

MDBA ANALYSIS OF THE OPERATING RULE CHANGE TO THE USE OF THE BARMAH-MILLEWA FOREST ENVIRONMENTAL WATER ALLOCATION

BUSINESS CASE

PROPONENT: VICTORIA/NSW

The MDBA's advice covers the following criteria in the Basin Officials Committee agreed *Phase 2 Assessment Guidelines for Supply and Constraint Measure Business Cases* (the Guidelines reference shown in brackets):

- Eligibility (3.1)
- Ecological values of the site (4.2)
- Ecological objectives and targets (4.3)
- Anticipated ecological outcomes (4.4)
- Hydrology of the area and environmental water requirements (4.5)
- Operating regime (4.6)
- Assessment of risks and impacts of the operation of the measure (4.7)
- Complementary actions and interdependencies (4.9)
- Project governance and project management arrangements - legal and regulatory requirements (4.11.2)

Business case assessments by the Department of the Environment will include advice from the MDBA on the technical feasibility and fitness for purpose of proposals as per section 4.8 of the Guidelines.

Key points/summary

- The proposal meets the Basin Plan supply measure definition, noting comments below.
- The benchmark model does not represent contemporary use of environmental water in the Barmah-Millewa Forest. A known limitation of the benchmark modelling is that BMFEWA usage is not well coordinated with environmental demands generated by the MDBA's Environmental Event Selection Tool. However, in practice over the past five watering events, the BMFEWA was used in a much more coordinated way with other environmental entitlements than the model represents.
- The proposed rule changes embed current portfolio coordination practices to formalise contemporary arrangements. The current BMFEWA usage flexibility, allowed through the provision to deviate from triggers by agreement, will be maintained under the proposal via a yearly consultation with water managers to determine whether to vary the December release trigger or the four month flooding rule if that appears to be a sensible option. This does not represent a large additional impost to existing coordination activities.
- It is unclear if proposed operational rule changes to the EWA meet all BMFEWA objectives. The proponent should provide analysis which investigates the frequency of above channel capacity

flows in December and the four month flow event under the new rules to demonstrate that the ecological objectives of the BMFEWA are still met.

- The proponent should demonstrate that the rule changes will not affect the ability to coordinate BMFEWA use with other environmental water.

1. Eligibility (3.1)

The proposal meets the requirements under the Guidelines for further assessment and consideration in the SDL adjustment mechanism.

1.1 Supply measure requirements (3.1.1)

The proposal would meet the definition of a supply measure under the Basin Plan (cl.7.03 and cl.7.15) to:

- operate to increase the quantity of water available to be taken in a set of surface water SDL resource units compared with the quantity available under the benchmark conditions of development;
- achieve equivalent environmental outcomes with a lower volume of held environmental water than would otherwise be required; and
- have no detrimental impacts on reliability of supply of water to holders of water access rights that are not offset or negated.

noting that a final determination will require MDBA modelling, and that effects on reliability are determined by the proponent/s.

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

The MDBA confirms that the measure was not in the benchmark conditions of development (cl.7.02 of the Basin Plan).

2. Ecological values of the site (4.2)

The description of the site's ecological values in the business case is generally consistent with the assessment criteria in the Guidelines.

A relatively limited description of the ecological values of Barmah-Millewa Forest and other environmental assets in the Murray system affected by the proposal (e.g. Hattah, Gunbower-Koondrook-Perricoota) has been provided. As this is a rule change rather than a works proposal, this level of detail is considered adequate. Furthermore, the important values of the sites are well known and have been extensively described in readily available documents (e.g. environmental water management plans for Living Murray Icon Sites, assessment of environmental water requirements for the proposed Basin Plan).

3. Ecological objectives and targets (4.3)

Generally the business case meets ecological objective and target assessment criteria. Analysis is required to ensure that the ecological objectives of the BMFEWA continue to be met under the proposed rule changes.

The proposal uses specific flow indicators (SFIs) from Basin Plan modelling, rather than ecological objectives and targets, to measure the effectiveness of the proposal. Given the SFIs were developed to support ecological objectives and targets specified by the MDBA, there is an implicit and reasonable assumption that those objectives and targets remain valid. The proponent has indicated that environmental water managers confirm the SFIs are still relevant and adequately represent the forest's watering requirements at the scale required for this business case. The water requirements are supported by scientific evidence and are linked to the ecological values, objectives and targets of the sites.

4. Anticipated ecological outcomes (4.4)

4.1 Anticipated ecological benefits (4.4.1)

Anticipated ecological benefits described in the business case generally meet assessment criteria. Further justification is sought regarding how modelling, particularly for the preferred rule change (model run number 23479), confirms the proposal is consistent with the original intent of the BMFEWA.

Anticipated ecological benefits are described in terms of changes to SFI frequency (including with reference to Basin Plan limits of change) and maximum dry spells. As this is a rule change rather than a works proposal, this level of detail is considered adequate. The SFIs show a modest net improvement of 15 successful events across the Murray system and some reductions in maximum dry spell. The increase in the number of successful events highlights the likelihood of this proposal to maximise SDL adjustment potential through easing the limits of change. With one exception, the limits of change are satisfied (i.e. not breached) by the proposal. Flow and salinity indicators for the Coorong, Lower Lakes and Murray Mouth indicators either stay the same or improve.

The proponent should provide analysis which investigates the frequency of above channel capacity flows in December under the new rules to ensure the ecological objectives of the BMFEWA are still met. One of the BMFEWA's objectives is to provide conditions conducive to the successful breeding of thousands of colonial nesting waterbirds at least three years in ten. The proposal does not trigger BMFEWA use during December and when four month flooding has already occurred. The original BMFEWA triggers are designed to extend flood events for four months to help bird breeding events at Barmah-Millewa Forest between September and December (the timing for the four month flooding set in the Barmah-Millewa Environmental Water Management Plan is spring to summer). The proposal potentially shifts flooding events earlier than originally intended. It shows >15,000 ML/day flows for 150 days between June and December, but this could be June to October and not extend into December. Previous successful waterbird breeding events in the Barmah-Millewa Forest have relied on above channel capacity flows in December (about 12,000 ML/day). This supports the need for the continued inclusion of the December flow, in line with the Barmah-Millewa environmental water management plan which sets the timing of the four month water period from spring - summer (i.e. includes December).

It appears that removing the December trigger is purely based on comparing modelled outcomes between the baseline and benchmark, where the BMFEWA has been triggered more during December under baseline than under the benchmark conditions. The proposal states that 'modelling confirms that changes enhance outcomes in line with BMFEWA objectives' and the 'proposal remains

consistent with the original intent of creating a four month long medium flood event'. In support the proponent provided a modelling study by Jacobs with analysis showing the number of years over the 114 year modelling period in which the desired four month flow event is achieved (in the benchmark and for the proposal). This analysis appears to contradict the assertion that the original intent is maintained as each of the proposed alternate rules shows a reduction in the number of years that the event is achieved relative to benchmark conditions. As part of the clarification and to provide further context, the analysis of achievement under baseline conditions is needed.

Because the BMFEWA release rules are not actively coordinated with environmental water demands in the model, assessing changes in SFIs may not be sufficient to describe the benefits of the proposal. This is further discussed in the section below on environmental water requirements.

4.2 Potential adverse ecological impacts (4.4.2)

Potential adverse ecological impacts are described in terms of changes to SFIs and some of the limits of change. Given the scoring method allows for some level of trade-off in the achievement of SFIs, changes in SFIs are not considered to be an appropriate way to test for adverse impacts. It is however noted that proponent modelling shows a net increase in successful events.

Testing SFIs only addresses the overbank/floodplain part of the flow regime, described further below. Subsequently, impacts on other parts of the flow regime have not been assessed.

As discussed above, the proposal potentially shifts flooding events earlier than originally intended. This may result in different or lower environmental outcomes to what was originally intended in the creation of the BMFEWA.

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 and supplementary information provide sufficient information to explain the project's current hydrology and changes associated with the proposal. To assist the proposal's integration into the MDBA's model-based assessment framework further clarification and refinements are likely to be required.

5.2 Environmental water requirements (4.5.2)

Information on environmental water requirements has been provided to the appropriate level of detail to meet Guidelines criteria.

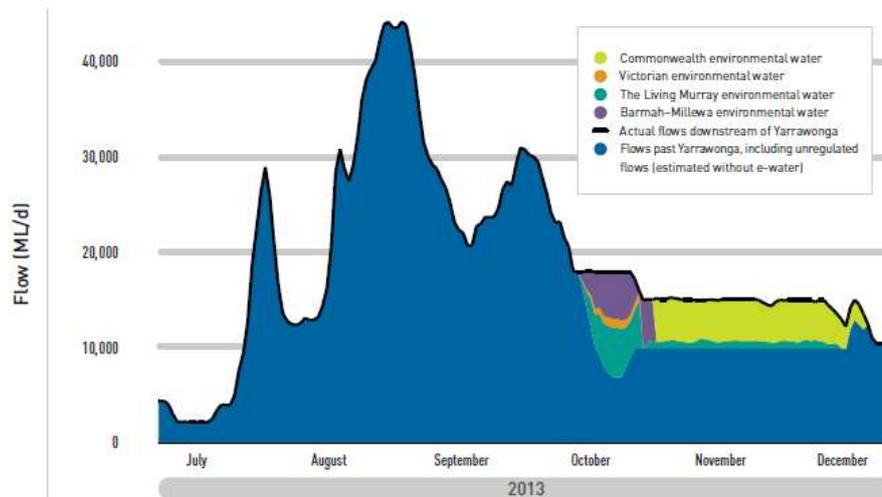
As noted in section 6 below, given that current practice in using the BMFEWA appears to differ substantially from modelled use, it is not considered sufficient to only show how the modelled SFIs are affected. The business case should also demonstrate that the rules change will have real beneficial environmental outcomes and will not affect the ability to coordinate use with other environmental water. This analysis should demonstrate that the lower overall use of the BMFEWA as per the proposal, which allows more borrowing opportunities for consumptive use (as described on page 28 of the proposal), does not result in adverse environmental impacts across the system.

6. Operating regime (4.6)

The premise of the proposal is that operating rules for the BMFEWA need to be revised to ensure better coordination with other environmental watering initiatives. This conclusion is based on the modelling study which showed that other environmental watering releases often occur earlier in the season resulting in significant flooding before the BMFEWA water is released. The conclusion drawn is that extended watering potentially into later months could have limited benefit. A known limitation of benchmark modelling is that BMFEWA usage is not well coordinated with environmental demands generated by the MDBA's Environmental Event Selection Tool. For this reason, the modelling of the BMFEWA rules doesn't reflect contemporary use of the portfolio. In reality, the BMFEWA is used in a much more coordinated way with other environmental entitlements than the model indicates. Deviations have been agreed for the past five watering occasions to allow the account water to be used more flexibly, including to initiate events before other sources of environmental water are approved for use and to extend watering into December and January to allow bird breeding events to reach completion. In all cases, there has been extensive coordination with other water holders (e.g. TLM, CEWH, Victoria, NSW).

An example of this coordination is illustrated in the figure below, when water was targeted at improved moira grass health in 2013. In at least two of the three events in the table below (2010-11, 2011-12), the BMFEWA flexibility clause appears to have been used (Clause 10 - operating practices for making releases can be varied and refined from time to time to improve environmental outcomes), allowing water to be delivered later (e.g. January, February and even March) than the formal triggers specify.

Year	BMFEWA Vol (GL)	Months BMFEWA used	Total Vol (GL)	Other entitlement contributors
2010-11	219	Sep, Oct, Jan, Feb	427	TLM, NSW
2011-12	280	Sep, Oct, Nov, Dec, Jan, Feb, Mar	425	TLM, NSW, Vic
2013-14	64	Oct	355	TLM, CEWH, Vic



Year

The proposed rule changes reflect current practices, with the addition of a yearly consultation with water managers to determine whether to vary the December release trigger or the four month flooding rule if that appears to be a sensible option. This does not represent a large additional impost. The current flexibility allowed through the provision to deviate from the triggers by agreement will be maintained under the proposal.

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

The proposal indicates that the likelihood of increased risks to water quality are not significant. Salinity is used as a surrogate for water quality as salinity is modelled by BIGMOD. IN further information received it is indicated that the impact on other water quality parameters listed in Chapter 9 of the Basin Plan are not significant. The risk management strategy complies with the AS/NZS ISO 31000:2009.

8. Complementary actions and interdependencies (4.9)

The business case partly meets the Guidelines criteria for complementary actions and interdependencies.

As acknowledged by both the MDBA and the proponent, measures need to be modelled as a package to fully understand their interactions, including any impacts on achievement of individual SFIs and their associated limits of change. The breaching of the limits of change for one of the flow indicators at Barmah-Millewa Forest is an issue that will need to be explored further during subsequent modelling, and it should be noted that modelling of the Hume Airspace proposal shows an increase in frequency of this particular SFI at Barmah-Millewa Forest which may more than adequately compensate for the decrease modelled within this proposal.

Not triggering the BMFEWA leads to increased storage volume and in turn increased spill events, in the same manner as the Hume dam airspace management proposal.

The business case does not identify the surface water SDL resource unit/s affected by the measure.

Linkages between constraints and the supply measure have not been addressed in the business case and should be considered where relevant in the assessment of the project.

The BMFEWA water is allocated based on states' water resource allocation. Under certain circumstances, it can be borrowed by other users and paid back later. Therefore there are potential interactions with other water users which should be examined and addressed.

9. Project governance and project management arrangements (4.11)

9.1 Legal and regulatory requirements (4.11.2)

The proposal would result in changes to transitional water resource plans, namely the Water Sharing Plan for the NSW Murray Lower Darling Regulated Rivers Water Sources and a number of Victorian bulk entitlements for the River Murray. It is expected that the relevant Basin State will seek accreditation of any amendments to these plans as required. The MDBA will consider if any amendments make the transitional plan no less consistent with the Basin Plan, as required by the *Water Act 2007*.

The business case for the Barmah-Millewa Forest EWA project notes that the new rules may be incorporated into the appropriate water resource plans developed by each state under the provisions of Chapter 10 of the Basin Plan. If this approach is taken, the MDBA will work with the proponents to assist in the development of water resource plans that meet the requirements of the Basin Plan.