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**Submission to Draft Determination  
Sustainable Diversion Limit Adjustment Mechanism**

**Introduction**

The Inland Rivers Network (IRN) is a coalition of environment groups and individuals that has been advocating for healthy rivers, wetlands and groundwater in the Murray-Darling Basin since 1991.

The purpose of the Murray-Darling Basin Plan (the Basin Plan) was to bring important water dependent species and habitats back from the brink of terminal decline. The minimum volume of water required to achieve this was identified as 4,000 GL. Subsequent political compromise has reduced that volume to 3,200 GL with the current Plan standing at 2,750 GL to be returned to river flows.

IRN has major concerns about the approach taken by the MDBA to develop this draft determination that adjusts the Sustainable Diversion Limit (SDL) up. The removal of 605 GL from water recovery aimed at improving the health of ecological assets and functions of the Murray-Darling river systems is not justifiable.

We consider that the draft determination report has a major failing in that the proposed removal of water from the environment has not been tested against a key objective of the Basin Plan to keep the Murray Mouth open for 9 out of 10 years.

While the report describes limits of change for Ramsar listed wetlands there is no clear evidence that the Murray Mouth targets will be met through such a large reduction of actual water in the river system.

We also do not accept that the level of environmental trade-off necessary to increase the SDL by an additional 605 GL has been clearly identified or rigorously assessed.

It is of particular concern that all the effort of the draft determination has been based on reducing water availability for the environment while expending no effort on projects that would provide an increase in environmental water holdings.

We consider that the process has been biased, politically motivated and is not ‘independent’, as purported in the draft determination report.<sup>1</sup>

Because of lack of effort in detailing efficiency measures and constraints measures we do not concur with the draft determination that the final outcome of the adjustment mechanism will be equivalent to achieving 3,200GL for environmental recovery.<sup>2</sup>

The various technical background papers have not demonstrated that supply projects have delivered equivalent or better environmental outcomes compared to those achieved under current Basin Plan settings, using less water.<sup>3</sup>

**Key Issues:**

1. The draft determination is outside the Basin Plan limits of change<sup>4</sup>
2. There is a high level of uncertainty and limitation in the modelling<sup>5</sup> and Ecological Elements method’s scoring<sup>6</sup> and the final modelling outcome is not yet available
3. Six locations across the Basin breach the limits of change
4. Equivalent or better environmental outcomes from supply projects have not been demonstrated
5. Poor consultation process

**Recommendation:**

That the MDBA withdraws its draft determination and reconsiders its approach to better reflect the objective of the SDL adjustment and maintain an ecologically sustainable level of take.

More detailed information on the Key Issues is provided below.

For more information regarding this submission, please contact:

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<sup>1</sup> Draft Determination Report, October 2017, Foreword p i

<sup>2</sup> Ibid Fig 4 p8

<sup>3</sup> Ibid p11

<sup>4</sup> Water Act 2007 s 23A(4)

<sup>5</sup> Independent Expert Advisory Panel Report, September 2017, Executive Summary p 1

<sup>6</sup> Ibid p 7

## **Key Issues**

### **1. The draft determination is outside the Basin Plan limits of change**

The SDL Adjustment Mechanism allows a net adjustment of Basin-wide surface water SDLs by up to five per cent, or 544 GL.

The proposal to increase the SDL by 605 GL is outside this limit. The lack of consideration of efficiency measures in the report and the use of some constraints measures as supply projects creates a high level of uncertainty that the Plan limits can be met.

The lack of information about the supply projects and the high level of uncertainty about their implementation raises major concerns about the achievement of the Plan objectives.

There are too many unknowns in the draft determination report. The technical papers provided to justify the outcomes identify a high level of uncertainty and limitation in the processes used to arrive at a final SDL adjustment of 605 GL.

IRN recommends that this draft determination is withdrawn until all efficiency measures and all constraints measures are identified and included in the modelling.

While the pre-requisite policy measures are included in the modelling the implementation plans are not described in the draft determination report.

### **2. There is a high level of uncertainty and limitation in the modelling and Ecological Elements method's scoring**

The technical reports: Benchmark of conditions of development, Independent review of hydrological modelling, Modelling assessment and Independent expert panel report all identify significant uncertainty and limitations in the process used to arrive at the draft determination that 605 GL can be removed from held environmental water without causing environmental harm.

#### **2.1 Modelling issues**

##### **2.1.1 Benchmark report**

IRN is concerned about the development of the model to assess the SDL supply contribution.

Not all the non-mandated changes to the benchmark were agreed to by the Benchmark Modelling Working Group.<sup>7</sup> This has implications on the suitability of the SDL<sub>A</sub> model for assessing some of the Murrumbidgee projects and their implications across the Southern Basin.

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<sup>7</sup> Benchmark Report, October 17 Table 5 p 15

The number of non-mandated changes to the benchmark SDL<sub>A</sub> model raises concerns about manipulation to achieve an identified outcome rather than to provide an independent method of assessing the supply projects.

Not all changes are explained in the Benchmark report.

It is of interest that with the inclusion of the updated Living Murray modelling there are still some differences in modelled flows and environmental outcomes, mostly due to changes made to Koondrook-Perricoota Forest.<sup>8</sup> There is no discussion on how this might affect the overall calculations of environmental outcomes.

The benchmark model includes the pre-requisite measures, however, there are no details provided about the implementation plans to be adopted by June 2019.

### 2.1.2 Review of hydrological model

This report identifies the political nature of the model development:

*‘the reviewer understands there has been some debate amongst the Authority and the jurisdictions as to the precise nature of some of the modelling changes made in preparing SDLBM. It is not within the scope of this review to investigate the legitimacy of the changes except for checking that all the changes have been agreed by BOC and the Authority.’<sup>9</sup>*

The report notes that hydrological models are only approximations of actual or proposed behaviour and that uncertainties in the implemented projects have led to simplified conceptualisation of projects included in SDL<sub>A</sub>.<sup>10</sup>

### 2.1.3 Modelling assessment report

This report appears to only provide information from the SDL<sub>BM</sub> and not the SDL<sub>A</sub> that has been described in the above reports to be developed for assessing the SDL adjustment projects.

The report concludes that *Final determination of SDL adjustment volume with model outcomes is presented in MDBA (2017b, in prep).*<sup>11</sup> This statement does not clarify whether further modelling of supply projects is underway or that efficiency and constraints measures will be added to the model for a final SDL adjustment outcome.

It is noted that the Goulburn River system will have a reduction in environmental water, even though no supply measures have been put forward for that system.

IRN has concerns that many of the supply projects included in the SDL adjustment package, particularly the constraints measures, have circumstances and triggers that are yet to be fully negotiated.

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<sup>8</sup> Ibid p 26

<sup>9</sup> Independent Review of Hydrological Modelling for SDL Adjustments, 30 September 2017. p 8

<sup>10</sup> Ibid p 16

<sup>11</sup> Modelling Assessment report, October 2017 p 31

There is very little confidence that many of these projects will actually be implemented.

Other key issues are identified in the Modelling Assessment report that are a concern for environmental outcomes and the rigour of the modelling process. These include:

- The Coorong, Lower Lakes and Murray Mouth demands are only targeted during very dry periods on the Murray
- The Hume Weir airspace project uses only estimates of environmental water requirements
- For the Menindee Lakes project the volume of environmental entitlements that can be created without affecting other water users are being assessed separately and have not been included.
- For the Koondrook-Perricoota project the minimum river flow to operate for wetland watering, Red Gum watering and bird breeding targets is not available

#### 2.1.4 Independent Expert Advisory Panel report

This report identifies that the *‘definition and calculation of base flows in the model has some major limitations with respect to their relationships with ecosystem definitions, objectives and outcomes’*.<sup>12</sup>

It also identifies that results were *‘significantly dependent on modelling assumptions, particularly regarding the method used to disaggregate monthly modelled flows into daily flows.’*<sup>13</sup>

Furthermore the report states that *‘Hydrological knowledge is also uncertain, with uncertainties associated with flow rating curves (particularly for higher and very low river flows) and other parameters promulgating through modelling analyses in an often-unquantified manner.’*<sup>14</sup>

IRN is very concerned about the major information gaps in the description of the modelled projects and the fact that six breaches of limit of change were identified.

We cannot accept the MDBA justification for arriving at a figure of 605 GL to be returned for extraction on the basis of the poor information provided and the level of uncertainty around modelling assumptions.

#### 2.2 Ecological Elements Scores

IRN has considerable concerns about the process of developing Ecological Element Scores as a method for assessing the environmental impacts of supply measures.

These concerns have been expressed at MDBA consultation and briefing meetings over the period of time that the methodology was being developed.

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<sup>12</sup> Independent expert advisory panel report p 1

<sup>13</sup> Ibid p 2

<sup>14</sup> Ibid p 7

The independent expert advisory panel notes that *‘there is considerable uncertainty in the representation of real changes in ecological condition when using the Ecological Elements method’s scoring.’*<sup>15</sup>

Their report also notes that spatial representation of key ecological components in the ecological elements method is poor.<sup>16</sup>

Based on these various limitations and uncertainties IRN concludes that the draft determination does not demonstrate a credible adjustment to the SDL.

### **3. Six locations across the Basin breach the limits of change**

IRN cannot accept the justification provided for six breaches of the limits of change that they will have minimal environmental consequence.

This defence ignores the poor state of Basin environmental assets and functions that require improved environmental flows to maintain their integrity.

In many cases the Specific Flow Indicators (SFI) are already compromised under the current Basin Plan SDL scenario. The proposed SDL adjustment will further impact on their achievement.

For example the SFIs for overbank flows in the MDBA draft determination report shows that 36 out of 45 indicators for overbank flows are set on or within 1% of the limit of change.

The independent expert review notes that *‘a shift toward a predominance of flow targets falling close to the high uncertainty bounds of the SFI event frequencies may reduce the resilience of the river ecosystem to further changes in flow event frequencies or other threats’.*<sup>17</sup>

The draft determination outcome is four breaches of the limits of change for base flows and two for overbank flows. This is unacceptable.

The four base flow breaches are at Balranald, Yarrawonga Weir, Torrumbarry Weir and Euston Weir.

Under the Plan (S60.7(d)) there is a requirement for base flows and freshes that no reduction in outcomes relative to the Benchmark run is allowed.<sup>18</sup>

Table 7 in the Modelling Assessment report demonstrates shortfalls for annual average base flows at seven places across the southern Basin as a result of the proposed SDL adjustment.<sup>19</sup>

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<sup>15</sup> Ibid

<sup>16</sup> Ibid p 8

<sup>17</sup> Ibid p 3

<sup>18</sup> Modelling Assessment report p 12

<sup>19</sup> Ibid p13

In addition there are two breaches of SFIs for overbank flows in the Lower Darling and Barmah Millewa Forest.

This raises serious doubts about the projects proposed that may reduce flows levels in these areas.

The Lower Darling has the lowest ecological element and ecological class score for all reaches in the Southern Basin.<sup>20</sup> Overbank flows are a particularly important ecological element for vegetation and bird targets.

The supply project proposed to change the operating rule for the use of the Barmah-Millewa environmental watering allowance cannot be supported in the context of the breach of overbank flow SFI.

The failure to remain within the limits of change for six areas is an indication that the SDL adjustment will not provide equivalent or improved environmental outcomes compared with the current Plan

#### **4. Equivalent or better environmental outcomes from supply projects have not been demonstrated**

Supply projects must deliver equivalent or better environmental outcomes compared to those achieved under current Basin Plan settings, using less water.<sup>21</sup>

A review of all documentation supplied with the draft determination report has demonstrated that there will not be equivalent or better environmental outcomes if 605 GL is returned to extractive industries.

Significant environmental assets may continue to decline if this proposed SDL adjustment is adopted.

The process appears to concentrate on preventing anymore environmental water recovery rather than providing evidence that the Basin Wide Environmental Watering Strategy will achieve its targets with a lower volume of water and that key environmental assets and functions will be restored to health.

##### **4.1 Ecosystem function**

The MDBA has identified four key ecosystem functions considered critical to maintaining the ecological health of the Basin rivers (MDBA 2010).

These functions are:

- The creation and maintenance of habitats for use by plants and animals (including fish);
- The transportation and dilution of nutrients, organic matter and sediment;
- Providing connections along rivers for migration and recolonisation by plants and animals (including fish); and

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<sup>20</sup> Benchmark report Appendix 1 p 46

<sup>21</sup> Draft Determination Report p 11

- Providing connections across floodplains, adjacent wetlands and billabongs for foraging, migration and recolonisation by plants and animals (including fish) (MDBA 2010).

There is very limited discussion and evidence provided to demonstrate that these four functions are not reduced through the proposed reduction in environmental flows. Engineering solutions to water delivery that reduce overland flows will have a significant impact on fish migration; transportation of nutrients, organic matter and sediments from floodplains; and connectivity.

#### 4.2 Coorong, Lower Lakes and Murray Mouth (CLLMM) targets

Under the Plan (S60.7(d)) there is a requirement to maintain or improve five limits under an SDL adjustment scenario for CLLMM. These include:

- (i) Lake Alexandrina salinity: less than 1500 EC for 100 % of the time and less than 1000 EC for 95 % of days where the salinity at the lake is measured at Milang in the model;
- (ii) Barrage flows: greater than 2000 GL/yr on a three year rolling average with a minimum of 650 GL in any year, to be achieved for 95 % of years;
- (iii) Barrage flows: greater than 600 GL over any two year period, to be achieved for 100 % of the time;
- (iv) Coorong salinity: South Lagoon average daily salinity less than 100 grams per litre for 96 % of years, where the salinity is calculated from the Coorong hydrodynamic model (MDBA, 2009) and an averaged value in the southern lagoon; and
- (v) Mouth openness: Mouth open to an average annual depth of 1 m (-1 m AHD) or more for at least 90 % of years and 0.7 m (-0.7 m AHD) for 95 % of years where the depth is measured as Mouth bed height from the Coorong hydrodynamic model (MDBA, 2009).

The Modelling Assessment report fails to demonstrate that the flow targets for the Murray Mouth will be met. Appendix C provides tables with modelling results for CLLMM salinity targets and barrage flow (Table 44). However, there is no reporting on the Mouth openness targets.

Neither the draft determination report nor any of the accompanying technical papers specifically address the above five limits and demonstrate that they have been maintained or improved under the proposed SDL adjustment.

#### 4.3 Ramsar wetland assets

The draft determination report analyses the impacts of reduced environmental flow volumes on the eight Ramsar listed wetlands in the Southern Basin.



Modelling indicates there will be changes to the hydrological regime as a result of operating the SDL adjustment mechanism. These include changes to the volume, timing, duration and frequency of surface water flows.<sup>22</sup>

The conclusion is that these changes are not likely to have significant adverse impacts on the Ramsar wetlands.

IRN contends that there should be no adverse impacts on Ramsar wetlands if the SDL adjustment is to deliver equivalent or better environmental outcomes.

The lack of information on efficiency measures and constraints measures, other than those proposed as supply measures, provides no confidence that the SDL adjustment will be compliant with the Basin Plan.

## **5. Poor consultation process**

IRN notes that while the MDBA ran a series of community consultation meetings in September and a Peak Bodies consultation in August, that we attended, there was insufficient information available to discuss.

We also note that none of the concerns we raised at that meeting appear to have influenced the MDBA's approach to this SDL adjustment process.

None of the reports were available to provide background information for these consultations. The independent expert panel report and hydrological modelling review were finalised in September, while all other reports were finalised in October with the Modelling Assessment report having numerous errors with reference sources and the draft determination report being finalised on 2 October, the day before public exhibition.

We do not consider that a period of four weeks is adequate to fully examine and comment on the exhibited material.

The Water Act sets out requirements for the MDBA to invite public submissions on any proposed amendment to the Basin Plan and to provide 'a reasonable amount of time for those submissions to be made and considered by the Authority'.<sup>23</sup>

IRN considers that the MDBA has insufficient time to fully consider all submissions and assess any subsequent revisions of the draft determination prior to submitting a report to the Water Minister by 15 December 2017.

It is evident that this very important consideration is being rushed. The outcome is likely to cause further impacts on the declining health of the Murray-Darling Basin and a failed Basin Plan.

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<sup>22</sup> Draft Determination Report, Appendix B, p 45

<sup>23</sup> Water Act 2007 s23A(2)(d)