MDBA ASSESSMENT OF THE HUME TO YARRAWONGA KEY FOCUS AREA

PROPONENT: VICTORIA & NEW SOUTH WALES

Key point/summary

The bottleneck of 30,000 ML/day at Yarrawonga proposed in the downstream Yarrawonga to Wakool reach materially affects the ability of this project to achieve its objectives. However, if the flow limit downstream of Yarrawonga was increased, then the Hume to Yarrawonga proposal could provide significant benefit, noting that some issues remain to be resolved.

Summary

In 2014 Basin governments, through their water ministers, agreed that as a first priority the three River Murray constraint measures be developed as integrated business cases. To this end, the MDBA does not consider that the current suite of business cases/concept proposals reflect an integrated approach.

Specifically, the three River Murray business cases do not all assume the same flow rates in the Yarrawonga-Wakool reach. This adversely affects the viability of both the Hume-Yarrawonga and River Murray in South Australia business cases. Furthermore, the Yarrawonga-Wakool constraints business case is a "concept draft" and as a result there is ongoing uncertainty as to how that business case will be progressed, and with what flow rate(s). The maximum flow rate currently proposed in the Yarrawonga-Wakool reach (up to 30,000 ML/day downstream of Yarrawonga Weir) could be delivered within existing constraints in the Hume-Yarrawonga reach (25,000 ML/day at Doctor's Point). Unless this proposed maximum downstream flow rate is increased, the proposed Hume-Yarrawonga constraints measure will not achieve its stated outcomes.

If NSW raised the limit in the downstream Yarrawonga to Wakool reach, then the proposed flows limit of 40,000 ML/day in the Hume to Yarrawonga Reach would be able to be properly utilised. This would allow for a more effective use of environmental water and would provide significant benefit to local and downstream ecosystems. If the Yarrawonga flow limit is increased the MDBA believes the Hume to Yarrawonga project should proceed to the next phase, noting there are issues to be resolved which are detailed below.

With respect to project risks, the business case identifies two significant risks after mitigation strategies are in place. The first is that landholders may not be willing to participate in easement agreements to inundate land. There may need to be some consideration of legislation changes to ensure river operating agencies are covered in relation to third party liability issues arising as a result of delivering overbank environmental flows. The second identified significant risk is the inability to use the Water for the Environment Special Account to fund operations and maintenance / reinstatement costs for physical constraints. The business case states that the delegation of asset ownership and operation in relation to this project, including any associated financial responsibility, cannot be confirmed at this time although discussions are underway through the Basin Senior Officials Group. These issues are likely to require further consultation and negotiation between the proponent, the Commonwealth and with landholders. A risk that has not been considered is the safety risk to third parties due to an environmental watering event. This issue will require further consideration.

The costing is considered to have a very high level of contingency and further refinement in the future may be beneficial to ensure no overestimated costings.

Without the implementation of prerequisite policy measures (ability to deliver water on top of unregulated flows and crediting of environmental return flows) this project is likely to have limited benefit.

Note: the MDBA has been involved in the development of the Hume to Yarrawonga business case, by commissioning consultants to undertake some of the technical work that supports the business case.

1. Eligibility (3.1)

Supply measure requirements (3.1.1)

The measure has the potential to provide equivalent environmental outcomes with less water.

Measures not included in the benchmark conditions of development (3.1.2)

The proposed flow rate of 40,000 ML/day was not in the benchmark. The benchmark has a limit of 25,000 ML/day.

2. Ecological values of the site (4.2)

The ecological values of the site are covered and include the river itself and the associated lagoon/billabong system and river red gum communities.

Benefits would also occur in areas downstream of this reach. These downstream areas include the Yarrawonga Wakool and SA River Murray reaches. The ecological values for these reaches are covered in their respective business cases.

3. Ecological objectives and targets (4.3)

The business case (page 13) states three objectives:

1. to allow environmental flows of up to 40,000ML/day to be delivered through the Hume to Yarrawonga reach of the River Murray, generally in winter and spring,
2. to better connect floodplains and wetlands with the river, and
3. in conjunction with the constraints measures in the Yarrawonga-Wakool and the South Australian reaches, to allow overbank environmental flows to be delivered along the length of the River Murray and its effluent rivers.

These objectives are appropriate, but (as noted below) are unlikely to be fully achieved unless the flow rate in the Yarrawonga to Wakool reach is increased well above the currently proposed 30,000 ML/day.

4. Anticipated ecological outcomes (4.4)

4.3 Anticipated ecological benefits (4.4.1)

The environmental benefits section is more generic than the level of detail found for example in Environmental Water Management Plans for The Living Murray Icon Sites. This seems appropriate given the nature of the constraints business cases which will have system wide benefits. The information provided on ecological values is appropriately supported by relevant government and scientific literature.

The business case describes environmental benefits in Chapter 3. Ecological objectives and targets are clearly articulated, and represent the ecology of the reach in broad terms.

The MDBA considers that the business case describes environmental benefits to an appropriate level of detail, particularly considering that the potential environmental benefits of relaxing constraints have already been assessed and documented in other technical reports by the MDBA and others (these are cited in the business case).

Importantly though, the ecological benefits are unlikely to be fully achieved unless the flow rate in the downstream Yarrawonga to Wakool reach is increased well above the currently proposed 30,000 ML/day.

4.4 Potential adverse ecological impacts (4.4.2)

The business case notes there are potential risks such as the possibility of hypoxic blackwater events, and the spread of pest flora and fauna. However it considers that a more natural environmental watering regime that includes some overbank flows would reduce and compensate for these risks. The proponent concludes that the risks are well within the scope of those that can be managed by current controls. This conclusion is supported by the Basin-wide Environmental Watering Strategy which identifies the importance of using environmental water to mimic natural patterns as "most likely to produce desired environmental responses".

5. Hydrology of the area and environmental water requirements (4.5)

5.1 Current hydrology and proposed changes to the hydrology (4.5.1)

The business case notes how flows have changed due to river regulation. It also provides a summary of how the proposed changes could affect hydrology, including that more than twice as many flows above 25,000ML/day at Doctor's Point could be achieved. However, this is based on modelling which assumes constraints in the Yarrawonga-Wakool reach were relaxed to at least 50,000 ML/day.

5.2 Environmental water requirements (4.5.2)

The report "Environmentally sustainable level of take" for surface water of the Murray-Darling Basin: Methods and outcomes (Murray-Darling Basin Authority, 2011) established environmental flow indicators which are linked to the environmental water requirements and objectives of the Basin Plan. This business case aims to assist with the better achievement of those requirements.

6. Operating regime (4.6)

The hydrological modelling that informed the development of constraints business cases was developed based on a set of assumptions to determine what outcomes could be achieved using available environmental water.

The model is not intended to show when environmental water would be delivered, but provides an indication of the total number of times that environmental water could be delivered. This modelling shows an upper limit of change for the frequency, timing and duration of flows in this reach if constraints are relaxed.

The modelling was built on the existing Basin Plan modelling framework. The MDBA's MSM-BigMod platform was used for the River Murray. These are established modelling platforms and accepted as

industry best practice for the Southern Connected System, and were used to inform the Basin Plan in 2011-12.

The business case describes the modelling results which show that with constraints relaxed, it may be possible to deliver higher flows in the range of 25,000-40,000ML/day at Doctor's Point more frequently to meet the downstream environmental needs and would also contribute to an increase in the number of events at the South Australian border, enabling significant watering of floodplain vegetation. It should be noted however that these outcomes are significantly restricted by the ability to deliver flows through Yarrawonga-Wakool reach.

The MDBA is supportive of the proposal in the business case to implement flows in a staged and incremental manner. This is consistent with the concept of commissioning structures in stages rather than operating at full capacity on the initial event. However, the process for implementing these arrangements is not provided. Specifically, will easement agreements be established to allow initial "trial" flows, or will another method of compensation be used during this period?

7. Assessment of risks and impacts of the operation of the measure (4.7)

In general the risk assessment at Appendix 5 of the business case addresses significant project development and delivery risks. Risks and impacts are adequately described and analysed and robust mitigation treatments are proposed.

After mitigation strategies are in place, two risks have been identified as having a significant 'residual risk rating':

- Lack of landholder participation in and/or support for landholder easement agreements to inundate land. There may need to be some consideration of changes to legislation to ensure river operating agencies are covered in relation to third party liability issues arising as a result of delivering overbank environmental flows.
- Inability to use Water for the Environment Special Account to fund operations and maintenance / reinstatement costs for physical constraints.

These issues are likely to require further consultation and negotiation between the proponent, the Commonwealth (Department) and with landholders. The second of these risks is considered to be incorrectly framed in presuming that O&M costs could be paid for from the special account.

A risk that has not been considered is the safety risk to third parties during an environmental watering event. This issue will require further consideration.

Project implementation is considered in the risk assessment framework in terms of operation, maintenance, management and funding of the project. However the MDBA considers that there are ongoing risks to project implementation relating to lack of clarity regarding governance arrangements and respective roles and responsibilities. This issue is discussed further below.

The proponent has undertaken a risk assessment intended for a broad stakeholder group. The risk assessment describes the main inherent risks and mitigation strategies to an appropriate level for the feasibility stage of investigation.

A consistent approach to implementation of all constraints measures is considered highly desirable. The benefit of this with respect to risks is that functions, tasks and processes can be aligned to a common set of risk management objectives. Therefore, it may be feasible to apply a streamlined approach to risks

and, in particular, to the stated mitigation strategies. It will be important to assign responsibility for risk mitigation at this stage of development.

8. Technical Feasibility and Fitness for Purpose (section 4.8)

Can the business case deliver effectively on stated outcomes?

The outcomes of the business case will be materially affected by what happens with the Yarrawonga-Wakool constraints proposal.

As noted above, the business case included three objectives:

1. To allow environmental flows of up to 40,000ML/day to be delivered through the Hume to Yarrawonga reach of the River Murray, generally in winter and spring,
2. To better connect floodplains and wetlands with the river, and
3. In conjunction with the constraints measures in the Yarrawonga-Wakool and the SA reaches, to allow overbank environmental flows to be delivered along the length of the River Murray and its effluent rivers (such as the Edward-Wakool system).

The first objective will be feasible only if the Yarrawonga-Wakool constraints proposal is progressed, and is of a sufficient level of constraints relaxation.

- The draft concept Yarrawonga-Wakool proposal suggests that constraints be relaxed to 30,000 ML/d downstream of Yarrawonga Weir.
- This flow rate (downstream of Yarrawonga Weir) could be delivered within existing constraints in the Hume-Yarrawonga reach (25,000 ML/d at Doctor's Point).

Hence, in the context of the current Yarrawonga-Wakool constraints proposal, the first objective of this Hume-Yarrawonga business case would not be met.

The second and third objectives are also dependent on progression of the Yarrawonga-Wakool constraints proposal. A key objective of relaxing constraints in the Hume-Yarrawonga reach is to allow higher flows that would benefit the floodplain assets of the mid and lower Murray, including Koondrook-Perricoota, Werai Forest, and Chowilla. Easing the restriction at Yarrawonga to 30,000 ML/day would improve the ability to provide flows to these assets, however, it is still too low to allow the full downstream benefits of the 40,000 ML/day flow increase at Doctors Point to be realised. The business case discusses in some detail the importance of relaxing constraints in the downstream River Murray areas to achieving ecological objectives and outcomes, in section 3.2 and 3.3.

However, if the stated objectives of the business case cannot be met in full, there could still be some benefits in being able to deliver higher flows in the Hume to Yarrawonga reach, even if not up to 40,000 ML/d.

Within the Hume-Yarrawonga reach, there would still be ecological benefits. The business case notes that the Victorian Murray Floodplain Environmental Water Management Plan suggests annual flows of up to 30,000 ML/d would help to maintain a number of permanent cut-off meander/floodplain depressions.[1]

[1] Page 22

Even if flows were restricted to 30,000 ML/day at Yarrawonga, relaxing constraints in the Hume-Yarrawonga reach to 40,000 ML/day would:

- Allow more operational flexibility
- Provide a potential buffer for river operators (landholders have noted strong concerns that unanticipated rainfall may result in flows being higher than planned.
- Potentially facilitate operation of other supply measures
- Allow for losses in the reach between Hume Dam and Yarrawonga
- Allow delivery to multiple users concurrent with an environmental flow (water deliveries to the Mulwala Canal can be as great as 10,000 ML/day).

Will any proposed technology perform as intended?

The business case does not propose specific details of technology to be implemented. Rather, the business case proposes, at a regional level, a suite of mitigation measures that would need to be put in place to allow delivery of managed flows of up to 40,000 ML/d. The business case describes how these mitigation measures would include technology such as:

- New or upgraded infrastructure, such as private bridges, crossings, pumps.
- Operational responses, such as enacting flood mitigation controls.

The business case sets out a phased implementation plan through which project proponent(s) would assess in more detail what specific technological actions would be required, and implement those actions.

Is project delivery and operation secure over the long-term?

The business case provides for long-term project delivery and operation in a number of ways. However, there are also some issues that remain outstanding. These are discussed below.

River operations

The business case recognises relevant issues associated with river operations. In particular:

- Section 4 recognises and discusses how actual flow delivery may differ from the modelled flows. It also identifies key dependencies and recognises principles which guide river operations.
- The business case proposes principles for implementing flows through a staged process (Section 8.2 and Appendix 3), complemented by an incremental commissioning of structures.
- The business case acknowledges the potential to learn from earlier programs (e.g. The Living Murray).

If the business case were to be progressed, some issues would need to be resolved:

- The business case assumes the same roles for MDBA and State River operators. If the project were to proceed, these roles would need to be clarified.
- The business case does not specifically consider whether funding would be required to establish or implement flow trials. Potentially, this could be covered through current MDBA / Commonwealth operations, but this is not clear.
- River operators would not deliver trial flows without some sort of arrangement in place to manage potential liability. The process for implementing these arrangements needs to be clarified. For example, easement agreements could be established to allow initial trial flows. Easements would either need to be established in multiple tranches (once for trials and then again for final flows) or

full easement arrangements would need to be in place before trials would commence. This will have implications for the scheduling of funding milestones for the project.

9. Complementary actions and interdependencies (4.9)

Yarrawonga-Wakool limit

The draft concept Yarrawonga-Wakool business case proposes relaxing the constraint to 30,000 ML/d downstream of Yarrawonga Weir. This would severely limit the delivery of managed flows at Doctor's Point. It therefore limits the achievement of the objective of delivering environmental flows of up to 40,000ML/day through the Hume to Yarrawonga reach of the River Murray.

Pre-requisite Policy Measures:

The business case (section 4.4) highlights the relevant policy changes identified as Pre-requisite Policy Measures (Basin Plan s.7.15 (2)). It also notes (s.6.2) that inadequate implementation would reduce the effectiveness of the constraint measure and reduce or entirely offset any SDL adjustment resulting from supply measures.

Other legal and policy issues to be addressed

The business case (section 8.4) notes a range of policy and legislative changes which are likely to be required to give effect to constraints measures. As noted in the business case, a separate process has been agreed for making changes to the general framework for River Murray system operations. The MDBA considers that these changes are vital to support implementation of the Hume-Yarrawonga proposal and would need to be confident that necessary changes are in train as part of the confirmation process. Specific changes proposed in relation to the Hume to Yarrawonga constraints measure includes:

- Amending the maximum regulated release provisions below Hume Dam.
- Amend the Water Act, and/or MDB Agreement to provide river operators with appropriate legal protection for any damage arising from deliberate overbank flow events. Changes may also be necessary to State instruments.
- A number of additional changes are required to support the Basin Plan Pre-requisite Policy Measures.

10. Costs, Benefits and Funding Arrangements (4.10)

The costing is considered to have a very high level of contingency and further refinement in the future may be beneficial to ensure no overestimated costings.

The business case is almost silent with respect to social and economic benefits. While this in some respects reflects the purpose of constraints measures (i.e. to allow higher flows and associated improved environmental outcomes, while mitigating negative impacts on third parties) we consider that if the measure is implemented, attention should be given to better communicating associated benefits to stakeholders, including funding for upgrades to ageing public infrastructure, such as roads and crossings.

11. Project governance and project management arrangements (4.11)

11.1 Legal and statutory requirements (4.11.2)

The Constraints Management Strategy Hume to Yarrawonga Constraints Measure Business Case potentially has impacts on the NSW Water Sharing Plan (WSP) for the New South Wales Murray and Lower Darling Regulated Rivers Water Sources 2016, which is a transitional water resource plan (WRP). Such changes may relate to the specification of channel capacity constraints in section 33 of the WSP.

Information that has been provided in these documents is at a high level, so it is unclear what the extent of such changes may be, and whether any changes would introduce any new inconsistency with the Basin Plan compared with the existing transitional WRP.

If the proposal requires changes to the WSP and if NSW wishes the amendments be recognised as part of the transitional plans under the Water Act 2007, they should be submitted to the MDBA so the “no less consistent” test can be applied.