australian network of environmental defender's offices

Submission on the Guide to the proposed Murray-Darling Basin Plan

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The Australian Network of Environmental Defender's Offices (ANEDO) consists of nine independently constituted and managed community environmental law centres located in each State and Territory of Australia.

Each EDO is dedicated to protecting the environment in the public interest. EDOs provide legal representation and advice, take an active role in environmental law reform and policy formulation, and offer a significant education program designed to facilitate public participation in environmental decision making.

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Introduction

The Australian Network of Environmental Defender's Offices (ANEDO) is a network of 9 community legal centres in each state and territory, specialising in public interest environmental law and policy. ANEDO welcomes the opportunity to provide comment on the Guide to the proposed Murray-Darling Basin Plan (**the Guide**).

EDO offices have been involved with the development of the *Water Act 2007* (**Water Act**) and the Murray-Darling Basin Plan (**Plan**) for a number of years. For example EDO Victoria and EDO NSW, in conjunction with peak environment groups, reviewed and commented on the Water Act as it was being developed. EDO offices have been advising peak environment groups across Basin States for the past 18 months on the Water Act and development of the Plan. We have attended the Murray-Darling Basin Authority (**MDBA**) peak bodies forums in 2009 and 2010 and have attended some of the MDBA information sessions on the Guide.

Our submission focuses on the legal requirements governing the development of the Plan – i.e. what the Water Act requires of the MDBA and the Plan – and whether the proposed approach in the Guide demonstrates that the MDBA will in fact meet those requirements when making the Plan. In addition, scientific officers at EDO NSW have reviewed the Technical Guide and provide comment on aspects of the MDBA's use of scientific data. We specifically focus on four issues:

1. How social, economic and environment factors must be considered under the Act;
2. The requirement that social and economic analysis include positive, as well as negative, impacts;
3. Whether the MDBAs approach as outlined in the Guide meet the requirements of the Water Act; and
4. The need for scientific results to be incorporated into the Guide without bias.

Our key findings and recommendations include:

- Current suggestions that social, economic and environmental considerations are to be balanced against each other in the Basin Plan are incorrect and not supported by the Water Act.
- Social and economic impacts are important considerations under the Water Act; however rather than being part of the decision of what is environmentally sustainable extraction, economic and social considerations are properly part of the decision of how best to deliver that environmentally sustainable extraction outcome and what transitional assistance is needed to achieve this outcome.
- The Guide lacks analysis of the social and economic costs of taking no action. This is inconsistent with best practice regulatory impact analysis.
- The MDBA's approach as outlined in the Guide does not currently meet the requirements of the Act in three key areas:
    - Limiting consideration to the lower range of 3000-4000GL only will not meet the environmental requirements of the Act based on the MDBA's own analysis, and is not supported by the Act;
    - The Guide lacks detailed analysis of how the Basin Plan will meet the requirements of international agreements such as the Ramsar Convention and the Convention on Biological Diversity; and,

- The identification 18 key indicator sites may not adequately provide for all key environmental assets and broader ecosystems, habitats and biodiversity as required by the Act.

- The Guide has undertaken extensive research and modelling in order to understand the factors affecting hydrology across the Basin, but has failed to incorporate scientific findings into policy decisions underpinning the Guide.

1. How must social, economic and environment factors be considered under the Act?

There has been considerable public debate in recent weeks over how environmental, social and economic considerations must be treated in establishing a Plan for the Basin in accordance with the Water Act.

We are concerned by public statements made by the MDBA and others during the last few weeks regarding what the Water Act requires of the MDBA in relation to the 'weighing up' of social, economic and environmental considerations. Claims that the Water Act does not allow consideration of social and economic factors in developing the Plan are false. Equally false, however, are more recent comments that the Water Act requires environmental, social and economic impacts to be 'balanced' against each other.

The principle aim of the Basin Plan is to return water extraction in the Basin to environmentally sustainable levels. The purpose for this is to meet our international obligations, protect and restore ecological values and ecosystem services, and improve water security for all users.[1] To meet this aim the Water Act clearly and deliberately establishes a process that requires the assessment of what is environmentally sustainable extraction to be based on scientific analysis. It does not allow the decision of what is environmentally sustainable extraction to be based on a 'balancing out' of environmental, social and economic factors. If such non-scientific considerations were to be injected into the assessment process, the resulting determination would not establish 'environmentally sustainable extraction' levels, it would instead simply justify adoption of current extraction levels - that are clearly unsustainable and that prompted passage of legislation seeking to address the Basin's long-term survival in the first place.

Reliance on scientific data alone in determining what is environmentally sustainable extraction does not, however, mean that economic and social factors are not important or should not be considered – indeed the Act requires that they are considered. The key issue is *at which point* of the process non-scientific considerations should be taken into account. Rather than being part of the decision of what is environmentally sustainable extraction, economic and social considerations are properly part of the decision of how best to deliver that environmentally sustainable extraction outcome and what transitional assistance is needed to achieve this outcome.

The main environmental requirements in the Act are the international obligations around the Ramsar Convention and Convention on Biodiversity (and others) and the sustainable diversion limit (SDL) obligations (i.e. the SDLs must be set at an 'environmentally

[1] This can be seen through the objects of the Act, the provisions of the Act and the purpose and basis of the Basin Plan. For further discussion of this see EDO Victoria's advice to the Australian Conservation Foundation of 14 December 2010, attached to the ACF's submission to the MDBA on sustainable diversion limits 24 December 2009.

sustainable level of take'). These levels must not compromise key ecosystem functions, key environmental assets, the productive base of the water resource, and key environmental outcomes including ecosystem function, biodiversity, water quality and water resource health).

The Act therefore requires the MDBA and the Minister to meet the environmental requirements of the Act. They cannot favour social and economic considerations if to do so would mean they are not meeting the environmental requirements of the Act. However, provided the environmental requirements are met, they must consider how to meet them in a way that optimises social, economic and environmental outcomes. This does not mean that all three are balanced against each other right from the start, it means that in meeting the environmental outcomes in the Act, they must do it in a way that minimises negative social and economic impacts.

It is clear from the Guide that this interpretation was the interpretation that the MDBA itself had already understood and acted upon in developing the recommendations in the Guide. Although we have some concerns about the way in which the MDBA has applied the interpretation to the SDLs (set out below), the broad interpretation is the same.

We have reviewed the legal advice from the Australian Government Solicitor (AGS) to Minister Bourke in October 2010. Despite comments from some stakeholders to the contrary, the advice to the Minister from the AGS supports the above interpretation and is consistent with the approach the MDBA had already outlined it the Guide. In the first instance the advice may appear to focus on social and economic considerations, but that is because the question asked (although not included in the advice) was clearly to the effect of 'Does the Act require the Minister and the MDBA to take into account social and economic factors in developing and making the Plan?' It is logical that the answer to a question such as this would focus on social and economic requirements. (In the same way an advice that asked what the environmental requirements of the Act were would have limited mention of social and economic considerations.)

The AGS' advice to Minister Burke clearly states that the MDBA and Minister must meet the environmental requirements of the Act, and that economic and social considerations do not weaken the environmental requirements, but assist in determining how to meet those environmental requirements.[2] We believe that it needs to be emphasised that the AGS' advice cannot, in any way, be construed to support a reduction of the lower range of environmental water returns below 3000 GL in order to accommodate 'social' or 'economic' concerns, as has been indicated publicly by the MDBA in various forums. (We discuss this further below.)

It must also be noted that there are mechanisms already built into the Act aimed specifically at minimising any negative social and economic impacts. The three key mechanisms established in the Water Act to minimise social and economic impacts flowing from the determination of 'environmentally sustainable extraction' are:

- The phase-in time for States to comply with the Basin Plan through transitional water resource plans (s241) and interim water resource plans (s242). In Victoria in particular this will give parties an extra eight years to implement the requirements of the Plan.

[2] See for example para 14 of the advice.

- The provision for a temporary diversion limit (s 24) which is specifically provided to minimise negative social and economic impacts when SDLs are lower than the amount of water that has been taken historically. If used, the temporary diversion limit allows extra water to be taken above the SDL for up to five years.
- The risk allocation framework established in Part 2, Division 4 of the Water Act, which provides that the Commonwealth will provide payments for changes to water allocations as a result of a change of government policy or certain other circumstances. The Commonwealth is already addressing this obligation in part by buying back water from sellers.

In light of these provisions, it is unclear to ANEDO why the MDBA has made comments to the effect that they cannot consider social and economic impacts when in fact they can, and have, considered them.

In summary, the Act clearly and deliberately includes a number of detailed provisions that take into consideration social and economic factors. However, those factors are accounted for *after* 'environmentally sustainable extraction' levels are established based on the available scientific data – they clearly are not meant to be 'double-counted' by also being considered at the initial stage of establishing 'environmentally sustainable extraction' levels. This approach assists the Plan to achieve its core purpose of returning extraction in the Basin to environmentally sustainable levels.

2. Appropriate social and economic analysis must include positive, as well as negative, impacts.

A further concern of ANEDO in relation to social and economic impacts is the apparent assumption by the MDBA and others that the only social and economic impacts to be considered from returning the Basin to environmentally sustainable levels are negative impacts. The provisions of the Water Act do not support this conclusion. For example the Water Act refers to 'optimising environmental, social and economic outcomes'[3]. This includes optimising the positive social and economic impacts that will result from achieving environmentally sustainable extraction levels and the resulting environmental benefits and increased water security. These positive social and economic impacts must therefore be included in any decision-making around options for meeting the environmental requirements of the Act. The Guide to the Basin Plan therefore does not paint the full picture as it does not include analysis of the costs of no action. There are precedents in many jurisdictions that a critical element of comprehensive regulatory impact assessment processes is an assessment the costs of taking no regulatory action.[4] Such analysis has been missing from the debate so far.

Any modelled economic impacts should consider a long term timeframe which will more accurately predict the positive flow-on effects increased tourism such as boating, fishing and other recreation activities will have on rural centres and regional areas. The MDBA has not sufficiently considered the long term benefits of improved environmental health

[3] See s3 and 20.

[4] For example, Part 3.5 of the Office of Best Practice Regulation *Best Practice Regulation Handbook* confirms that most Regulatory Impact Statements use the status quo as the costing benchmark, and Part 3.2 recommends assessing the cost of no action. Although the Plan Guide is not a Regulation, this Handbook does show that it is standard government practice to cost the status quo when determining regulatory impacts. Available at: http://www.finance.gov.au/obpr/proposal/handbook/3-preparing-a-regulation-impact-statement.html#s35.

to the wider community, and has focussed on the short term negative impacts to agriculture.

3. Does the MDBAs approach as outlined in the Guide meet the requirements of the Water Act?

For the purposes of the discussion below we note that the Guide is an indicator of how the MDBA is developing the Basin Plan (rather than being the Basin Plan itself) and our comments therefore focus on key areas where we believe the MDBA is or is not on track to meet the requirements of the Act through the Plan.

As noted above, although we consider the MDBA's interpretation of how environmental, social and economic considerations should be treated accords with the AGS advice and is generally sound, the way in which the MDBA has *applied* these principles to decision-making does not accord with the Act in some key areas.[5]

Our main areas of concern with respect to compliance with the Act are:

- The MDBA's decision to only examine scenarios for surface water SDLs at the lower range of 3000-7600GL;
- The lack of consideration of what the Plan must do to give effect to international agreements and fulfil Australia's obligations under those agreements; and
- The methodology proposed by the MDBA for setting key environmental assets

We address each of these in turn.

Setting surface water SDLs

The Guide states that a minimum of 3000GL and a maximum of 7600GL for environmental water returns would meet the environmental requirements of the Act. However, the Guide then proceeds to state that, in order to fulfil their obligation to optimise social, economic and environmental outcomes while meeting the environmental requirements of the Act, the MDBA will only examine the lower band of 3000 – 4000GL because the social and economic impacts above that would be too great. We believe this particular approach does not accord with the Act.

If the 3000-4000GL would meet the environmental requirements of the Act then the MDBA would be free to limit its consideration to this range in order to optimise social and economic and environmental factors. However the Guide itself plus evidence from other sources indicates that the lower range option will not meet those requirements.

The following evidence indicates that the 3000 – 4000GL will not meet the environmental requirements of the Act:

[5] Although at a general level the MDBA's approach to developing the Plan is consistent with the requirements of the Act, some of the language describing the Plan development process in the Guide indicate that the MDBA's understanding of this process is confused. As required by the Act, the MDBA has done an initial assessment of what the environmental water requirements of the Basin are based on scientific analysis, before proceeding to consider the economic and social impacts. However in parts of the Guide it states that the MDBA must balance out all three considerations. For example at page xx it states "The task of the Authority is to balance social and economic effects of reduced consumptive water with the requirements to determine the amount of water needed for the environment." As discussed above, this statement implies an equal balancing of all three factors and is incorrect.

a) The Guide states that the lower range will leave five regions in 'poor' condition.[6] Catchments with a 'poor' rating were judged to be in a state where the ecosystem functions are at significant risk of being compromised.[7] This does not accord with the requirement for SDLs to be set at a level that does not compromise key environmental outcomes including ecosystem functions.[8]

b) The Guide states that the predicted outcomes at the 3000GL level have a high dependence on a long-term return to wetter climatic conditions.[9] This statement and the MDBAs reliance on it does not appear to accord with the best available climate science (as the Authority is required to do under s21(4)). In fact, the CSIRO has said recently that a return to wetter climatic conditions is unlikely, at least for the southern basin, based on research CSIRO conducted for the MDBA.[10]

c) 3000-4000GL is unlikely to meet the environmental requirements of the international agreements. For example, Professor Max Finlayson has stated that 3000-4000GL will not maintain the ecological character of many of the wetlands in the Basin as is required by the Ramsar Convention, and that setting the SDL at that level will breach Australia's obligations under that Convention.[11]

d) The Guide gives a comparison in Chapter 8.11 of what outcomes can be expected to be achieved under each of the three lower scenarios. It is clear that for most of the outcomes, 3000GL would not meet the environmental requirements of the Act. For example, 3000GL is likely to lead to a slow decline in waterbird numbers[12], will not meet the threshold for native fish breeding[13], and is unlikely to meet the target of 75% of red gum communities maintained or restored[14]. The assertion in the Guide that 3000GL is within the range that meets the environmental requirements of the Act is therefore contradicted by the MDBA's own analysis. Outcomes for the 3500GL and 4000GL scenarios are improved but will still not meet environmental requirements in all areas.

Therefore, the MDBA's assertions in the Guide that the lower band *will* meet the environmental requirements of the Act this does not appear to be supported by the MDBA's own analysis. Certainly the 3000GL scenario appears in no way to meet the environmental requirements of the Act.

A further important consideration is that the MDBA appears to have assessed the environmental requirements of the Act too narrowly. Consideration of the 3000-4000GL

[6] See page 74 of the Basin Plan Guide.
[7] See page 72 of the Basin Plan Guide.
[8] Definition of 'environmentally sustainable level of take' at s4.
[9] See page 75 of the Basin Plan Guide.
[10] See for example CSIRO media release 'Study indicates a changing climate in the South-East' 22 October 2010 http://www.csiro.au/news/Study-indicates-a-changing-climate-in-the-south-east.html.
[11] Presentation at the ANU Crawford School Dialogue on the Murray-Darling Basin, 15 October 2010, paper to be released.
[12] See page 114 of the Basin Plan Guide.
[13] See page 117 of the Basin Plan Guide.
[14] See page 118 of the Basin Plan Guide.

scenarios appears to have only focused on what will be required to meet key environmental asset and key ecosystem function requirements.[15]

The 'environmental requirements of the Act' are not limited to requirements around key environmental assets and key ecosystem functions[16]. Requirements also include:

(a) the other elements of 'environmentally sustainable level of take' which are the productive base of the resource and the key environmental outcomes which include ecosystem functions, biodiversity, water quality and water resource health[17]; and
(b) the requirements of the international agreements namely the Ramsar Convention, the Convention on Biological Diversity, the migratory birds conventions, the desertification convention, and the climate change convention.

Critically, the MDBA has stated that the key decision in the process - that reductions above 4000GL should not be considered due to the extent of negative social and economic impacts - was based on a single study done by Marsden Jacobs. The Marsden Jacobs study was based on interviews with entitlement holders – posing questions such as whether negative social and economic impacts would be too great if their allocations were reduced by a certain percentage. The way these questions were worded do not accord with the Act or the way it is to be implemented (for example no individual allocations will actually be reduced), is unlikely to meet the requirement of 'best available socio-economic analysis'[18] and therefore appears to be an unsound basis for making the key decision in the development of the Basin Plan.

Lack of consideration of the requirements of international agreements

ANEDO notes that there is no discussion in the Guide of how the Plan will meet the requirements of the international agreements. It appears that the MDBA has not yet fully considered what the obligation to give effect to international agreements actually requires of the Plan. There is no indication in the Guide of any analysis done to determine what the international requirements are, or whether they will be met by the proposed approach. It is very important that the Plan give effect to and implement the international agreements listed in the Act in order to be valid. Part 2 of the Water Act in particular draws its constitutional power from the Commonwealth's ability to legislate to implement international agreements. A Basin Plan that did not meet these requirements may therefore be invalid.

The requirement to implement international agreements comes about in two ways under the Water Act. First, the Act includes a general requirement to give effect to international agreements in sections 3, 20, and 21. Second, the specific elements of the Convention on Biological Diversity and the Ramsar Convention are brought into the Water Act under section 21(2) and (3). In setting SDLs the MDBA must ensure that they reflect the requirements of the international agreements.

Some of the important requirements of international agreements that are to be incorporated in the MDBA's Plan are to:

[15] See for example the last sentence on p110.
[16] As set out in the definition of environmentally sustainable level of take at s 4.
[17] As set out in the definition of environmentally sustainable level of take at s 4.
[18] Water Act s 21(4)(b).

- Regulate or manage activities which have significant adverse impacts on biodiversity under the Biodiversity Convention – the use of Basin water resources is identified in the Water Act to be such an activity;[19]
- Implement special measures to conserve biodiversity;[20]
- Maintain the ecological character of all Ramsar sites;[21] and,
- Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species through the development and implementation of plan or other management.[22]

We do not go into detailed discussion here of what each international agreement requires for the Basin Plan. Further analysis of the requirements of the international agreements is in our advice to the Australian Conservation Foundation which was released as an attachment to their submission to the SDL discussion paper[23], and can also be found in the recent article '*Changing Character: The Ramsar Convention on Wetlands and climate change in the Murray Darling Basin, Australia.*'[24] in relation to the Ramsar Convention.

The MDBA's proposal to only consider the 3000-4000GL SDL scenarios does not meet the requirements of the international conventions, particularly the Ramsar Convention (given the environmental impact of those scenarios). The MDBA must do a thorough assessment of what is required by the international conventions and ensure that the Plan, including the SDLs, do in fact meet those requirements.

Methodology for establishing key environmental assets

The MDBA has identified 2442 sites as being 'key environmental assets' and has chosen 18 of those as indicator sites for the remainder of the key environmental assets. The MDBA has stated that their assessment shows that providing enough water to the 18 indicator sites also means that enough water will be provided to the remaining 2424 sites to ensure they are not compromised and therefore meet the requirements of the Act.

We do not make specific comment on the methodology used to select those assets or indicator sites. However, we flag an area of concern in the MDBA's use of 18 indicator sites to meet the key environmental asset requirements of the Act.

The Water Act requires that sufficient water be provided not just for the 18 indicator sites but for all key environmental assets. As set out above, it also requires (through various provisions of the Act and the international agreements) that sufficient water be provided to protect and restore ecosystems and natural habitats and conserve biodiversity, and provide for water dependent ecosystems etc. The MDBA must ensure that in focusing on the watering requirements of 18 indicator sites, the 2424 sites and the broader requirements of maintaining connectivity across systems to maintain ecological function etc are not forgotten or compromised. For example, watering 18 indicator sites

[19] Article 8, Biodiversity Convention and Water Act section 21(2)(a)(i).
[20] Article 8, Biodiversity Convention and Water Act s 21(2)(a)(ii).
[21] Article 3, Ramsar Convention.
[22] Article 8, Biodiversity Convention.
[23] EDO Victoria's advice to the Australian Conservation Foundation of 14 December 2010, attached to the ACF's submission to the MDBA on sustainable diversion limits 24 December 2009.
[24] EPLJ, *Changing Character: The Ramsar Convention on Wetlands and climate change in the Murray Darling Basin, Australia* Vol 27 Part 6 2010.

using infrastructure works that do not allow water to pass through to other sites or systems along the way is unlikely to meet the broader environmental requirements of the Act. The MDBA's focus on 18 indicator sites must not take away from the broader requirements of all key environmental assets and other environmental requirements. Importantly, as the Basin Plan is implemented over a number of years and updated over time, the full range of key environmental assets must not be forgotten in favour of the 18 indicator sites.

4. Scientific results should be incorporated into the Guide without bias

Data Analysis and suitability of data sets (climate data)

ANEDO notes that in the development of the surface-water SDL scenarios[25], modelling uses long-term averages to identify environmental water requirements and SDLs. We question the appropriateness of the use of this data set (based on 114 years of data) to predict SDLs. Short term SDLs (10 year proposed water resource plans) based on this data set which includes over a century of climatic fluctuations may not be appropriate for current climatic conditions, however SDLs over a longer time period will be more difficult to monitor and manage. For example, without more specific climate data, in dry times (when water users are more likely to require relatively more water), environmental flows could be kept low, because in the long term 60-80% of without-development flows will be maintained. This has potential implications for the health of the more sensitive assets in the Basin, like swamps and marshes, that require greater average environmental flows than other assets.

Transparency of data sets, data analysis and modelling assumptions

MDBA has undertaken multiple analyses of huge data sets and presented the results deemed appropriate. However, in many instances results have been excluded, modelling assumptions are not presented and data analysis is biased towards protecting social and economic factors. Three examples are: the exclusion of 4 key environmental assets from Table 4.10 of the Technical Background due to comparison not being "meaningful"[26], the assumptions behind the limited modelling of social and economic factors unexplained in the Guide and explained at the Technical Workshop in Canberra as being a "policy decision" and the reduction of the lower diversion limit from 3800GL to 3000GL without explanation.

In modelling the predicted climatic conditions of the Basin under various climate change conditions, MDBA has assumed a median global climate model that is not in accord with contemporary climate science predictions.

In addition, analysis of the long term socio-economic impacts for the 3000, 3500 and 4000GL reductions show no significant difference. Without a significant difference, there is no scientific reason why the lower limit (3000GL) should be selected over the 4000GL scenario. However, given that the modelling data is not available for higher reductions (up to 7600GL), the decision by the MDBA to favour the 3000GL scenario is not easily understood.

[25] As presented in Table D.1-D.3 in Technical Background Part III
[26] MDBA (2010). Guide to the Proposed Plan. Technical Background. Part 1. p.108

ANEDO submits that all data sets, data analysis and modelling assumptions should be publicly available, especially where policy decisions are made that are incongruous with the scientific data presented in the Guide. We note that the MDBA website is not easily navigated, documents are not catalogued in a meaningful way and the sheer number of documents available makes the process arduous and time consuming.

Risk Assessment

The MDBA has identified areas that pose a risk to the future water resources of the Basin, and in assessing the risk notes that it is unacceptable for any of the risks to become a reality. Bayesian models analysed by MDBA show that two of the four risks identified[27] have a moderate (40-80%) likelihood of occurring, and one of the four risks identified has two sub-sections with a high (>80%) likelihood of occurring[28]. The fourth risk identified (policy with unintended impacts), does not appear to have been assessed using comparable methodology, has been prioritised as high/highest in terms of management strategy, and has been identified as requiring further work.

The risk assessment indicates that a return of 3000GL of water to the environment will not result in protection of key assets and ecosystem functions, and that this scenario also results in a moderate risk that water will so affected by salinity and nutrients as to be unsuitable for irrigation. The results of the risk assessment do not meet the objectives of the Guide as interpreted from the Water Act, namely maintain and improve ecological health; establish limits to take based on environmentally sustainable determination; and maintain appropriate water quality[29].

Environmental Water Requirements – Identified Targets

The first objective of the Guide aims to "maintain and improve" ecological health, however the targets identified at hydrologic indicator sites aim to "maintain 80% of current extent [of vegetation] in good condition".

Firstly, the objective of the Guide is not being met, as a target of 80% neither maintains nor improves ecological health, instead allowing for a net loss of current vegetation in the Basin. Secondly, interpretation of "good condition" is ambiguous, and does not clearly identify whether the vegetation to be maintained at 80% of existing levels is that vegetation which is currently in good condition, or that existing vegetation needs to be maintained in a good condition. If the former, it is unclear whether changes to vegetation condition (due to climate change or other processes) which degrade the condition from good to moderate or low, will mean that the vegetation is not required to be protected.

In addition, given the uncertainty of the models[30], and the uncertainty of water availability in the future, we would prefer to see a more precautionary approach which aims to maintain (or improve) the status quo of vegetation in the Basin.

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[27] These risks are "insufficient water for the environment" and "poor health of water-dependent ecosystems". Guide to the Proposed Plan, Technical Background Part 1, pp 75-77

[28] This risk is "water quality unsuitable for use" and the two subsections with a high likelihood of occurrence are "acquatic ecosystem protection" and "Irrigated agriculture"

[29] MDBA (2010) Guide to the Proposed Plan, Technical Background Part 1. pp67-68

[30] Moderate ratings are given a "low uncertainty" of achieving the Guide's Objectives

It is not entirely clear whether the 60-80% of without-development targets will allow for bankfull and overbank flow components at a suitable rate to maintain or improve the health of identified environmental assets.

Hydrologic Indicator sites (Key environmental Assets) – Identified Targets

MDBA has identified 18 environmental assets to be used as an indicator of ecosystem health across the Basin, and has determined that average end-of-system flows will be around 60-80% of without-development flows.

Figure 4.10[31] identifies the environmental water requirements for the 18 hydrological indicator sites (except for four sites which have not been included in the analysis). Only two sites have water requirements that fall within 60% of without-development flows, and both of these have very high uncertainty ratings.

In fact two sites have very high uncertainty ratings at 80% of without-development flows.

If the key environmental assets are chosen as a representative of the health of over 2000 assets in the Basin, Figure 4.10 indicates that the asset (or assets) with the highest demand for water, namely Booligal Wetlands, or Macquarie Marshes, should set the lowest percentage flow throughout the Basin in order to protect all assets. Failure to do so, in the knowledge of water requirements, shows a lack of commitment by the MDBA to commit to the Objectives of the Guide, and a predetermined acceptance of failure to both meet the Objectives and to protect even the key environmental assets.

It is uncertain which of the other 2000 assets throughout the Basin are represented by Booligal Wetlands and Macquarie Marshes, but it appears certain that if the end-of-system-flows are less than 80% for these two assets, many other assets throughout the Basin will not receive the environmental watering required to maintain and improve their condition.

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[31] MDBA (2010). Guide to the Proposed Plan. Technical Background. Part 1. p.109.