National Farmers' Federation

Submission to the

Issues Paper
Development of Sustainable Diversion Limits for the Murray-Darling Basin

18 December 2009

National Farmers' Federation

Member Organisations

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ADFA

Australian Livestock Exporters' Council ALEC

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Executive Summary

The development of the Basin Plan commences a significant reform process for the Murray-Darling Basin. The development of the Sustainable Diversion Limit (SDL) and environmental watering plan is an important consideration – and the aspects most likely to impact on the agricultural sector and the rural community's right across the Basin. Such impacts must be considered not just in light of the Basin but its importance to the nation and food security. An important outcome is that rural communities and irrigated agriculture must feel a valued part of the nation.

NFF believes that the original intent of the Water Act 2007 is not reflected in the current interpretation of the provisions. While the environmental focus may be legally correct, there must be an imperative to balance the social and economic considerations with the environment, without compromising either the environment or the economic base underpinning the vibrancy of the Basin.

In that regard, NFF does not believe that socio and economic studies have been in any way adequately considered and examined in this issues paper. Due to the inherent impacts on entitlements, lending arrangements and the market, much more focus is required in this area.

NFF supports a rigorous and transparent approach to setting and reviewing the SDL. The irrigation sector must understand the process and the methodology that will affect future entitlement reliabilities.

NFF is also concerned about how the different forms of "take" will be assessed and included in the SDL and would welcome further discussion on this important issue.

In setting the SDL, NFF broadly supports the use of existing Water Resource Plan (WRP) areas and that significant interception activities are identified and require the acquisition of an entitlement to offset the impact.

NFF supports that all environmental water not just the Commonwealth's acquisitions should contribute to offsetting the SDL. The watering requirements of the environment must also be offset by considering non-flow and engineering solutions. Moreover, environmental watering requirements must be managed efficiently to minimise the water required by key environmental assets. Indeed, NFF also recommends an immediate release of a draft list of environmental assets and their water requirements to aid dialogue. Key environmental assets are those without which, the system would fail. It is not a wish list.

In terms of the Commonwealth's acquisition program, NFF is concerned that some catchments may be disproportionately affected in the offsetting arrangements for the SDL. This includes unregulated catchments and groundwater systems (which are largely not a target for acquisition) but also includes those regulated systems that appear not to have sold much water to the Commonwealth.

Getting the Basin Plan right, of which the SDL is an essential component, will be paramount to the future of agricultural production, irrigation communities and the regional economic and social fabric that they support. NFF stands ready to work with the MDBA to ensure this outcome.

1. The National Farmers' Federation

The National Farmers' Federation (NFF) was established in 1979 and is the peak national body representing farmers, and more broadly agriculture across Australia.

The NFF's membership comprises of all Australia's major agricultural commodities. Operating under a federated structure, individual farmers join their respective state farm organisation and/or national commodity council. These organisations collectively form the NFF.

The NFF has recently implemented a re-structure of the organisation. This will enable a broader cross section of the agricultural sector to become members of the NFF, including the breadth and the length of the supply chain.

Each of NFF's members deal with state-based 'grass roots' issues or commodity specific issues, respectively, while the NFF represents the agreed imperatives of all at the national and international level. A key priority of the NFF is water and to this end, NFF is the peak body collectively representing the interests of irrigators and other agricultural users.

2. Introduction

The NFF welcomes the opportunity to make a submission on the Issues Paper for Development of Sustainable Diversion Limits for the Murray-Darling Basin ("SDL Issues Paper"). This issues paper is an important step in the development of the Basin Plan. Potentially, the Sustainable Diversion Limit (SDL) will significantly impact the water resources available for consumptive use or diversion.

As a general comment, the NFF notes that the SDL Issues Paper has created some confusion. While peak stakeholder groups sought a more technical document to better understand how the SDL will be developed, other individuals sought something that could clearly and concisely explain the SDL. The Murray-Darling Basin Authority (the "MDBA") has attempted to construct an issues paper that could deliver on these varied expectations. Unfortunately, this SDL Issues Paper has failed to achieve that goal. NFF stands ready to assist where appropriate.

The ability for stakeholders such as NFF to make informed comment on the SDL Issues Paper has been constrained due to the omission of a:

- Draft list of key environmental assets and their water plans that will inform the watering requirements;
- Draft list of key ecosystem functions and how these are proposed to be managed and addressed;
- Draft list of key environmental outcomes for discussion; and
- Draft SDL calculations for at least one northern valley and one southern valley for discussion and debate.

This submission will endeavour to respond to the SDL Issues Paper. However, this response is constrained by the very fact that the SDL Issues Paper does not provide a definitive position on the SDL. The SDL Issues Paper provides a tentative position but then caveats the stated tentative position. This leaves stakeholders with little idea on how the SDL will be calculated. As a result, the NFF submission will attempt to consider the issues at face value while reserving the right to comment further when more information is provided by the MDBA to underpin its various positions.

3. The Basin

The Murray-Darling Basin is Australia's most significant inter-jurisdictional Basin. It is significant in terms of agricultural production, rural communities, environmental assets and the diverse nature of the Murray and Darling Basins. The development of the Basin Plan and in particular, the SDL, puts this all at significant risk as the basic premise is that the Basin Plan is an environmental plan, not a plan that balances environment and production uses.

It is unfortunate that during the Millennium Drought (2003/04 to date) there has been so much attention on the end of the Basin when there have been significant issues all over the Basin. Just as an example, while the Lower Lakes are crippled by soil acidification, there are some 2000 similar sites across the Basin yet these do not attract the same degree of media and wider community attention. This sole focus is most unfortunate.

Also unfortunate are similar misguided comments on water management across the Basin. While we can always learn from the past and our mistakes, the severity of the current drought and its impact on runoff has a recurrent timeframe of over 300 years for the Southern Basin (CSIRO, 2008). This means that water management has become extremely difficult and challenging.

Trying to balance the supply of water for critical human uses with a greatly diminished water resource within natural systems that were extremely dry, that had negative base flows and tributary inflows running backwards called for unique solutions. Governments needed to suspend water plans to deal with these special circumstances – and indeed many remain suspended. At the same time, special agreements were entered into for sharing the Murray's limited water with a special emphasis on water for towns and cities along the length of the river. It also resulted in some natural systems being cut off from the river channel, tributaries and wetlands.

The result is that communities have been hurting and the environment has been stressed. However, in some respects, the decoupling of wetlands from the river has been positive. Many have been returned to natural wetting and drying cycles and many pest species such as carp are in significant decline. Unfortunately, these outcomes are rarely considered as part of longer term planning.

The future must balance the competing needs of the river. Farmers are dependent on a healthy river and good quality water for production. Similarly, our urban centres also need water of appropriate quality. Importantly, the environment including the riverine and river channel require water of sufficient quantity and quality.

The challenge in the development of the Basin Plan is how to better manage the system to deliver on these competing requirements. Unfortunately, the *Water Act 2007* appears to be of little assistance here.

4. Objects of the Act

The NFF understands that the MDBA is required to construct the Basin Plan and in particular, the SDL in accordance with the provisions of the *Water Act 2007*. However, the objects of the Act and the provisions relating to the Basin Plan are inconsistent. Moreover, the MDBA's interpretation of the Act is different to that which was discussed with the NFF during the drafting of the Water Bill 2007.

The Water Act 2007 objects, under s. 3(c) states "*..to promote the use and management of the Basin water resources in a way that optimises economic, social and environmental outcomes*" and at 3(d)(iii) "*...to maximise the net economic returns to the Australian community from the use and management of the Basin water resources*".

Moreover, the Act must at 3(e) "*..improve water security for all uses of the Basin water resources*" – this is reiterated in the provisions for the Basin Plan (at s.20(g)). An important issue for entitlement holders is that their reliability is maintained[1]. This is fundamental as these underpin lending arrangements with bankers as well as irrigators' ability to continue to invest in irrigated agriculture. It is also a fundamental undertaking of the Commonwealth Government and one of the underlying principles for the Water for the Future program for irrigated agriculture.

The Basin Plan provisions in the Act also refer to the objects of the Act and that the Basin Plan must promote the objects of the Act (s. 20) and in particular, at s.20(d) "*...optimises economic, social and environmental outcomes*". Further at s.21(4)(c)(ii) the MDBA and the Minister must have regard to "*the consumptive and other economic uses of the Basin water resources*" as well as "*the management objectives of the Basin States for particular water resources*" (s.21(4)(c)(iv)). This section also incorporates a number of other pertinent issues such as social and other public benefit issues and regional natural resource management planning processes.

Despite the above, many, including the MDBA, believe that the Basin Plan has a sole construct of providing for the environment without regard to the above provisions. This is clearly reflected in the number of references to "irrigated/agriculture" and "environmental/environment" contained in the SDL Issues Paper – four compared to approximately 150. Unfortunately, the references to irrigated agriculture are included only as part of a description of the Basin (page 9), as an example of consideration of social and economic consequences in inter-valley sharing of environmental water (two references at page 33) and in relation to contextual studies (page 34).

A point of clarification is always going to be the second reading speech for the Water Bill 2007. The then Minister for the Environment and Water Resources stated:

"...changes to water availability are eroding the security of water entitlements, and making it harder for irrigators to earn a reliable income" (House of Representatives, 8 August 2007, p. 5-6); and

"*Reform is needed to ensure the viability of the basin's water dependent industries, to ensure healthy and vibrant communities and to ensure the sustainability of the basin's natural environment*" (House of Representatives, 8 August 2007, p.6).

This second reading speech makes it eminently clear that the triple bottom line approach to reform of the Basin's water resources was front of mind in the development of the Bill. Furthermore, in NFF direct representations made to the then Minister for Environment and

[1] NFF notes that this does not mean that irrigators should expect 100% allocation in 100% of years but a more secure property rights regime.

Water Resources regarding changes to the provisions for the Basin Plan to ensure that social and economic considerations had equal weighting in the Bill, the Minister advised that this wasn't necessary as the Basin Plan must comply with the objects of the Act which were clearly to provide equal weighting and consideration of social, economic and environmental issues. The then Minister noted that it was unnecessary to duplicate these in the Basin Plan provisions as the entire Bill (and Act once assented and commenced) was required to comply with the objects of the Act.

NFF believes that the Basin Plan must make provision for key environmental assets in a way that optimises the use of the available resources for social, economic and environmental outcomes – not just environmental.

NFF also contends that given that the MDBA has stated that it is broadly or liberally interpreting some provisions, then so it must do so in particular to the full application of equal weighting to economic, social and environmental outcomes of the Basin Plan – as required by the objects of the Act. As stated to "optimise" not minimise the impacts as stated in the SDL Issues Paper.

5. Water Act Provisions for SDL

The *Water Act 2007* provides little guidance on how to develop the SDL apart from stating that it must be the "*long-term average sustainable diversion limit*" that reflects an environmentally sustainable level of take and that the MDBA has a broad mandate in terms of how this can be specified (s.23). Under s.20, the above is clarified by the requirement to include interception activities.

Given the discussion in the previous section outlining the interpretation of the Basin Plan as having a strong environmental focus, one could provide an alternative assessment of the provisions relating to the Basin Plan.

The MDBA could decide on an SDL based on assessing the available resources, providing (as is currently the case) for system losses (storage and transmission, which are in fact environmental uses) and planned environmental water provisions of water resource plans across the Basin (given the specific requirement to ensure that these are protected). Any remaining water could be determined as the consumptive pool. This consumptive pool must optimise the social, economic and environmental needs of the Basin.

Under s.21(4), the MDBA and the Minister must also have regard to "*the consumptive and other economic uses of Basin water resources*" (ss.(c)(iii)) and "*the management objectives of the Basin States for particular water resources*" (ss.(c)(iv)) and "*state water sharing arrangements*" (ss.(c)(x)). These provisions make it eminently clear that the strong environmental basis that many claim as the Basin Plan's key focus may in fact be incorrect and that the Basin Plan must take a more balanced and equitable approach.

NFF believes that the key component of the Basin Plan that will deliver, if appropriately planned and implemented, is the delivery of the embedded Environmental Watering and Water Quality and Salinity Management Plans (although the latter will no doubt, at least in part, be about Adelaide's water quality rather than the environment). This interpretation is valid, given section 21 and sections 25 and 28. These sections could be read and interpreted that the embedded plans are the basis for enhancing and providing for the environment, rather than solely through the SDL.

In particular, the Environmental Watering Plan states that its purpose is to safeguard existing environmental water (planned and entitlement), plan for the recovery of additional environmental water (future actions) and coordinate the management of environmental water. The purpose is to protect and restore wetlands and other environmental assets and protect biodiversity dependent water resources and other outcomes.

The SDL in and of itself will not deliver environmental outcomes. It is the management of the water deemed to be the environment's (planned and entitlement) that is the key to better outcomes.

If this interpretation is correct, then the Basin Plan will provide limited but exercisable environmental water as either water entitlements (i.e. same as irrigator entitlements) or planned environmental water.

This water must then be maximised to deliver environmental outcomes, including:

- Protecting and enhancing the key environmental assets such as Ramsar wetlands;
- Improved key ecosystem functions such as flooding regimes; and
- Improved environmental outcomes (ecosystem functions, biodiversity, water quality and water resource health).

Importantly, the NFF believes that if the development of the Basin Plan is a decision to impinge and expunge irrigated agriculture and its dependent rural communities only, then this is a disastrous outcome. The MDBA, the Minister and the broader Australian public needs to reach a consensus on the major, key environmental outcomes sought – as not everything can or ought to be retained and protected.

As an example, Menindee Lakes and the Lower Lakes and Coorong are a significant user of water – in terms of end of system flows, ecological use and evaporation. A reasonable outcome might be that the existing uses might be appropriate, however, with engineering or other solutions the evaporative losses may be reduced – and there have been many suggestions over the years how this might be done. It is now time to make the trade offs. Other key environmental assets require a similar decision – what is retained and what is let go because, as a nation and in the face of continued and increased climate variability, not everything can be saved and restored to its natural state.

Such important decisions also need to be taken in the light of what ought to be the responsibility of the Basin Plan and hence the MDBA, and what ought to be the responsibility of State water resource managers. In other words, do not duplicate efforts of the states.

6. Environmental Entitlement Purchases to Offset SDL

NFF notes that the SDL will be offset by the acquisition of entitlements by the Commonwealth Government, as was outlined in the MDBA's Fact Sheet 3 which discussed the relationship between the SDLs and the water purchases (Murray-Darling Basin Authority, 2009).

Morever, NFF contends that all environmental water regardless of whether this was purchased by a jurisdiction or is planned water under a water resource plan or acquired through any other means, must be offset against the new SDL's imposed by the Basin Plan.

An NFF calculation of the environmental water available now is around 3,232 GL[2]. Following implementation of a range of programs (e.g. Water for the Future, Water for Rivers, RiverBank, RiverReach etc) this figure should rise to around 6,095 GL[3]. It should be noted that these figures exclude other environmental uses, such as base flows and losses. Attachment 1 shows this information in more detail. These figures are largely calculated on southern Basin information (mainly Victoria and NSW). Should a similar exercise be undertaken for the entire Basin, it may be highly revealing about what environmental water is available now and will become available in the near future.

7. Water Plan Areas

NFF recognises that there are a number of transitional water resource plans (WRPs) in effect and these will have different expiry dates – spanning some seven years. Once these plans expire, the replacement plans will need to be accredited and comply with the Basin Plan.

One of the unfortunate impacts of the different expiry dates is that there will be a staged impact to the various irrigation areas as a result. If the Basin Plan is as environmentally focussed as some think it will be, these impacts will be most significant on those plans which expire in the early stages (i.e. 2012 to 2014) and which currently cover around 65% of the water resources of the Basin. Mostly this is because the impact will be felt up to seven years earlier than those plans expiring towards 2019.

NFF believes that it would be preferrable for all plans to have a consistent expiry date. This could happen in a couple of different ways:

- Have all plans expire in when the majority expire, i.e. 2014;
- Maintain all current expiry pathways, provide temporary diversion arrangements only for those plans that expire early and have all new plans commence from 2019 with the SDL; or
- Extend the earlier expiring plans to 2019 and then bring into place the new plans, with any temporary diversion arrangements.

NFF does not support the first approach, i.e. that all plans expire in 2014. This position is supported by jurisdictions as it was accepted that all "transitional" WRP's, including Victoria's, will remain in place until the term is completed and then be replaced by a Basin Plan accredited WRP. The second approach will continue to see inequities and impacts between Victoria and the remaining states.

The NFF supports the last approach that the earlier expiring transitional plans, and any subsequent plans, are all extended (or made) to expire in 2019. From 2019, all WRPs should be made for the same term.

[2] This volume is the maximum estimated available on an annual basis. Actual volume applied, or the availability of these entitlements, varies from year to year and is subject to prevailing environmental conditions.

[3] Ibid

Proposed approach to determining WRP areas

As a general principle, NFF agrees with the proposed approach to determining WRP areas, i.e. that they should be the same as the current boundaries used under State water legislation. This means that surface water will follow catchment boundaries, and groundwater WRP will be based on aquifer hydro-geological units.

NFF notes that the MDBA will consider catchment based WRP where an aquifer lies entirely within a surface water WRP area. However, where the aquifer extends beyond surface water catchments a separate WRP area may be defined. Aquifers that extend beyond state boundaries will be treated as a whole water resource for the development of an SDL before the state specific requirements are specified. This is largely consistent with the treatment of surface water in the Border Rivers and Murray.

NFF is concerned that where different arrangements are considered, it may lead to unnecessary complexity and confusion, more so when some groundwater and surface water sources will be treated as one where there is a high degree of connectivity. The NFF recommends that one approach is used to reduce the level of confusion that will arise and the requirements for different management approaches to WRPs.

Of concern is where the Basin Plan will cover the entire Basin and there may not be a WRP for every part of the Basin (e.g. unregulated upper catchments or groundwater). The SDL Issues Paper has not attempted to explain where and whether this will occur. Moreover, neither has the SDL Issues Paper described the approach to setting the SDL for the Basin when or if the entire Basin is not covered by WRPs.

The ability for NFF to make an informed comment on the WRP areas has been complicated by the lack of incorporation of any maps in the SDL Issues Paper of either areas not currently or proposed to be covered by a WRP – or indeed where the WRP for groundwater units that may come under different WRP areas than the currently defined state boundaries.

NFF reserves a final comment on this issue until more information is available.

8. Take

Modelling

NFF notes that river system modelling will be used as the basis for determining the water resources of the Basin. This will include adapting and using of the CSIRO Sustainable Yields Audit (SYA) Project work. NFF has previously written to the MDBA outlining concerns with the SYA models and would expect that these models have been updated to incorporate these concerns and for more recent information. As an example, the groundwater models for NSW assumed continued growth in extraction because this did not recognise the reduction in the entitlement volume and consequently future take following implementation of the WRPs for NSW aquifers from 2006.

Moreover, the NFF notes the CSIRO technical report outlining the uncertainties for river modelling (Van Dijk, et al., 2008). The report outlines two areas of uncertainty – internal and external.

Internal uncertainties covered areas such as a lack of data for diversions, river losses, the quality of high flow gauges, groundwater exchange, ungauged losses, simulation of river operations and diversions, simulation of low streamflow patterns, simulation of inflows and future diversion patterns due to socio-economic changes.

In summary, the greatest uncertainties surround lower river systems and the least uncertainties are for unregulated wetter headwaters of most regions. Important issues are the changes in river regulation, irrigation water use and development. Of note is that CSIRO advised that the models perform "very poorly" in reproducing low flows. The greatest water balance uncertainties are associated with river system losses with the Namoi and Gwydir being the catchments of greatest uncertainty.

External uncertainties cover areas such as natural climate variability (including rainfall), different predictions of the IPCC models, changes in vegetation water use, and farm dams and plantation growth. The report noted that there is regional variability which is amplified by environmental indicators. The greatest uncertainty for rainfall is for the lower parts of Victorian regulated rivers, the Darling and the Lower Murray. The report noted that the potential impacts of changes in water maangement and use in regulated systems are large. These will be dependent on social, economic and policy changes, changes in water efficiency and the trade in water entitlements.

In summary, the report notes:

- Uncertainty is least for wetter headwater catchments due to better rain and stream flow gauging leading to more reliable rainfall to runoff modelling;

- Uncertainty is greatest at the end of systems particularly where strongly affected by regulation and diversions or where there is significant anabranching and floodplain and wetland losses; and

- Overall uncertainty probably cannot be reduced significantly without further effort in river model development or research and data collection.

Finally, CSIRO advises that natural variability causes a large and irreducible uncertainty that needs to be considered when using the results of this project in a risk-based approach. In other words, CSIRO advised to be careful how the work of the SYA was used in development of the Basin Plan.

Climate Scenarios

NFF notes the discussion at Attachment A of the SDL Issues Paper regarding the proposed suite of climate scenarios. NFF notes the comment that the "*CSIRO report sets out the evidence that global warming has contributed to the current prolonged drought in south-eastern Australia*". NFF would also note comments in a prior report by CSIRO (Chiew, Cai, & Smith, 2009) to the MDBA. Essentially this report advises that CSIRO cannot separate climate variability (drought) from climate change. The report states that only a small amount of climate change is currently applicable. This obviously may change over time.

NFF also notes that the IPCC models in the above report date only from 1961 during a period of higher rainfall and runoff. The models used for state water planning and hence the CSIRO SYA covers the period from 1895. The report also indicates that historic climate is similar to the

last 20-30 years with only the last 10-15 years showing less rainfall and runoff[4]. This is at odds with the often stated premise that the last half of last century was drier than the first half of last century. CSIRO recommended that recent climate be used as the very dry scenario for a conservative risk based consideration[5]. Overall, CSIRO suggest that there is a significant need for greater research to provide more rigour in assessments.

NFF supports the use of long term climate scenarios (i.e. from 1895) to underpin the development of the Basin Plan. The use of baseline, wet, median and dry scenarios is also supported. However, the discussion does not make it clear how these different scenarios will be used to determine the SDL, particularly on an annual basis for the purposes of determining allocations (operationalising the SDL). For example, will the MDBA "select" one of the scenarios or in some way use all scenarios?

It is also not clear how the MDBA will use the short term 15 year sequencing for surface water, i.e. between 2009 and 2024. Is it meant to extrapolate the climate history (1895-2009) over the next 15 years?

Importantly, the NFF suggests that the MDBA must consider equal weighting of social, economic and environmental – as required by the objects of the *Water Act 2007*– when setting the SDL. In other words, NFF will not support an SDL established to deliver on environmental objectives only with some secondary or tertiary consideration of how this may impact on social and economic outcomes in the Basin.

Of importance to NFF and the irrigation sector is the assessment of risk assignment arising from the new SDL and Basin Plan. NFF recommends the use of 2004 WRP baseline to determine any impacts for the purposes of risk assignment. The MDBA must be able to show, in a transparent way, how the SDL will affect entitlement reliability (allocations) against the 2004 WRPs.

Productive Use

NFF notes that there is no definition of "productive use" in the Water Act 2007.

In 2007, the NFF led the Water Bill consultations for irrigators with the then Minister for Environment and Water. During those discussions, the productive base of water referred to the commercial extraction of water by agriculture and other users. NFF rejects the definition of productive base in the SDL Issues Paper (at section 3.5.3). By using this definition, the relevance of irrigated agriculture is minimised in the planning process.

NFF believes that, as stated in the Water Act 2007, the productive base must not be compromised when setting the SDL. This does not mean that a lower level of extraction through the SDL is not possible. As a primary example, it may mean that in setting the SDL and consequent WRP, the reduction must not compromise the critical mass for an industry to operate.

Key Environmental Assets and Values

The NFF notes that the basis for the Water Act 2007 is international treaties for wetlands and migratory birds. Consequently, these are part of the list from which key environmental assets will be determined. NFF contends that the MDBA needs to consider those wetlands that are truly of national significance and importantly, those that are critical to the ecosystem functions of the

[4] Table 1 on p. 12
[5] Page 13

Basin. NFF does not support the use of a myriad of species as the basis for determining environmental watering requirements of the Basin because if the key wetlands are addressed then the needs of many of these wetland dependent species will also be addressed.

NFF supports that key environmental assets are those, without which the Basin's ecosystems will fail. An automatic premise from this is that this list should not include every wetland, ecosystem or endangered species across the Basin. This means that locally important wetlands can be managed through WRPs rather than the Basin Plan.

The MDBA cannot responsibly balance social, economic and environment needs if it seeks to protect and enhance every single environmental asset in the Basin. This is especially so given that throughout the Basin there are 30,000 wetlands on private land, 220 wetlands on the national register of important wetlands to Australia and 16 Ramsar wetlands. The CSIRO SYA lists 18 key wetlands and 12 large systems. The archived MDBC website also lists wetlands larger than 5,000 hectares and has a map of 35 major wetlands, mostly located in NSW and Victoria. Attachment 2 details these various lists.

The Basin Plan will undoubtedly lead to expectations (e.g. a specific wetland will be a key environmental asset) that will not be met. The MDBA and the Commonwealth have an important role to ensure that there is good communication with the public about the priorities for environmental watering. This includes the management of community expectations that the new Federal arrangements will "save" particular wetlands (or even whole rather than parts of wetlands).

Interestingly, the CSIRO SYA included a list of wetlands likely to be most affected by climate change (Attachment 2). This impact was assessed in terms of flood frequency. In this list, Lake Wyara in the little developed Paroo system is listed at the upper end of significant flooding impacts. This means that river diversions may have little to do with whether a system will be at risk in the future. Conversely, unlike community expectations, the same list had the Lower Lakes & Coorong around the middle group of wetlands likely to be impacted by climate change and development.

NFF notes that the Water Act 2007 specifies that the Basin Plan considers responses for international agreements for migratory birds of the East Asian-Australasian Flyway. It should be noted that the Flyway is a non-breeding habitat and hence this must be factored into any environmental watering program, i.e. there should be no need to provide prolonged flooding events for the sole purpose of ensuring that fledgling migratory birds reach maturation.

At the time of writing, NFF was unable to locate information on which Basin wetlands are the target habitat for these migratory birds. Without this information, any decision on which wetlands (and consequently their water requirements) are important for complying with international agreements cannot be made. This makes it difficult to provide informed comment on this aspect.

Of critical importance is what should be managed at a Basin level and what is managed at a local level through planned and other environmental water in WRPs. NFF does not support the duplication of actions by the MDBA and then through State WRPs. This is a critical issue – duplication is a real concern and as a result, the possibility of more significant impacts to entitlement holders.

Another issue of particular interest to NFF is the fact that not all environmental health issues are flow related – and that some of the solutions are also not flow related. The archived MDBC

website contains a list of the main causes of floodplain wetland degradation (see Table 1 below). Most of the listed degradation causes will be best managed by non-flow options. The first cause is the only one that might be resolved by flow. But just as important are other resolutions, such as pulsing all water in the river to deliver environmental outcomes. This practice has been standard operating protocol in the Murray for a number of years.

Table 1 Main causes of floodplain wetland degradation[6]

Cause	
1	Changes in river hydrology caused by regulation of flow and diversion of water.
2	Blockage of floodplain flows by causeways, levee banks and structures.
3	Disposal of storm water, sewage and irrigation effluent into wetlands.
4	Changes in water quality caused by unsuitable land-use practices.
5	Excessive grazing pressure by stock, feral and native animals.
6	Cropping on floodplains and lake beds.
7	Introduced fish species and aquatic weeds.
8	Rising saline groundwater beneath floodplains.
9	Irrigation practices on or adjacent to floodplains.
10	Urban and recreational developments.

Other options that need to be explored are the use of engineering solutions. The Murray has a significant investment program aimed at engineering solutions (such as regulators and pumps to enable water to be delivered to wetlands as the "offtake" level requires high river levels). This program commenced with the Living Murray Program and NFF understands the funding program is similar to that of the Living Murray (i.e. around $500M).

The issue of concern is that the remainder of the Basin requires a similar program. This will minimise the volume of water required to address environmental assets and outcomes. If a decision is taken to assess water requirements without considering the non-flow and engineering solutions, then NFF expects that irrigation communities will be considerably affected. Importantly, the impact to water entitlements will be considerable and property rights infringed unnecessarily.

One issue not canvassed by the SDL Issues Paper is whether existing wetlands are natural or man-made in terms of recent history watering regimes. In considering the future watering requirements, it should not be expected that man-made regimes are the status quo – in some cases the regime has been put in place to assist irrigation. NFF understands that some of Victoria's major wetlands may fall into this category. This issue must be considered and included in future water requirements.

NFF is of the view that if key environmental assets have appropriate watering regimes, then importantly, key ecosystem functions and outcomes will also be addressed, i.e. multiple outcomes from the same water. One of the important trade offs for entitlement holders is whether changing current protocols for return flows from flood events (i.e. from being added into the consumptive pool) to use for downstream wetlands. This action of itself will impact on reliability of entitlements. However, if the water required for the environment is reduced by this action, then this may be an acceptable trade off. NFF encourages the MDBA to make this trade off information available to the sector for further discussion and debate.

At this late stage, it is unsatisfactory that no list (not even a draft) of key environmental assets is available and that key ecosystem functions or environmental outcomes have been identified. This makes it extremely difficult for stakeholders to make informed comment on the SDL Issues

[6] Source: http://www2.mdbc.gov.au/nrm/water_issues/wetlands.html

Paper. If not already intended, there is an onus and an imperative on the MDBA to ensure that stakeholders are provided with a list immediately.

Another important issue, once environmental assets are identified, is the environmental watering plans (location, map, photos, current condition, current impacts, management options etc) for each asset. This must include the current water requirements, the future water requirements – and what the gap is likely to be. Once the gap is identified, what management options may be appropriate, including non-flow and engineering solutions?

As an example, the Macquarie Marshes are 80% privately owned and likewise, approximately 50% of the Narran Lakes are privately owned. No amount of water or a watering program will deliver environmental outcomes. NFF understands that irrigators in the Macquarie Marshes purchased a block of land and locked it up. Over time, this land clearly demonstrated that the environmental degradation to the Marshes was a result of grazing by landowners and not irrigation diversions. Figure 1 below shows the impact of grazing compared to a neighbouring nature reserve in 2005.

Figure 1 Fence on Macquarie Marshes showing the impact of grazing to an ungrazed nature reserve[7]

In summary, the MDBA must not duplicate actions and plans already underway at a local catchment level. Non-flow management options and engineering solutions need to be implemented to minimise the volume required for environmental water. The discussion in the SDL Issues Paper on environmental watering failed to address these issues and as a result, the SDL Issues Paper lacks the required level of transparency.

Moreover, the MDBA cannot take the position that the Basin Plan is the solution for all environmental issues in the Basin. The MDBA must target solutions to high priority systems – and there is an argument that a little water for a wetland or floodplain in good condition is a more effective outcome than a lot of water for a highly degraded wetland or floodplain. This important decision on what to protect and restore and what to leave alone must be taken across all identified assets, ecosystem functions and outcomes. This discussion must take place before assessment of the Basin's environmental water requirements.

[7] Source: http://www.jennifermarohasy.com/blog/archives/000949.html

NFF reiterates that the development of solutions for key environmental assets will also restore key ecosystem functions, and environmental outcomes. In determining the Basin Plan, the MDBA must make the hard decisions on which environmental assets and ecosystem functions/outcomes will be the focus for the Basin Plan. Agriculture, and rural communities, should not be the only sector impacted by the Basin Plan.

Sustainable Rivers Audit

NFF notes the use of the Sustainable Rivers Audit (SRA) in the SDL Issues Paper. The NFF notes that the report is based on only one round of sampling. Report 2 (due 2010-11) will be more comprehensive and will include trends. This report will be received during the consultation period for the Basin Plan. The MDBA must make it clear how this second report will be used for the draft and then final Basin Plan. Particularly, how this information may be used to change the consultation draft to the final Basin Plan.

Report 1 sampling occurred during significant drought periods. The sampling is not evenly spread across the catchments (sometimes concentrated in upper catchment and very few in lower catchments – notably for fish and thus probably is not an accurate indication of lower catchment fish samples). In this report, hydrology rated quite well for all but four catchments but fish & macro invertebrates poorly. The good hydrology results do not explain the poor result for fish & macro invertebrates – in some catchments it was the montane reaches that rated poorly. Again, this is not explained by hydrology.

Of concern is that this report appears to be the focus of many Government decisions. As an example, the DEWHA refers to this report in the table on water purchases on the website (http://www.environment.gov.au/water/policy-programs/entitlement-purchasing/2008-09.html) as well as on the catchment profiles. NFF is concerned that the SRA appears to be used – and perhaps inappropriately relied upon – as a "health rating" for the Basin.

The NFF recommends that the SRA ought not to be an input into the Basin Plan – it is not the purpose of the report and the report has significant inaccuracies and errors.

Proposed approach to determining "take"

The definition of "take" in the Water Act 2007 becomes any activity that reduces water in the water source, or prevents water from becoming runoff into a water source. As such, this could potentially cover a wide range of water uses, including dryland agriculture or use of pasture such as lucerne. The definition of "take" could also include all releases of water from storage dams (see point (c) under Water Act 2007 definition of "take") for the purposes of diversion (irrigation, stock & domestic and urban) or even the environment. It also could potentially mean the storage of water in catchment dams (point (d) under Water Act 2007 definition of "take"). This definition is impractical and confusing.

NFF notes that the MDBA has essentially given any and all environmental water as "pass" in this definition[8]. NFF recommends that the MDBA must be clear on what it considers "take" for the purposes of considering "diversions" for assessment of the SDL – this means beyond what has been identified in the SDL Issues Paper of the "private" use of water. The MDBA must clarify at what point this "private" use of water is to be included and excluded.

The SDL Issues Paper describes six categories of take but does not take a position at what point these categories are to apply for the purposes of determining take under the SDL (e.g. all of

[8] SDL Issues Paper, page 28

Basin or WRP areas only). This information is critical to provide stakeholders with the ability to clearly determine a position.

Importantly, water that may not have been included in WRPs may now be included. This will result in a more significant impact on entitlement holders. The MDBA must provide some guidance on this issue. For example, if water that was previously extracted (e.g. floodplain interception) but not included in WRP volumes for diversions and now will be but the diversion volume is not increased then capped, will result in major impacts to existing entitlement holders. NFF views this as a perverse outcome. In other words, the MDBA cannot start including a whole range of new uses as diversions without revising the calculation of the various categories of diversions in WRPs. To do is most egregious.

It should also be noted that some of the accounting of "take" has been previously accounted for in other ways, for example, theft was part of "losses". NFF would expect a reassessment of all water inputs and water outputs in the water balance.

In terms of the "take" categories in the SDL Issues Paper, NFF supports in principle the inclusion of licensed and authorised take, licensed and authorised interception providing the issues outlined in the preceding paragraphs are clarified. Incidental interception activities such as plantation forestry should be required to obtain an entitlement to offset the impact. Moreover, unauthorised use is illegal and jurisdictions have an obligation to deal with these rather than include them as "take" for SDL assessment. Moreover, such use has previously been part of the "loss" component of water accounting.

NFF does not support the impoundment of water in storages (i.e. public supply dams) being included as "take". This is essentially only deferment of delivery and is a fundamental part of water management. If this was to be included, then Australia might as well take the decision to go back to pre-development with no dams and the consequential issues such as no water with which to provide critical human needs.

Net Water Use

While NFF supports the consideration of net water use (e.g. the gross volume of water diverted less return flows) for irrigation areas, NFF does not support this approach to water diverted at farm gate, i.e. the Mike Young and Jim McColl model that states that the farms should have a net water entitlement. The main reason is that any improvements in farm delivery efficiency would then be retained by the system. Why would a farmer invest in the future of irrigated agriculture and his farm asset if this approach was taken!

Proposed approach to interception activities

One of the major omissions on the SDL Issues Paper is that it is not clear where the assessment of the Basin's water will commence and how this relates to WRP areas. This becomes increasingly of concern when attempting to determine the water to be included in the SDL. As an example, the Basin covers areas in upper catchments that currently are not included in regulated surface water WRP areas. Regulated surface water assessment commences with dam inflows, storage volumes, and unregulated events below the dams. Water that is deducted from this includes losses, use and trade. If the assessment of the Basin's water "take" commences above the dam, including interception activities such as farm dams and plantation forestry, then there could be more severe and therefore perverse impacts on entitlement holders.

Clarification of this is a major concern for NFF. Importantly, interception activities must be resolved is such a way that does not inadvertently impact on entitlement holders. This may include the requirement for the impactor to acquire an entitlement to offset the impact. This will be particularly contentious for both the plantation industry and also upper catchment farmers. However, the significant farm dam impacts are from lifestyle or peri-urban farms.

In terms of what interception activities ought to be included, NFF supports MDBA undertaking an audit of the activities. While the Water Act 2007 states that only significant interception activities are included and managed, there is an argument that a cumulative impacts assessment approach is undertaken. In other words, it should not be individual activities – which may be small impacts – but the total of all these individual activities that should be assessed in terms of significance. As an example, individual farm dams will not be much of an impact, but as the Yass catchment shows, these all summed together have resulted in major impairment of runoff.

NFF supports the approach considered by the MDBA that all interception activities must be assessed, and where these are identified as being significant, will be required to obtain a water entitlement equivalent to the average volume being intercepted. Importantly, the MDBA must put in place a monitoring and compliance regime – or at least require the jurisdictions to have these as a mandated part of the accredited WRP.

Which interceptions activities are significant enough to be explicitly identified in SDL provisions?

There are a number of interceptions activities that have already been considered in terms of impact. Previous MDBC assessments (Van Dijk, et al., 2006) have considered a range of interception activities including afforestation, return irrigation flows, farm dams, vegetation recovery from bushfire, groundwater surface water connectivity (including unfettered groundwater extraction) and climate change.

It will be difficult to include the reduced water as a result of bushfire recovery as this is a natural process. Plantation forestry is a significant issue with major impacts in some catchments – however this must be reviewed in terms of cumulative impacts. South Australia is leading the jurisdictions in terms of managing impacts – now requiring entitlements to be acquired to offset the interception of water. NFF understands that under the COAG Water Reforms, it has been proposed that an acceptable management option will be to reduce irrigation allocations to offset plantation forestry interception. NFF rejects this approach.

Farm dams are likewise an issue. Some states have legislated upper catchment farm dams. Essentially, where this water is used for irrigation (or commercial uses), the landholder is required to obtain an irrigation entitlement to offset the interception. However, it is unlikely that compliance is monitored. In NSW, the state uses a voluntary "good neighbour" policy, i.e. "dob" in your neighbour as the method of compliance. This is unlikely to result in compliance as who wants to "dob" in the neighbour that you may need if there is a bushfire!

Farm dams are also used for stock & domestic water supply. Again using NSW, landholders have the right to 10% run off. However, there are significant differences between the allowable runoff versus the capacity of the on farm storage dam. There could be significant difference between the two resulting in major interception. Again monitoring and compliance is an issue. There are some management options that might be available – requiring an entitlement to offset the impact

of the storage/use volume or alternatively, requiring a bypass pipe or other infrastructure to ensure that the dam only holds the 10% run off allowed.[9]

Regarding reduced irrigation return flows, the major issue is the result of the improved water efficiency. Australian Governments and the wider community have demanded that irrigators and water supply is the most efficient. The perverse outcome of these applied duty of care standards are reduced irrigation area outflows. NFF does not support that these activities are included in the interception activities to be included in the Basin Plan.

One area that has significant groundwater development and farm dam impacts on surface water flows is between Adelaide and the Coorong and Lower Lakes. Development has been to the extent that extractors are affected and flows from the Adelaide Hills to the Lower Lakes have been severely affected. Anecdotally, NFF understands that this has had more of an impact on the Lower Lakes inflows than upstream development. Appropriate management must avoid situations like this, and this might be through the WRP accreditation process.

Pumping from groundwater bores adjacent to or in close proximity water sources is an acknowledged issue. NFF supports management protocols to resolve this interception activity.

Importantly, and not canvassed in the SDL Issues Paper is at what timeline this significant impact requires an offsetting entitlement. For example, do all interception activities in a catchment require an entitlement – or the large ones, or the ones implemented or established in the last 5 or 10 years or only future interception? The MDBA must provide some advice on how this might be applied at a local scale. Potentially, there could be winners and losers even within the interception uses. Moreover, how this is resolved may also flow on to impact existing entitlement holders.

Of particular interest to NFF is that where an entitlement is acquired to offset the significant interception use, these entitlements must not become tradeable – as this will simply exacerbate the situation. The MDBA must make certain there are adequate provisions to ensure that acquired entitlements to offset interception either cannot be traded, or if traded, the interception activity must cease.

Inter-valley sharing of Environmental Water Contributions

While there may be considered some merit in inter-valley sharing of environmental water contributions, there are some significant unknown impacts. The NFF does not support the "shepherding" of environmental water which is essentially one model of inter-valley sharing due to the unknown third party impacts.

NFF has previously noted that there are existing arrangements between environmental water and irrigators (e.g. Barmah Millewa Forest borrow for both Victoria and NSW, and that outflows from Barmah Millewa Forest watering events are reallocated to the consumptive pool) which essentially are in place to minimise socio-economic impacts of the re-balancing of environmental water. To cease these in favour of inter-valley sharing may create third party impacts and perverse outcomes for irrigators with flow-on social and economic impacts.

The third party impacts are largely unknown and until these can be quantified and eliminated, the NFF is not in a position to support inter-valley sharing. NFF does not support approaches that will lead to wins for the environment and leave irrigators in a worse situation.

[9] Farm dams in this context refer to stock and domestic supply dams not irrigation storage dams.

9. Optimising Social, Economic and Environmental Outcomes

Proposed approach to optimising social, economic & environmental outcomes through SDLs

The NFF notes, with concern, the approach taken by the MDBA in assessing the social, economic and environmental outcomes of the Basin Plan, i.e. mainly that social and economic appears to be considered as an afterthought. The objects of the Water Act 2007 require the MDBA to optimise the social, economic and environmental outcomes of the Basin Plan. This is clear and unambiguous.

The NFF rejects the statement in the SDL Issues Paper (p. 32) that the MDBA is required to develop a Basin Plan that is "*required to minimise the social and economic impacts*". The objects of the Act and the purpose of the Basin Plan (section 20(d)) are to optimise the social, economic and environmental outcomes. The MDB needs to urgently reconsider its approach to the development of the Basin Plan – and the SDL – to ensure the balanced approach to social, economic and environment.

NFF is concerned that the MDBA has not clearly articulated, at this stage, how to consider the social and economic impacts (as opposed to optimising the Basin Plan outcomes).

NFF recently attended a Collaborative NRM Forum at the University of Melbourne where Prof Andreas Ernst from Kassel University in Germany made a presentation on an integrated water management model for the Upper Danube Valley (for more information, see http://www.glowa-danube.de/eng/projekt/projekt.php). This model is nearly complete and has taken nine years to develop. Such a model for the Murray-Darling Basin is urgently required. The NFF urges the MDBA to consider overseas approaches and models that may be transferable to Australia.

The SDL Issues Paper notes that the proposed approach is to initially focus on minimising the average reduction in water availability. However, this does not provide the entire picture. Timing of water allocation announcements is also important. For irrigated crops and dairy, early season availability underpins planting decisions. For horticulture, the needs vary. Some require water during winter to resolve issues around frost damage to fruit while others (e.g. grapes) may require water in December following the "forced" drying out for grape quality.

It is important to ensure that current arrangements for water from the environment to irrigators remains as these underpin allocations unless it can be demonstrated that there is less impact for entitlement holders by using this for multiple environmental uses. For example, irrigators can "borrow" allocations from the Barman-Millewa Forest Allocation to underpin early season announcements. These borrows are then repaid when allocations reach trigger levels. The second arrangement is when environmental water returns to the river from a wetland watering event, these are used to increase allocations, i.e. the return flows form part of the consumptive pool. Changes that use this water for downstream environmental sites may be appropriate only if this is the best option or trade off to minimise the impact of a more stringent SDL on entitlement holders. However, NFF notes that such trade offs must be modelled and discussed with stakeholders to ensure transparency.

Another example is the "shepherding" of water from one water source downstream to other environmental sites. This is essentially creating a "super" class of high security environmental water despite this water retaining its characteristics (i.e. tagged entitlements).

As a high level principle, NFF supports that there should be no winners and no losers, in particular irrigation entitlement holders should not be impacted by other approaches to management of environmental water allocations. Any such arrangements must be modelled to the 2004 WRPs to ensure there are no impacts and to provide transparency. The irrigation stakeholders must be involved with this exercise.

Future Increases to SDL

Most discussion outlines the proposed SDL and future of a reduction to diversions. However, it has not been canvassed about future increases (e.g. if future run off is wetter than expected). If the SDL is set and there is a future increase, this increase cannot be used by the States to issue new entitlements. This increase must be used to improve allocations and reliability of all existing entitlements.

Environmental Water

NFF notes that environmental groups have called for no changes to environmental water (particularly planned environmental water) in a future of less water. NFF does not support this approach due to its inherent impact on all entitlement holders. Environmental water and irrigation water must all be subject to variability with climate change.

10. Surface Water and Groundwater Connectivity

Proposed approach for dealing with surface water groundwater connectivity

Surface water and groundwater connectivity is not just one way, i.e. from surface to groundwater. Groundwater often is the base flow in a river system. Some systems are more connected than others, and extraction from deep groundwater aquifers is unlikely to be an issue for the Basin Plan. In summary, the issue is complex and knowledge of the system at a Basin or local scale is variable.

Management of groundwater surface water connectivity is a major issue. At present, it appears that the impact will be borne solely by surface water users. However, there must be consideration of how there will be a balanced approach between both surface water and groundwater systems and entitlement holders. The SDL Issues Paper is silent on this.

NFF supports the proposed approach to set separate SDLs for groundwater and surface water and that longer term management for significant connectivity will be required but the issue in the preceding paragraph must be considered.

One issue that is not canvassed by the Basin Plan is the Great Artesian Basin (GAB) which partly lies within the Basin. What approach will be used by the MDBA for the GAB – or will this not be included?

11. Setting and Expressing SDLs

NFF notes that the Water Act 2007 provides the MDBA with significant flexibility in how to set the SDL – basically, this could be anything. NFF supports that the MDBA takes a flexible approach to setting SDLs. However, it is difficult to make comment on such an important issue when little information is given on how the SDL would be calculated for each form of take and as a whole.

This submission has outlined some issues which may have significant impacts on entitlement holders, for example by including all water users and uses in and outside of a WRP area. This is generally overlaid with the assumption that the SDL will be lower than is currently the case. In other words there is to be much less water shared by possibly more users and uses.

Proposed approach to setting and expressing SDLs

NFF notes the general discussion supporting a long term rolling average for groundwater, small unregulated systems and some interception activities. However, the MDBA views this approach as having some disadvantages for regulated and larger unregulated systems. These relate to changes of time and location, particularly climate variability and climate change.

NFF notes that there should also a requirement to balance inter-generational equity and this has not been canvassed in the SDL Issues Paper. Basically, inter-generational equity is balancing the changes of today with tomorrow's water users. In part, this can be achieved by being less conservative today, and using the WRP and Basin Plan planning process to review the SDL – as should be the case – over time (e.g. ten yearly). Moreover, most plans also contain a mid-term review mechanism. NFF notes that this could resolve some of the disadvantages perceived with regulated and larger unregulated systems. It could also assist in allowing adjustment should conditions prove to be wetter than estimated when the Basin Plan and WRP was established, particularly if the MDBA takes a significantly conservative approach to setting the SDL.

NFF has already commented earlier in this submission on the models being used for the SDLS. These concerns must be resolved to give confidence in the process and the Basin Plan and to provide transparency beyond the MDBA.

Importantly, the way in which the SDL is set and expressed must also be responsive to the needs of the irrigation sector. For example, if water is unnecessarily allocated to the consumptive pool until late November, there will be significant impacts on crop planting. Effectively irrigators will be required to defer use until the following year (via carry over) or sell the late allocation. It will also result in farmers taking riskier planting decisions hoping that allocations will increase when it appears that a potential watering event fails to eventuate.

Importantly, it is not just the provision of water to the environment that has the potential to impact on irrigation allocations. It is also the rules that apply to the management of the system. To this end, ad hoc attenuation of entitlements through manipulation of these rules will not be supported. The process must be transparent and agreed so that irrigators know and understand how their allocations will be issued. This is also a fundamental requirement of the water market.

Furthermore, NFF notes the review of the MDB Agreement (now Schedule 1, Water Act 2007) currently underway. Amendments to the rules may also affect Murray River based entitlements in NSW, Victoria and South Australia. This occurred through the Water Act 2007 provisions around critical human needs (CHN) and new reserves policies. The triggers for these will be important in terms of their impacts to entitlement holders – as water set aside today for a future CHN or reserve will affect entitlement reliability. The SDL Issues Paper is silent on these issues.

NFF supports the use of models to compare different SDL approaches. However, these models must not become tools solely for the use of the MDBA. These model runs must be transparently discussed with peak stakeholders and their views garnered for the best approaches and tradeoffs, as well as to ensure that the assumptions about irrigated agriculture are as accurate as possible.

The models must also be validated against the 2004 WRPs as a benchmark for assessment of risk assignment for both the Commonwealth and the States.

Lessons from MDB Cap

One of the major issues confronting the existing Cap is that the Cap is managed on a long term average at a state level, but is assessed at a Basin level annually. This has lead to criticisms of specific valleys diverting more water than allowed on an annual basis but not on an average long term basis. The arrangements at a Basin level are essentially a snapshot in time and unresponsive to changing inter-annual conditions.

Application of SDL

NFF notes that some entitlement holders are advocating for particular water entitlements to take the entire cut in diversions from the SDL. This is essentially respecting one type of property right and not others. NFF suggests that the application of the SDL must be undertaken equitably across all water uses and water users. This includes non-entitlement uses such as plantation forestry and farm dams. It would be an unfortunate outcome if State Governments chose to reduce water allocation and therefore reliability to allow increased interception, i.e. to not require these uses to acquire an entitlement to offset the water use.

Indigenous Cultural Water Use

NFF notes that the MDBA will consider cultural water use as part of the Basin Plan. The position of the NFF is that true cultural water use is very much aligned with environmental water use and to this end would support allocations from the environmental pools to Indigenous cultural water use.

However, some have noted that cultural water use is about a pool of water used for commercial use (production and or sale). NFF will only provide support for such commercial use of water where jurisdictions acquire entitlements for Indigenous commercial use.

12. Conclusion

A successful outcome for the MDB Basin Plan will be a stronger more confident rural sector complemented by healthy riverine ecosystems that can adapt to a changing climate. It is unfortunate that the time parameters prescribed for the development of the Basin Plan considerably underestimated the time required for good water planning.

Farmers, the community and the environment must all be part of a trade off to achieve a strong future for the Murray-Darling Basin.

The MDBA must consider other non-flow options and engineering solutions for the management of environmental outcomes (assets, ecosystem functions and outcomes).

NFF is concerned that the MDBA's interpretation of the Basin Plan provisions in the Water Act 2007 will not address the needs of the rural sector by not taking an appropriate balance between the productive sector and the environment.

The MDBA must avoid an outcome where conflict between upstream and downstream interests (both environment and irrigators) diminishes agriculture, riverine communities and the environment.

NFF looks forward to working with the MDBA to clarify these issues.

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Bibliography

Chiew, F., Cai, W., & Smith, I. (2009). *Advice on defining climate scenarios for use in the Murray-Darling Basin Authority Basin Plan modelling.* Canberra: CSIRO.

CSIRO. (2008). *Water Availability in the Murray-Darling Basin: A Report to the Australian Government from the CSIRO Sustainable Yields Project.* Canberra: CSIRO.

House of Representatives. (8 August 2007). *Hansard.* Canberra: Parliament of Australia.

Murray-Darling Basin Authority. (2009, September). Fact Sheet 3: Sustainable Diversion Limits and the Impacts of Environmental Water Purchases. Canberra, ACT, Australia: Murray-Darling Basin Authority.

Van Dijk, A., Evans, A., Hairsine, P., Khan, S., Nathan, R., Paydar, Z., et al. (2006). *Risks to the Shared Water Resources of the Murray-Darling Basin.* Canberra: CSIRO.

Van Dijk, A., Kirby, M., Paydar, Z., Podger, G., Mainuddin, M., Marvanek, S., et al. (2008). *Uncertainty in river modelling: A report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields.* Canberra: CSIRO.

Attachment 1 – Environmental Water Products

Jurisdiction	Allocation name	Year approved	Volume and main conditions	Recovered	To be Recovered
MDBC	Barmah-Millewa Forest EWA	1993	100 GL/yr shared by NSW and Victoria (provision to carryover up to 700 GL; can be withheld for up to 4 years)	100.0	
MDBC	Barmah-Millewa Overdraw	2001	50 GL/yr during wetter years (around 80% of years) shared by NSW and Victoria	50.0	
NSW	Lower Darling River ECA	2002	30 GL/yr (Menindee Lakes must be>480 GL, and have been >640 GL since the last time it was <480 GL)	30.0	
NSW	NSW Murray Wetlands EWA	2000	30 GL/yr	30.0	
NSW	Moira Lakes Savings	2000	2.027 GL/yr (for use in NSW Murray wetlands)	2.0	
NSW	NSW Murray Additional Environmental Allowance	2004	5.4 GL/yr (whenever the high security allocation is equal or less than 97%)	5.4	
NSW	Murrumbidgee ECA	1998	25 GL/yr (additional volume of **25 GL/yr** when allocations are <80%, increasing up to **200 GL** for allocations 80% - 100%)	200.0	
NSW[10]	RiverBank	2006	~100 GL/yr	32.0	68.0
FED	Darling River Water Savings Project	2007	~63 – 183 GL/yr (savings estimated in Part 1 Report)		187.0
VIC	Victorian Murray Wetlands EWA	1987	27.6 GL/yr (2,600 ML/yr allocated to Hird and Johnsons Swamps)	27.6	
VIC	Gunbower Forest EWA	1997/98	25 GL (one in three years) and **40 GL** (one in twelve years)	65.0	
VIC	Goulburn River EWA	1995	80 GL in November in wet years (around 70% of years). Additional **25 GL** when inflows to Lake Eildon have been high and the storage is relatively full	105.0	
VIC	Food Bowl Stage 1	2007	~75 GL/yr	0.0	75.0
FED	Food Bowl Stage 2	2008	~112.5 GL/yr		112.5
VIC	Wimmera & Glenelg Rivers	2003/04	41.24 GL/yr	41.2	
VIC	Lodden River	2005/06	2 GL/yr	2.0	
SA	SA Additional Dilution Flows	1987	3,000 ML/d or 1095 GL (when storage volumes in the Menindee Lakes exceed nominated trigger points, at the same time the combined storage volume of Hume and Dartmouth Reservoirs also exceed nominated triggers)	1095.0	
SA	SA Murray Wetlands EWA	2002	200 GL/yr	200.0	

[10] All coloured rows are projects yet to be completed.

Jurisdiction	Allocation name	Year approved	Volume and main conditions	Recovered	To be Recovered
WFR	Water for Rivers	2003	212 GL/yr (Snowy ANF below Jindabyne Dam); plus70 GL/yr (Murray) (**197 GL recovered**; **65.67 GL for Murray;** 98 GL/yr committed/ underway/ scoped**)**	131.3 65.7	80.7 4.3 13.0
MDBC	The Living Murray Initiative	2004	~500 GL/yr (**411.68 GL/yr recovered**; 73.2 GL/yr to be implemented)	411.7	73.2
FED	Water for the Future Restoring the Balance	2008	~2087 GL/yr (**637.7 GL recovered**); estimate based on average price per megalitre paid to date	637.7	1449.3
FED	Water for the Future Rural Water Infrastructure	2008	~800; estimate based on average price per megalitre of announced projects; excludes Food Bowl 2 and Menindee Lakes as these are reported separately.		800.0
				3231.6	**2863.0**

Attachment 2 – Various lists of Wetlands

Figure 2 Major Wetlands in the Murray-Darling Basin[11]

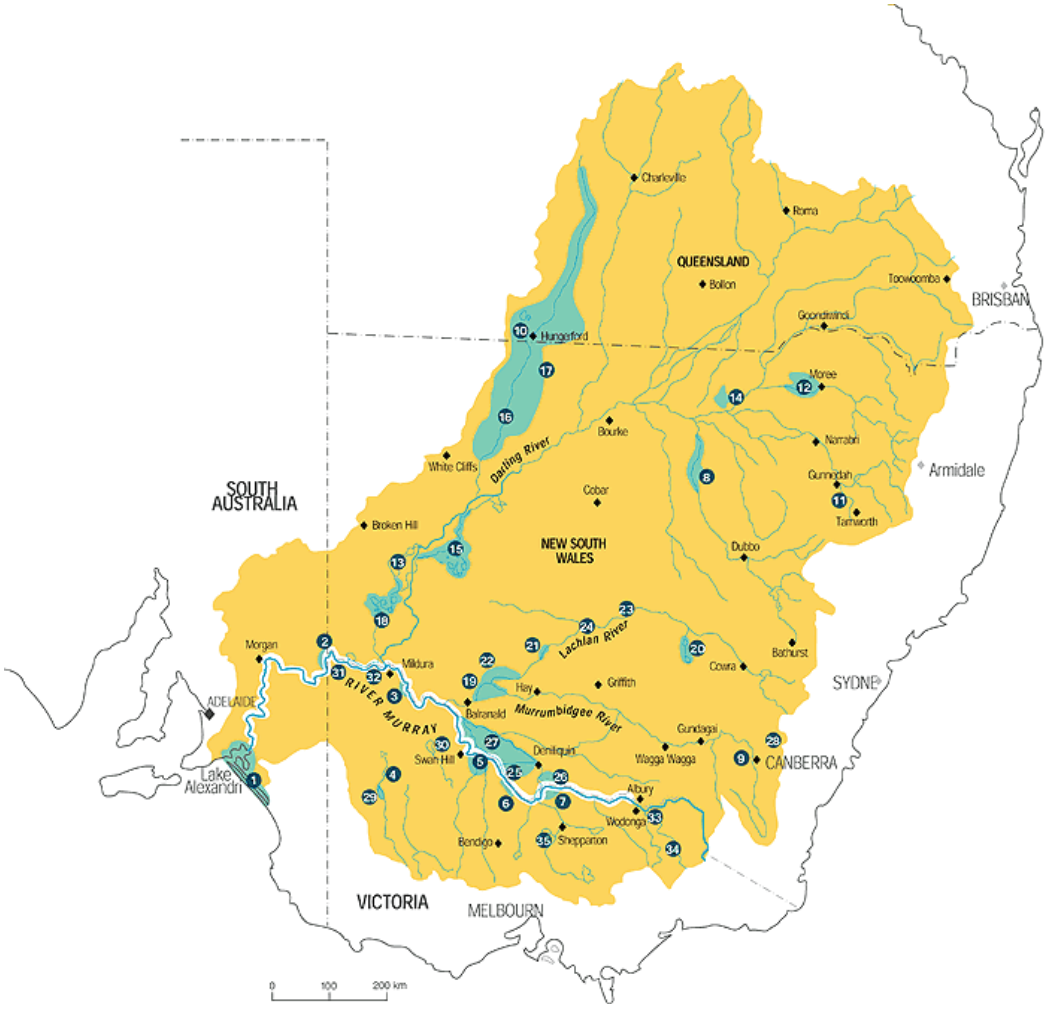

Table 2 Wetlands in the Murray-Darling Basin that are of International Importance and listed under the Ramsar Convention[12]

State	Wetland
Queensland	Currawinya Lakes National Park
New South Wales	Macquarie Marshes Nature Reserve
Victoria	Barmah Forest
	Gunbower Forest
	Hattah-Kulkyne Lakes
	Kerang Lakes
	Lake Albacutya
South Australia	Coorong and Lakes Alexandrina and Albert
	Riverland, including Chowilla Floodplain System
ACT	Ginini Flats, Namadgi National Park

[11] Source: http://www2.mdbc.gov.au/nrm/water_issues/wetlands.html
[12] Source: MDBC archived website http://www2.mdbc.gov.au/nrm/water_issues/wetlands.html

Table 3 CSIRO Key and Large System Wetlands

CSIRO Key Wetlands (in order of flooding impact)	CSIRO Large System Wetlands
Mid Murrumbidgee	Paroo Overflow
Lake Numulla (Paroo)	Narran Lakes
Lowbidgee (M'bidgee)	Gwydir Wetlands
Paroo overflow lakes	Macquarie Marshes
Yantabulla Swamp (Warrego)	Great Cumbung Swamp
Gwydir Wetlands	Barmah-Millewa
Lower Balonne Floodplain	Gunbower
Lower Lakes & Coorong	Koondrook-Perricoota
Great Cumbung Swamp	Chowilla
Talyawalka Creek (Barwon Darling)	Lindsay-Wallpolla
Barmah-Millewa	Lower Lakes/Coorong
Hattah Lakes	Murray Mouth
Gunbower-Koondrook-Perricoota	
Macquarie Marshes	
Lake Wyara (Paroo)	
Lower Darling Anabranch	
Booligal Wetlands (Lachlan)	
Chowilla Floodplains	

Table 4 Important wetlands of 5,000 hectares or more in extent[13]

State	Name	Location
NSW	Lake Goran	Liverpool Plains
	Lower Gwydir Wetlands	Lower Gwydir River and Gingham Watercourse
	Menindee Lakes	Lower Darling River, nr Menindee
	Narran Lakes	Terminal drainage of Narran River
	Talyawalka Anabranch and Teryawynia Creek	Darling River between Wilcannia and Menindee
	Paroo Overflow	Paroo-Warrego Riverine Plains
	Yantabulla Swamp	Paroo-Warrego Riverine Plains
	Darling Anabranch Lakes	Darling River Plains on Great Anabranch
	Lowbidgee Floodplain	Murrumbidgee River between Maude and Balranald
	Lake Cowal-Wilbertoy Wetlands	Lachlan River Floodplain between Forbes and West Wyalong
	Booligal Wetlands	Floodplains of Lachlan River distributaries
	Great Cumbung Swamp	Lachlan River floodplain near Oxley
	Lachlan Swamp	Mid Lachlan River
	Lake Brewster	Lachlan River floodplain
	Koondrook and Perricoota Forests	Murray River, between Moama and Barham
	Millewa Forest	Murray River, between Tocumwal and Barmah
	Werai Forest	Along Edward and Neimur Rivers
	Lake George	Between Canberra and Goulburn
Victoria	Lake Hindmarsh	North-west of Jeparit
	Lake Tyrrell	North-west of Sea Lake
	Lindsay Island	Near Mildura
	Wallpolla Island	Near Mildura
	Lake Hume	Near Albury-Wodonga
	Lake Dartmouth	On Mitta Mitta River
	Lower Goulburn River Floodplain	Below Goulburn Weir

[13] Excludes Ramsar sites; source: http://www2.mdbc.gov.au/nrm/water_issues/wetlands.html