - 1.1.2. Implement a timely process for decision-making about when environmental water is purchased or sold
- 1.2. Enable temporary trade of environmental water
  - 1.2.1. Create a pre-approvals process for temporary trades
  - 1.2.2. Establish flexible trading mechanisms to obtain water in a specific event at a specific location under clearly specified terms and conditions
    - 1.2.2.1. Introduce open call options with pre-established triggers eg after a 12 month no flow period<sup>2</sup>
    - 1.2.2.2. Establish a market based reverse tender process for purchasing environmental water on a temporary access basis
    - 1.2.2.3. Establish a market based reverse tender process for purchasing environmental water from on-farm storages
- 1.3. Enable Barwon-Darling account water to be acquired by the Commonwealth and eligible for trade

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<sup>2</sup> For example, a contract might state that CEWH has access to an entitlement holder's share of the water in a particular flow event if a flow event of at least the same volume has not occurred during the six months preceding the commencement of this flow; in effect, CEWH is buying water for the environment in situ and when it is most needed rather than permanently acquiring a full entitlement



## MECHANISMS TO USE EVENT-BASED OPPORTUNITIES

- 1.4. Enable arrangements for storage and release of CEW water from both public and private storages to enhance environmental and stock and domestic low flow outcomes
- 1.5. Enhance communication processes to ensure time-relevant notification of accurate information about flow events
- 1.6. Improve and manage the compliance regime to ensure that the reliability of all water is protected<sup>3</sup>

## MAXIMISATION OF NON BUY BACK OPTIONS

- 1.7. Continue to co-invest in on farm water use efficiency to provide more water for the environment and for production<sup>4</sup>
- 1.8. Invest in infrastructure that contributes more water to the environment and/or achieves environmental outcomes with less water
  - 1.8.1. Identify and resolve constraints to the delivery of environmental water and recognise associated offsets
  - 1.8.2. Investigate and implement recovery measures (eg piping projects, wetlands reconfiguration), to enhance environmental flow volumes
  - 1.8.3. Construct environmental works and measures (eg bifurcation weirs, structures to keep environmental water in the intended watercourse), to ensure that environmental water can be directed to where it is most needed
  - 1.8.4. Install instream infrastructure that enhances fish passage, persistence of strategic waterholes and general environmental outcomes
- 1.9. Invest in environment-enhancing non flow related measures<sup>5</sup>, including but not limited to:
  - 1.9.1. Eradicate European carp and other invasive fish species
  - 1.9.2. Enhance the water filtration capacity and bank binding function of riparian zones
  - 1.9.3. Contain salt in areas of dryland salinity
  - 1.9.4. Stabilise beds and banks of erosion-prone waterways
  - 1.9.5. Establish off stream stock watering points
  - 1.9.6. Control environmentally destructive weeds such as lippia, water hyacinth
  - 1.9.7. Rectify cold water pollution from regulated storages to improve downstream conditions
  - 1.9.8. Refurbish, desilt and modify weirs for more effective fish and environmental flow passage

## EMPLOYMENT OF ABORIGINAL PEOPLE FOR LOCAL ROLES

- 1.10. Aboriginal people are long-term residents of the Northern Basin with close ties to country and water. They have a particular role to play in the management of environmental water for cultural flows and future economic opportunities. NBAC considers that CEW should employ

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<sup>3</sup> This assumes added importance because extra environmental water in flows will tempt those who are prepared to manipulate the system; an associated consideration is that illegal diversions have third party impacts on entitlement holders downstream

<sup>4</sup> This is vitally important in highly irrigation-dependent communities where buyback has major economic and social impacts

<sup>5</sup> Broadly-based natural resource management activity is guided by where the dollars spent can achieve the best outcomes; governments have progressively defunded programs such as Caring for our Country, and areas where investment produced excellent results are now regressing to their former states



Aboriginal people on the ground. Employment in conjunction with enhanced ecological outcomes has implications for:

- 1.10.1. Implementation of the recommendations of the National Cultural Flows Research Project
- 1.10.2. Participation in TICs
- 1.10.3. Structural adjustment including preferred tendering and Aboriginal employment strategies that provide economic opportunities for Aboriginal people

## PROTECTION OF LOW FLOWS AND ENVIRONMENTAL WATER

- 1.11. Practically and verifiably protect all CEW and other environmental water to ensure that it reaches its intended destination within the timeframe and at the volume anticipated, supported by measures such as an event-by-event loss accounts and 'give and take' solutions negotiated by TICs
- 1.12. Eliminate third party impacts associated with the delivery of environmental water
- 1.13. Purchase small sleeper licences on the Barwon-Darling and intersecting streams to minimise the risk of their activation adversely affecting the low flow regime

## TARGETED RATHER THAN INDISCRIMINATE BUYBACKS

- 1.14. In sections of catchments where further buyback may be required, target locations, classes and volumes of water that have the least economic impact
- 1.15. Where negative economic impact cannot be avoided, provide compensation for affected businesses and organisations

## Guidelines for building & implementing the Toolkit

The measures in the Toolkit above should be guided by:

- A. All mechanisms<sup>6</sup>, current and emerging, to achieve long term sustainability in the Northern Basin must be investigated and adopted in line with their potential to contribute to the overall triple bottom line objective.
- B. There should be no third party impacts on dependent communities as documented in the Intergovernmental Agreement (IGA).
- C. The Basin Plan is for the public good, and its cost is therefore a community service obligation of government.
- D. Equivalent degrees of rigour must be applied to environmental and socioeconomic analysis.
- E. Recovered water must retain its original characteristics.
- F. New or additional entitlements must not be created from savings made by infrastructure works or system management enhancements.
- G. Monitoring and evaluation must be robust enough to allow confidence in the assessment of the level of achievement of Basin Plan objectives.

## Use adaptive management to involve communities in implementation

Understanding and acceptance of the Basin Plan by Northern Basin communities is in the best interests of governments and should be a key goal for everyone involved.

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<sup>6</sup> Not just water recovery; a transparent process (e.g. multi-criteria analysis) that acknowledges assumptions and value judgments must be used to reconcile environmental and social and economic considerations.



*NBAC recommends that the implementation of the Toolkit should be guided by the principles of adaptive management.*

The definition of adaptive management in the Basin Plan states that it is taken to include the following steps;

- a) Setting clear objectives
- b) Linking knowledge (including local knowledge), management, evaluation and feedback
- c) Identifying and testing uncertainties
- d) Using management as a tool to learn about the system and change its management
- e) Improving knowledge
- f) Having regard to the social, economic and technical aspects of management

All these principles should include flexibility for progressive change based on local understandings.

This is a widely accepted definition and is useful in providing general guidance for implementation. However, it does not deal with the detail of how adaptive management should be done, or the processes and attitudes that need to be in place before the rivers in the North can begin to be managed in an adaptive way.

There are practical steps that MDBA can take to achieve the adaptive application of the Toolkit and the Basin Plan in partnership with the communities of the Northern Basin.

## Establish a network of local Toolkit Implementation Committees

It is recommended that permanent Toolkit Implementation Committees (TICs) be established in each catchment, with community and government representation, to provide a framework for local decision-making about Basin Plan and Toolkit implementation. NBAC is concerned that successful adaptive management of natural resources is not happening. More detail on how this approach should be applied in the Northern Basin is provided in Appendix III.

## Conclusion

It is vital for all governments and policy makers to acknowledge the necessity for a Toolkit of measures to achieve the Water Act's objective *"to promote the use and management of the Basin water resources in a way that optimises economic, social and environmental outcomes."* It is now broadly understood that the Basin Plan's singular focus on increases to environmental flows ('just add water') is only one aspect of long term environmental sustainability that can by itself be, at best, partially successful and result in poor 'value for money' outcomes. An approach that includes the other factors that influence environmental outcomes is required. In this respect, the Northern Basin Toolkit is the Northern equivalent to the Southern Basin SDL offset process, and is equally deserving of long term resourcing and action.





## RECOMMENDATIONS AND RATIONALE

NBAC has spent the last four years advising MDBA and others about Basin Plan development and preparing recommendations for the next stage of Plan implementation. This full list of recommendations is aimed at:

- Assessing trade-offs and achieving a triple bottom line outcome
- Recognising and addressing the social and economic impacts of water recovery
- Recognising and protecting the cultural, social and economic benefits of environmental flows
- Strengthening Aboriginal cultural connections
- Improving hydrologic modelling
- Ensuring effective, long term monitoring and evaluation
- Researching the connection between flow regimes and ecological outcomes
- Strengthening communication and engagement through localism

### HIGH PRIORITY, DO NOW (HN) RECOMMENDATIONS

	Recommendation	Rationale
HN1	<p>NBAC recommends that MDBA develops and implements a Toolkit of complementary measures to ensure that the Basin plan delivers the best mix of environmental, economic and social outcomes. The Toolkit, based on the NBAC model, should:</p> <ul style="list-style-type: none"> <li>• address the limitations of water recovery as identified in the Northern Basin Review</li> <li>• enhance environmental outcomes especially with regard to low flows in the distributary system in the Lower Balonne, the Barwon-Darling and the Bogan Rivers</li> <li>• be based on an adaptive management approach</li> <li>• have its environmental outcomes and potential savings quantified in determining SDLs</li> <li>• be supported by all levels of government</li> </ul>	<p>Just adding water is not enough: environmental objectives cannot be achieved without complementary measures.</p> <p>The Northern Basin Review (NBR) indicates that many critical flow objectives, particularly low flows in the Barwon-Darling, cannot be met under any of the water recovery scenarios that have been tested.</p> <p>Non flow related measures can often achieve the same or better environmental outcomes at significantly less cost.</p> <p>The toolkit approach will ensure that MDBA's SDL recommendations incorporate all available opportunities to achieve environmental outcomes while minimising social and economic impacts.</p> <p>NBAC notes that the NBR provides modelled results: it is important that there is ongoing monitoring and evaluation to ensure there is a real improvement in low flow outcomes.</p>



	Recommendation	Rationale
HN2	<p>NBAC recommends that priorities for water recovery be:</p> <ol style="list-style-type: none"> <li>1. works and measures</li> <li>2. on farm water use efficiency</li> <li>3. adaptive flow management measures</li> <li>4. market based mechanisms</li> <li>5. purchases from willing sellers</li> </ol> <p>Infrastructure programs should:</p> <ul style="list-style-type: none"> <li>• be continued for as long as possible</li> <li>• have increased flexibility in their value per megalitre</li> <li>• have all funds originally allocated to them retained for that purpose</li> </ul>	<p>Buy-back has some negative social and economic impacts for irrigation dependent communities, making it the least preferred option.</p> <p>Works and measures can achieve the same or improved environmental outcomes with less water.</p> <p>On-farm water use efficiency is a win for both the environment and production.</p> <p>Adaptive flow management provides maximum flexibility in highly variable systems.</p> <p>During the period of the NBR, NSW has shifted some of the budget originally allocated for infrastructure programs in the North to other projects in the South of the state.</p>
HN3	<p>NBAC recommends that:</p> <ul style="list-style-type: none"> <li>• the Commonwealth revises its water recovery strategy to take into consideration the new social and economic information at a community level</li> <li>• in catchments where further buyback may be required, the Commonwealth water recovery strategy should target locations, classes and volumes of water that have the least negative social and economic impacts</li> <li>• buyback in highly vulnerable communities should be minimised until the hierarchy set out in Recommendation HN2 is properly resourced and exhausted, and Recommendation HN4 accompanies any buyback</li> </ul>	<p>Well informed recovery can have positive results for communities by minimising impacts.</p> <p>Modelling results demonstrate that how water is recovered is just as important to achieving environmental outcomes as the volume.</p> <p>The original Basin Plan didn't have social and economic information at a high enough resolution to identify impacts at a community level before water recovery was undertaken.</p> <p>We now have much better social and economic information as a result of the Northern Basin Review, which clearly identifies the most vulnerable communities.</p>



	Recommendation	Rationale
HN 4	<p>NBAC recommends that further investment in structural adjustment be targeted to communities that have been identified as impacted by water recovery by the social and economic work, focusing on:</p> <ul style="list-style-type: none"> <li>• assistance for individuals to re-skill, relocate and find new work</li> <li>• assistance for businesses to build capacity and diversify</li> <li>• low interest loans to restructure and adapt</li> <li>• exit strategies and relocation costs</li> </ul>	<p>Some communities that have received assistance under the MBD regional economic development program have not been and will not be affected by water recovery: others have much greater needs.</p> <p>Each community has a different social and economic profile that dictates the most effective assistance for it.</p> <p>Communities are best placed to advise what sort of assistance they need: 'one size fits all' programs do not work.</p> <p>Academic research and best practice indicate that small business is the principal driver of regional economies.</p> <p>In some affected communities, leaving is the best option, which is only viable if assistance is available.</p>
HN5	<p>NBAC recommends that MDBA facilitates and supports permanent local Toolkit Implementation Committees (TICs) with community and government representation in each catchment in the Northern Basin. The establishment of a Northern Basin Plan Implementation Oversight Committee with community representation for liaising with all government jurisdictions is also recommended</p>	<p>The question most often asked at local meetings is: why is the Basin Plan necessary and what is it trying to achieve?</p> <p>Effective implementation of Toolkit measures is best achieved by tapping into local knowledge and experience.</p> <p>TICs would be best placed to deal with operational issues involving tradeoffs.</p> <p>An Oversight Committee could regularly assess the performance of the Plan in the Northern Basin and give policy advice based on adaptive management.</p>



	Recommendation	Rationale
HN6	NBAC recommends that MDBA uses a robust, transparent, publicly available and defensible methodology to explain to the community how a triple bottom line decision is made.	<p>The process used to reconcile the environmental, social and economic dimensions of the Basin Plan must be transparent to communities.</p> <p>The trade-offs involved must be clearly articulated by MDBA. The aim must be the greatest degree of objectivity. Where subjective judgments are made, this must be acknowledged.</p> <p>Understanding the likelihood and consequences of environmental results being achieved will help guide the weighting MDBA gives to this information and it's justification for pursuing alternative strategies.</p> <p>Where the risk of not achieving desired environmental outcomes is high, the MDBA Board can consider other options and better allocate resources to achieve the desired results.</p>





	Recommendation	Rationale
HN 7	<p>NBAC recommends that MDBA clarifies how it intends to incorporate Indigenous peoples' values and use of water in the outcomes of the Northern Basin Review and the decision about SDLs.</p> <p>NBAC urgently requests MDBA to advise the results and any subsequent recommendations from the National Cultural Flows Research Project and where and how these will fit with the NBR.</p>	<p>The socioeconomic study in relation to environmental water only assessed social and economic impacts in three out of 21 communities. This does not fully encompass Northern Basin Aboriginal communities.</p> <p>The social, spiritual and cultural impacts of Aboriginal values and uses for water were not taken into proper consideration in the science projects in Northern Basin Review.</p> <p>Aboriginal people are long-term residents of the Northern Basin with close ties to country and water. They have a particular role to play in the management of environmental water for cultural flows and future beneficial opportunities. Examples of roles include providing advice on the seasonality and timing of watering of wetlands, and providing advice on certain fish species that require watering at certain times. Aboriginal consultation and involvement in the release of the carp herpes virus is integral to the success of this proposed program.</p>
HN8	<p>Due to the disparity (28 GL) in cap factor application to water recovery assessments, huge doubt and uncertainty over recovery targets exists. NBAC recommends that the issue be dealt with immediately through MDBA's adoption of a conversion factor that is consistent with the Water Sharing Plan assumptions.</p>	<p>With incorrect cap factors, baseline diversion limits (BDLs) are wrong, and SDLs based on them will be invalid.</p> <p>There is a growing disparity between the information used by market bodies like ACCC, IPART and financial institutions. This has serious implications for market confidence and the credibility of water recovery reporting.</p>
HN9	<p>NBAC recommends that MDBA finalizes and publishes cap audit reports from 2012, 2013 and 2014, released as a matter of urgency to increase community confidence in water plan performance.</p>	<p>This involves the Water Audit Monitoring Report and Cap Register.</p> <p>NBAC needs to see the full reports to have confidence and ensure there is consistency in methodology and reporting.</p>



	Recommendation	Rationale
HN10	<p>NBAC recommends that:</p> <ul style="list-style-type: none"> <li>the NSW floodplain harvesting policy implementation process be completed as soon as possible so that reliable information can be incorporated in the modelling.</li> <li>MDBA improves estimates of baseline diversion limits (BDLs) and corrects any errors identified.</li> </ul>	<p>Communities need to understand BDLs as the starting point for the Basin Plan</p> <p>It would be controversial if this is done after the SDLs are set and would look like MDBA is setting SDLs without all the relevant information.</p> <p>Revised BDLs are required as it is not helpful for community confidence for these numbers to be revised again after the NBR process is complete.</p> <p>The investigations leading to the volumetric allocation of floodplain harvesting will allow the correct BDLs to be used in setting SDLs.</p>
HN11	<p>NBAC recommends that MDBA co-ordinates a whole-of-government integrated monitoring, evaluation, reporting and implementation (MERI) framework that includes monitoring and evaluation (M&amp;E) that is sufficiently detailed and continuous at the catchment level to measure whether the objectives of the Basin plan are being achieved.</p>	<p>Current M&amp;E in the Northern Basin is fragmented, hit and miss, and not shared effectively between different agencies.</p> <p>MDBA is leading the whole-of-Basin management through the Basin Plan and is therefore the appropriate agency to co-ordinate M&amp;E in the future. There are distinct M&amp;E gaps at the catchment level that must be addressed.</p>



## HIGH PRIORITY, DO SOON (HS) RECOMMENDATIONS

	Recommendation	Rationale
HS1	NBAC recommends that the terms of reference of the Murray-Darling Basin Authority (MDBA), as defined in the Water Act 2007 be amended to enable it to engage in the coordination of much broader natural resource management than just water recovery.	<p>A sustainable future for the Murray-Darling Basin cannot be achieved by management of river flows alone.</p> <p>MDBA is the appropriate agency to coordinate a whole-of-Basin approach to holistic natural resource management.</p> <p>Limitations and the associated dissatisfaction with some elements of the Water Act 2007 justifies amendments.</p>
HS2	NBAC recommends that CEW investigates options to maximize its delivery of environmental water by implementing a flexible trading regime, including the purchase of temporary water and other appropriate market mechanisms.	<p>The availability of environmental water is more beneficial at particular times</p> <p>Trading provides the ability to allow unneeded environmental water to be used productively with the revenue raised available to buy additional environmental water at more strategic times.</p> <p>When combined with other market mechanisms such as leasing private storages, flexible trading can achieve multiple benefits.</p>
HS3	NBAC recommends that governments establish a committee of review to identify and understand local impacts of past policy decisions, such as those affecting Collarenebri, so that they can be avoided in the future. This committee must meet at least once in Collarenebri.	<p>Collarenebri has been decimated by Twynam's sale of water to the Commonwealth.</p> <p>Mistakes are repeated far too often. It is inequitable that individuals should benefit at the expense of communities.</p> <p>We have learnt a great deal from the Basin Plan process so far and this learning must not be wasted.</p>



	Recommendation	Rationale
HS4	NBAC recommends that there be a review of and increases to the strategic gauging station network, and greater strategic use of telemetry to gain a better understanding of inflows, river flows, transmission losses and extractions. This process should be conducted in collaboration with the TICs.	<p>A more comprehensive gauging network is imperative to enabling informed management of flows, compliance management and the detailed information needed to more accurately calibrate models.</p> <p>Accountability to taxpayers for the substantial public investment in the purchase of environmental water is essential.</p> <p>MDBA has acknowledged it is currently not possible to do a risk assessment of the protection of environmental flows due to insufficient gauging.</p>
HS5	NBAC recommends that Water Sharing Plan, Water Resource Plan/Resource Operations Plan and Basin Plan objectives and environmental water requirements at the catchment level be aligned as part of the accreditation process	<p>At the moment this does not occur.</p> <p>The revision of state water plans to comply with the Basin Plan is the perfect opportunity to align objectives.</p> <p>Accreditation should be used as the trigger to achieve this.</p>
HS6	NBAC recommends that the Productivity Commission is adequately resourced and has acquired appropriate water expertise to fulfil its role in auditing the implementation of the Basin Plan, including reviewing state water plans to ensure they are accredited according to proper process.	<p>Concerns about the Barwon-Darling water sharing plan highlight the need for a competent independent body to review water plans.</p> <p>This body must ensure that plans aren't just 'deemed' to be accredited.</p>





## MEDIUM PRIORITY (M) RECOMMENDATIONS

	Recommendation	Rationale
M1	<p>NBAC recommends that for Jack Taylor Weir, Beardmore Dam, Bourke Weir, Boggabilla Weir, Cunnamulla Weir and Mungindi Weir, and other weirs that do not drown out at medium flows:</p> <ul style="list-style-type: none"> <li>• outcomes for fish be optimised by the construction of fishways/ladders</li> <li>• modifications be made to enable environmental flows to pass through</li> <li>• weir pools be desilted</li> <li>• Wilcannia Weir be replaced by a new one</li> </ul> <p>with the details to be endorsed by TICs.</p>	<p>This is Included in the Toolkit section on investing in environment-enhancing non flow related measures.</p> <p>The obvious environmental benefits of these recommendations, particularly the replacement of Wilcannia Weir, are targeted at addressing the Aboriginal cultural, health and social values that are improved through access to water.</p> <p>Without this infrastructure there is little benefit to be gained by these disadvantaged communities from the Basin Plan, despite their need.</p>
M2	<p>NBAC recommends a tender in the Barwon-Darling and intersecting streams specifically targeting inactive licenses, including account water.</p>	<p>This is a risk management strategy aimed at reducing the potential for activation of these licences for irrigation, given the current inability of government to protect environmental water as it passes from one catchment to another.</p>
M3	<p>NBAC recommends that care is taken in the way social and economic information is aggregated, presented and interpreted by MDBA. In particular, the results of the floodplain grazing study and employment modelling should be expressed in the same units when presented.</p>	<p>To date, some of the aggregated information has been presented in a way that is misleading because different units are used to express impact (eg on farm productivity vs FTEs). Both are presented in the same table in percentage terms, but the percentages refer to different units.</p>
M4	<p>NBAC recommends that the cultural, social and economic benefits of environmental flows, including the results of specific studies such as floodplain grazing, be documented and made available to Northern Basin communities.</p>	<p>Environmental flows produce ecological outcomes, but also have other benefits.</p> <p>Rivers are valued for their aesthetic, recreational, cultural and economic aspects (eg fishing).</p> <p>Environmental flows are important to Aboriginal people for cultural reasons.</p>



		<p>These values need to be considered as part of the triple bottom line assessment.</p> <p>Water recovered for the environment also has benefits for floodplains and flood plain grazing.</p> <p>The relative contributions of different types of agriculture to local economies should be recognized.</p>
M5	NBAC recommends that the NSW government addresses the adequacy of town water supplies including water treatment works along the Barwon-Darling,	<p>Town water supplies for Collarenebri, Walgett, Brewarrina, Bourke, Louth, Tilpa, Wilcannia and Menindee are dependent on water supplies directly from the Barwon or Darling Rivers into their water treatment plants. Unlike irrigators, towns do not have off river storages.</p> <p>With town water supply being a basic right, of higher priority than any extractive use for production, there is an urgent need to assess the adequacy of supplies under worst case predicted river flows. Additionally, water quality is an important factor for recreation and tourism (tourism in Bourke is worth approximately \$60k per night).</p> <p>There is also a need to assess the ability of each of the town water treatment works to adequately treat water of inferior quality, including algae, salinity and extreme soil pollution. These water quality characteristics are strongly influenced by the volumes extracted upstream of each town. This will include the requirement to understand current status of water treatment capability (size, duration, capacity and water quality treatment capability), low flow pulses and the range of range of water quality conditions that councils have had to deal with since the introduction of cap (Barwon-Darling).</p>



M6	NBAC recommends that outcomes such as health and education for Aboriginal communities be monitored and evaluated to determine their relationship with cultural flows.	<p>Water ownership by Aboriginal people gives them the autonomy to make their own decisions regarding the use of this water.</p> <p>Further discussions are required to determine the most appropriate source of water entitlements (eg environmental water, the water market). MDBA's socio-cultural study for Brewarrina, Dirranbandi and St George, extended to include the remaining 19 communities that haven't been covered, would provide a baseline to assess the outcomes of water recovery on health and education across the Northern Basin.</p>
M7	NBAC recommends that the internal structures of relevant government water agencies are adjusted to enhance Aboriginal management and employment opportunities.	<p>This will enhance coordination and delivery of environmental outcomes.</p> <p>There are a number of projects that align with NBAC recommendations. NBAC supports government commitment to ensuring these are progressed.</p> <p>Equitable funding and participatory identification of positions are required, working together to identify where these roles are needed and should sit.</p>
M8	NBAC recommends that the capacity of NBAN is enhanced to meet future Basin Plan implementation challenges. This would involve reviewing internal governance structures, representation and funding to ensure NBAN is adequately placed to meet future needs of Aboriginal people in the Northern Basin.	<p>NBAN is the established body for Aboriginal representation and negotiation on water policy in the Northern Basin.</p> <p>This recommendation is to facilitate partnerships with state and federal bodies to deliver on established agreements (eg Native Title claims). This facilitates capacity building both ways and cross-cultural learning between Aboriginal people and water managers. Governments should also facilitate opportunities through partnerships with the private sector eg water brokers.</p> <p>There is also a local level need for Aboriginal engagement in the implementation of the</p>



		Basin Plan and environmental water planning eg environmental watering committees and other existing local NRM committees.
M9	NBAC recommends that issues of lack of physical access by Aboriginal people to culturally significant land and water be identified and resolved where this is possible through liaison and development of access agreements with relevant private and government asset holders.	Feedback from communities has identified lack of access due to a number of different factors as a significant issue.
M10	NBAC recommends that the models that MDBA uses for the water recovery scenarios should be the most current, best available information from the states, rather than being out of date with known errors that have been corrected but not accredited.	<p>MDBA is obligated by the Water Act to use the best available information. NBAC has concerns that this is not occurring with the use of models. For example, the MDBA's use of the 2008 Barwon-Darling model, despite there being a 2012 model run gazetted in the NSW Water Sharing Plan.</p> <p>NBAC has serious questions about the rigour of the process undertaken to accredit the Barwon- Darling interim water sharing plan. This leads to questions about other plans that were grandfathered before the Basin Plan was made.</p>
M11	NBAC recommends that the inflow and irrigator behaviour module of IQQM for the Barwon-Darling be thoroughly investigated to determine its current validity.	NBAC has heard community concerns about changes in inflows and irrigator behavior. It is important for community confidence that it is dealt with in a transparent way.
M12	NBAC recommends that all new water recovery scenarios and changes to site-specific flow indicators, as a result of the Northern Basin Review science projects and associated modelling, be documented and reported to communities.	<p>MDBA has developed a number of new scenarios since its Phase 2 consultation with communities that have further refined the options.</p> <p>It has also altered site-specific flow indicators (SFIs) based on findings of NBR science projects.</p> <p>MDBA needs to be transparent in demonstrating the implications of new scenarios. This is an important step and point of accountability in the narrative in order to</p>



		show how new information has been incorporated and subsequently influences results.
M13	NBAC recommends that the MDBA fully explains all assumptions and models used to link flow regimes and site-specific ecological outcomes.	<p>This relationship is a fundamental underpinning of the Basin Plan.</p> <p>It is the most common science-related question asked by communities. However, there are uncertainties and limitations in the relationship that need to be explained.</p> <p>It is also important to explain how fish, birds and trees are used as indicators of ecological condition, and the nature of their dependence on river flows.</p>
M14	<p>NBAC recommends that:</p> <ul style="list-style-type: none"> <li>• monitoring and evaluation (M&amp;E) must include cultural, environmental, social and economic considerations</li> <li>• the outcomes of M&amp;E are presented in a way that makes sense to the wider community, using simple, clear language and graphics where possible</li> <li>• M&amp;E is realistic about what can and can't be done; it must involve simple and practical programs that are guaranteed to be continued in the long term</li> <li>• floodplain inundation be monitored and reported on to keep track of the types of flows the floodplains are receiving</li> </ul>	<p>The current focus of M&amp;E is environmental, but the Basin Plan aspires to a triple-bottom line outcome; M&amp;E must cover all aspects.</p> <p>The Northern Basin review funded Light Detection and Ranging (LiDAR) for at least some of the Northern Basin. Extended, this can now be used to keep track of inundation patterns. Knowing that the Basin Plan is improving floodplain inundation is important for its acceptance.</p> <p>M&amp;E results are often presented in a way that is not easily understood by lay people. Graphics resonate more with communities than words. M&amp;E is best when aligned with the everyday experiences of the environment by local people.</p> <p>It is recognised that there will never be the resources to conduct as much M&amp;E as we desire. The first step is to allocate available resources on a long-term basis</p> <p>The M&amp;E that can be achieved with these resources can then be determined. We would like to have a Rolls Royce, but resource</p>





		<p>availability usually results in a Datsun. As long as the Datsun is maintained and repaired to keep it running, that is not ideal but is better than nothing.</p>
M15	<p>NBAC recommends that CEW takes a proactive approach to demonstrating the benefits of environmental watering.</p>	<p>The community needs to have confidence that water recovery is delivering tangible benefits to the environment and the community as a whole.</p> <p>Visibility points with interpretive signage would be a good way to show the benefits of environmental watering.</p> <p>There are iconic environmental sites that should be accessible to the public (within reason).</p> <p>Governments could work together to establish visibility points at Narran Lakes, Macquarie Marshes, the Gwydir Wetlands and the fish traps at Brewarrina (where possible) to demonstrate the benefits of environmental water initiatives.</p> <p>There are few other opportunities to observe the on-ground benefits of environmental watering.</p>



## APPENDIX I – MEMBERSHIP OF NBAC

The Committee members are Mal Peters (Chair), John Clements, Ed Fessey, Katrina Humphries, Bruce McCollum, Sarah Moles, Michelle Ramsay, Donna Stewart, Ian Todd, Jason Wilson and Geoff Wise.

## APPENDIX II – NBAC TERMS OF REFERENCE

The Northern Basin Advisory Committee (NBAC) is established under s203 of the *Water Act 2007* to advise the Authority on the following matters in relation to Basin Plan implementation:

- a) the development and implementation of a MDBA Northern Basin Work Program. This work program could address any or all of;
  - i. improved modelling or ecological analysis,
  - ii. ways of delivering environmental outcomes more efficiently,
  - iii. social and economic impacts,
- b) community and other proposals intended to achieve water savings and/or improve environmental outcomes in the northern Basin, including;
  - i. implications for SDLs,
  - ii. social, economic and environmental issues,
  - iii. potential synergies with other proposals,
- c) possible changes to management and operational rules that could result in water savings and/or improve environmental outcomes, including the need to address any third party impacts,
- d) northern Basin water-related environmental management and cultural practices,
- e) any other matters relating to the Basin Plan's implementation by the MDBA, and
- f) in performing its functions, the NBAC will actively engage with, seek local knowledge and input from, and support involvement of valley based community committees across the northern Basin with regard to the Basin Plan.

### **MDBA Meeting Protocols – members will:**

- a) commit to attending all scheduled meetings
- b) read all papers and relevant materials provided in advance of the meeting
- c) participate in rigorous and respectful discussion, including challenging assumptions
- d) ensure that meeting etiquette is maintained, including: turn mobile telephones and other communication devices to silent; behaviour is appropriately professional, including interactions with presenters and other participants; and being punctual
- e) respect the confidentiality of the meeting and conflict of interest requirements (remembering that this confidentiality requirement endures after a member has left the committee)
- f) provide timely responses to requests from the Secretariat in relation to papers, resolutions and actions.

May 2016



## APPENDIX III – ADAPTIVE MANAGEMENT

### 1. Establish a network of consultative groups

People are central to adaptive management. The first step towards achieving an adaptive application of the Toolkit is the establishment of genuine community involvement in management. Opportunities to meet and discuss river management at a valley level need to be provided. Ongoing opportunities for local involvement in broader natural resource management are also extremely limited at present, particularly in NSW. Without opportunities to meet, discuss and plan, and to gather and learn the necessary information, adaptive management will not work. NBAC is proposing the establishment of Toolkit Implementation Committees (TICs) to advise on catchment health in general.

A review of the water and natural resource management forums already in place in the Northern Basin would be useful. They include the Namoi Water Working Group, the Border Rivers Water Network (BREWN), Macquarie and Gwydir environmental water advisory committees, the Lower Balonne Working Group, and the proposal for a group to discuss management on the Border Rivers and Barwon-Darling. This is not to suggest that new groups should be modelled on the existing ones, but that there is a lot to learn from observing and consulting with existing groups and getting their views on what does and doesn't work.

### 2. Set clear objectives for management in consultation with local people

Clear, explicit objectives must be adopted between groups and across management boundaries. Local and regional groups and forums should be the basis for developing local and regional outcomes that support and contribute to Basin-wide outcomes. Identifying fundamental conflicts of interest and difficult trade-offs should be a part of the process. There are many instances where management does not result in a win-win for everyone and where trade-offs are the only option.

The terms of reference for local groups should be based on their management objectives, setting the scene for both local people and governments to work towards clearly identified outcomes.

### 3. Make local knowledge an integral part of management, evaluation and feedback

Monitoring, evaluation and feedback to management are essential and need to be linked to the objectives and actions.

Experience shows that formal committees and planning processes can become resistant to new information, especially if it questions the basis of the planning. This is why it is important for local water management forums to be clear about their objectives and revisit those objectives from time to time as part of the evaluation and feedback process.

### 4. Use management as a tool to learn about the system

Where possible experiments or trials should be designed to test proposals and gather information. The project involving BREWN and Water Stewardship Australia provides an ideal opportunity to apply strong adaptive management principles.



Where appropriate, management actions should be supported by computer models that are developed collaboratively and are easy to understand. Models are rarely set up in this way. Too often they are developed in isolation and used in ways that create barriers to communication and erode trust and confidence. This creates situations with 'insiders' and 'outsiders' in organisations and the community.

Recognising the limitation of the information being worked with is essential. Sometimes management groups develop a belief that certainty is necessary to maintain credibility which leads to a search for precise predictions. This can be unhelpful and misrepresents reality. Local groups are more willing to accept limitations in information and uncertainty in implications if these limitations are explained in terms of their likelihood and consequences when considering different management options.



## APPENDIX IV – COMMENT ON THE NBR PROCESS

There were challenges for NBAC throughout the Northern Basin Review (NBR). It is hoped that documenting them along with suggestions for future processes may be of some value to MDBA and other government agencies facilitating advisory committee processes, and in thinking about the ongoing implementation of the Basin Plan.

NBAC acknowledges that MDBA staff and Board members have listened to our advice and note, to some extent, that the outcomes of the NBR and the response to it will have been influenced and informed by NBAC's work.

The following points outline NBAC's suggested improvements, albeit with the benefit of hindsight.

1. **The SDL and volume focus of the Basin Plan:** NBAC has been frustrated by fundamental flaws in the Basin Plan which put the focus on establishing the right sustainable diversion limits (SDLs) rather than asking what environmental outcomes we want and how they can best be achieved. This has led to inflexibility, sub-optimal outcomes, unnecessary negative socioeconomic impacts and ineffective expenditure of large amounts of public money. NBAC requested, unsuccessfully, at the start of its tenure that research be undertaken into quantifying 'non flow related measures' that could contribute to achievement of environmental outcomes and avoid the socioeconomic impacts caused by recovering water for the environment through buyback.
2. **Southern-centric tools and timeframes in the Basin Plan:** Linked to the above point, the main tools available for achieving environmental water targets aside from buyback and on-farm water use efficiency projects were offsets and supply measures. These were designed for the Southern Basin circumstances and timeframes (especially the process for identifying constraints) and therefore excluded Northern Basin participation, thus reducing the opportunity to further minimise negative impacts of the Basin Plan.
3. **Bringing communities along:** Again, this was always going to be difficult when environmental outcomes are expressed primarily through the surrogate of hydrological flow indicators, with the links between flows and ecological outcomes still needing much more research. Communities need to be able to grasp objectives based on actual outcomes and are much more willing to accept uncertainty in the science if there is a process of local involvement in adaptive management with sufficient monitoring and evaluation to enable hypotheses to be tested and knowledge to be gained over time.
4. **Committee administrative and executive support:** During the four years of NBAC's advisory role there have been many changes to our support staff, some due to the three monthly rotation of staff through different sections of the organisation. To improve committee efficiency and consistency, enable proper meeting protocols and minutes, and allow stronger relationships to be built, the committee processes need, as far as possible, to be supported by the same appropriately skilled support staff.
5. **Absence of NSW government from the process:** NSW Government representatives were absent for much of the NBR process and infrequent and irregular attendees at NBAC meetings. This was a significant flaw, preventing coordination at the intergovernmental level, information flow, input by NBAC, addressing of issues that arose during the NBR process and building of relationships. NBAC concludes there has been a lack of commitment by NSW to the NBR and the NBAC process and holds





concerns about the implications arising from this for the Basin Plan as we move to the implementation phase.

6. **Room for Improvement by MDBA:** At times NBAC struck organisational cultural issues including MDBA's perceived lack of transparency and lack of willingness to embrace and act on community and NBAC input. There were many staff who genuinely attempted to honestly answer questions and provide information. However, at times it felt as though NBAC wasn't getting the 'full story' as MDBA was defending the position it had taken. For instance, MDBA has recently commenced research on *some* of the Toolkit concepts (possibly more due to the scientific modelling and scenario results indicating a lack of improvement in many SFI's regardless of the volumes of water recovered rather than NBAC's advice from the beginning of its tenure, in late 2012). Unfortunately, due to delayed acknowledgment of the importance of Toolkit concepts by MDBA, resources and time have been substantially reduced with consequences in terms of less information to inform the SDL decision.
7. **Timeframes for completion of modelling, cultural flows research and socioeconomic analysis:** NBAC (and no doubt MDBA) has struggled to fully understand, question and subsequently provide advice on some elements of the NBR process due to the late completion of modelling and socioeconomic analysis and the still incomplete cultural flows research project. The lack of information was a significant issue affecting the progress of NBAC's Working Groups.
8. **External communication and engagement:** NBAC repeatedly stressed its role as a conduit rather than a replacement for MDBA's engagement activities with Northern Basin communities. It is evident that MDBA is working hard to communicate clearly with communities. However, it is still a challenge to communicate the elements of the NBR and the Basin Plan clearly due to factors including the language used, MDBA's reliance on detailed and complex models, and the approach of using flow targets rather than environmental outcomes.

NBAC has not yet seen evidence of a genuine intention by MDBA to fully engage in a participatory way with communities by adopting the concept of localism. MDBA has a job to do and it is genuinely working hard to inform communities along the way, but the challenges of this complex and very large undertaking, as well as the absence of experience in incorporating localism, have made it difficult for MDBA to establish the systems, culture and timeframes that would enable formal inclusion of local input and knowledge.