IMPROVING ACCESS TO WATER ALLOCATION TRADE BETWEEN ZONES IN THE SOUTHERN MURRAY-DARLING BASIN

CONSULTATION REPORT - OPTIONS ASSESSMENT

WaterNSW

VICTORIA State Government | Energy, Environment and Climate Action

Disclaimer

For the purposes of this report, Victoria is represented by the Department of Energy, Environment and Climate Action (DEECA) and NSW is represented by WaterNSW, a state-owned corporation.

Acknowledgements

DEECA and Water NSW would like to acknowledge the contributions of Frontier Economics and Ricardo (member of WSP) for the options assessments outlined in this report.

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Contents

WaterNSW and the Victorian Department of Energy, Environment and Climate Action (DEECA) have been working together to improve how access to water allocation trade is made available during competitive trade openings in the Murray, Goulburn and Murrumbidgee systems. This report presents the findings of this work, including independent assessments of alternative options for accessing these trade opportunities. This report will be used to test the assessment findings with market participants before implementation of any changes.

Context

Since committing to the National Water Initiative in 2004, Victoria and NSW have taken steps to remove unnecessary barriers to trade.

During this time, active and competitive water markets have led to the large-scale movement of water between some valleys or 'trading zones'. Opportunities to trade water between zones is highly valued by water market participants because there are price differences between regions and the opportunity to import additional water to supply-limited areas. This has resulted in significant over-subscription for some trade openings when they occur, where the volume of demand for trade outstrips the available water that can traded.

Trade opportunities between zones

Access to opportunities to trade water between zones has historically been provided on a 'first-in, first served' basis, where trade applications are considered in the order they are received. This worked well when competition for these opportunities was relatively low, however in recent years we've seen increasing competition for trade and heard stakeholder concerns that the first-in, first served approach advantages a small group of well-resourced market participants This was a key finding of the Australian Competition and Consumer Commission's *Murray-Darling Basin water markets inquiry 2021*.

For moving water between zones there are two forms of trade openings based on how they arise:

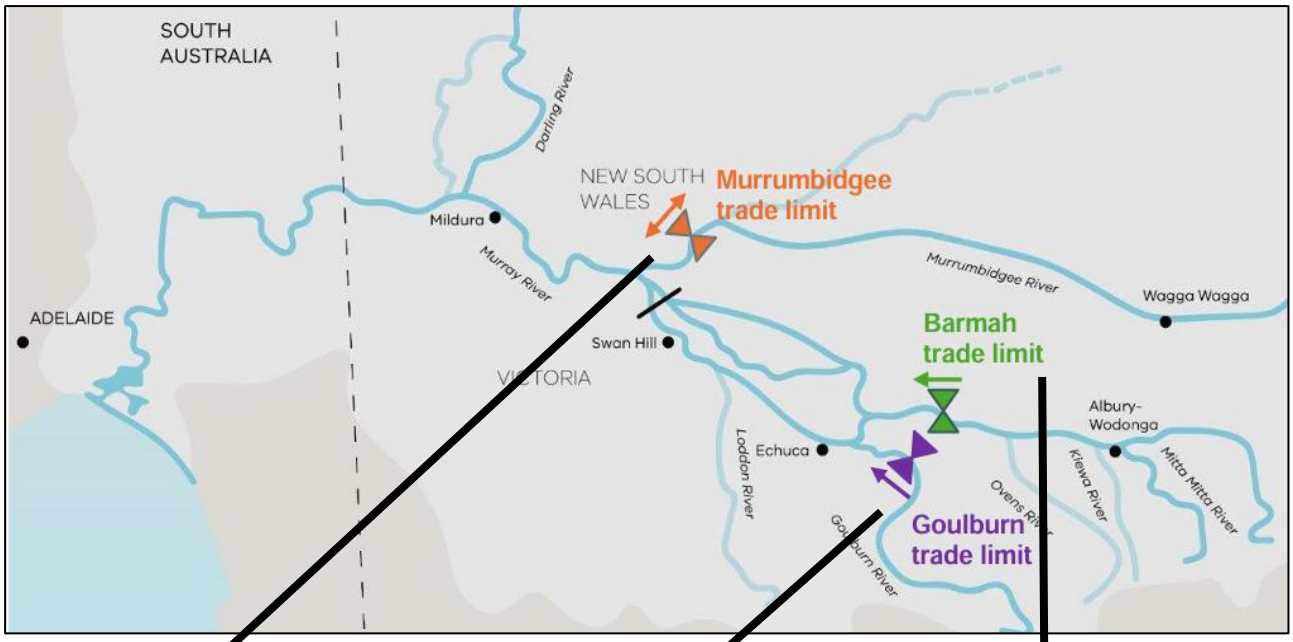
- ***Scheduled openings*** are trade opportunities that occur at the beginning of the year or at pre-determined time through the year, such as for Goulburn and Barmah.
- ***Ad-hoc openings*** are unscheduled openings that arise due to market activity or river operations. Some ad-hoc openings are more unpredictable than others. Although Murrumbidgee trade openings are considered ad-hoc, river operations forecasts and daily update of available balance differentiate them from the Barmah and Goulburn ad-hoc opportunities, where their unpredictability makes it extremely difficult to implement any of the options proposed.

Figure 1 below demonstrates where these types of opening apply.

Current state

Since October 2024, scheduled trade openings for Goulburn and Barmah have been conducted using a randomisation method to provide more reliable service. Ad-hoc openings have continued on a first-in, first served basis.

For Murrumbidgee IVT, there is a strict protocol in place that once a trigger is reached, it allows a small window for applications to be submitted and assessed on a 'first-in, first served' basis until the available balance reaches the trigger that closes the opportunity.



Murrumbidgee trade limit

While these openings are considered ad-hoc, they can be somewhat predictable based on a combination of factors and triggers i.e. river operations forecasts. Murrumbidgee IVT runs on a very strict Protocol where there is a small window of submissions, and the assessments are done on a 'first-in, first served' basis until the available balance reaches a trigger that closes the trading opportunity.

Goulburn trade limit

Scheduled trade openings at the commencement of each water year and later in the season (October and December) have recently been managed through a randomisation process in Victoria. The volume is determined through resource assessments by Goulburn Murray Water.

Ad-hoc openings are available when backtrade creates additional trade capacity.

Barmah trade limit:

Scheduled trade openings at the commencement of each water year have recently been managed through a randomisation process with cross-border collaboration between Victoria and NSW. The volume available is determined by Murray-Darling Basin Authority based on system capacity and conditions.

Ad-hoc openings are available when backtrade or operational changes restore trade capacity.

Figure 1. Location and description of trade openings under review

Method

WaterNSW and DEECA are progressing with three stages of work to improve the equity and efficiency of access to trade (Figure 2).

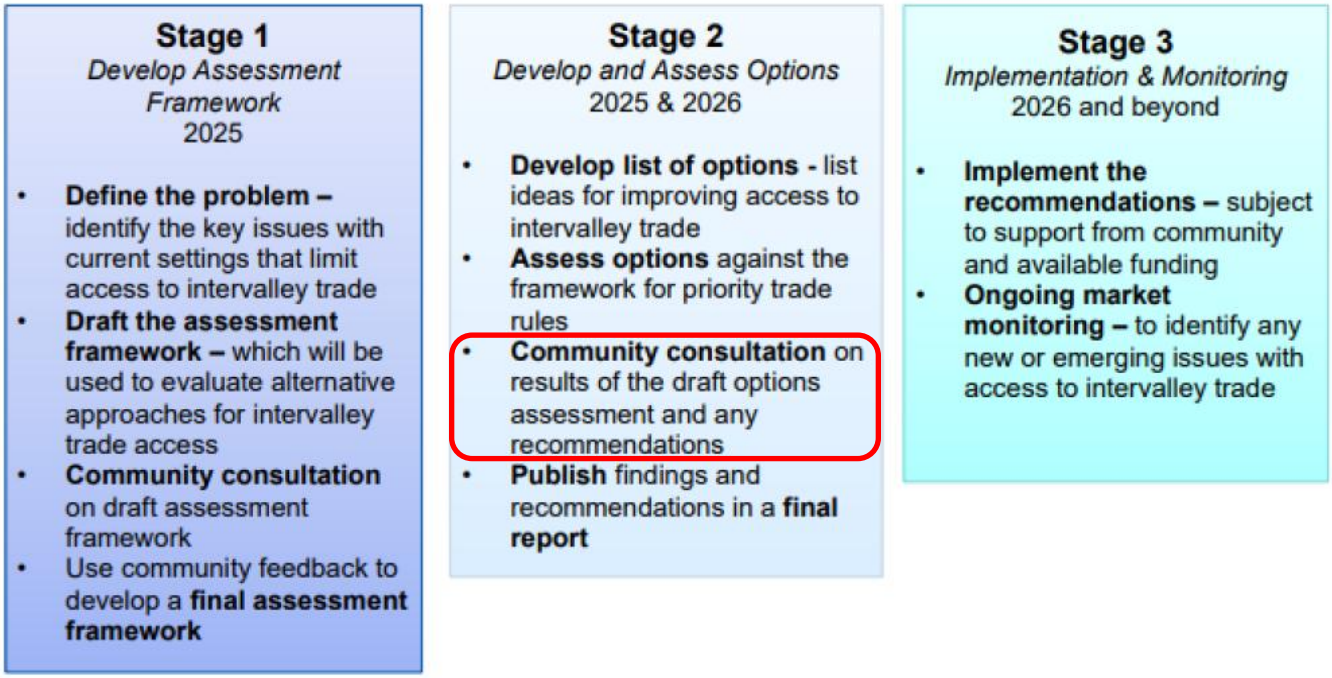


Figure 2. Three stages of the work to improve access to trade (current stage is highlighted)

In Stage 1, WaterNSW and DEECA developed a shared principles-based framework for assessing options to improve access to trade (Appendix 1).

We are now ready for public consultation on the independent technical assessments of proposed options for improving access to the trade. In this current consultation, we are seeking feedback on the preferred options for managing access to future trade opportunities in the Goulburn, Murrumbidgee and Barmah.

Once feedback has been considered and final recommendations are developed, subject to funding and resourcing availability, WaterNSW and DEECA will proceed with any changes in a pragmatic way ensuring continued access to trade for water market participants. We are committed to clear communication prior to any changes to minimise disruption to businesses and agencies that rely on water markets.

Options for assessment

Based on stakeholder feedback five different options for scheduled trade openings in Barmah, Goulburn and Murrumbidgee were identified for assessment, as described in Figure 3.

Option 1: First-in, first served

- Submit application immediately after opening
- Process in order received (alternating between Victoria and NSW for Barmah)
- Quickest application submissions more likely to succeed

Implementation requirements: Victorian Water Register improvements, refinement to Murrumbidgee trade opening times

Option 2: Randomisation

- Submit application within a specified window
- Process in order determined by an auditable randomisation tool
- All applications have equal chance of success

Implementation requirements: Develop and trial Murrumbidgee arrangements and randomisation tool

Option 3: Blind auction

- Submit application within a specified window, including their bid (i.e. price they are willing to pay for a share of the available trade opportunity) & payment
- Process in order from highest to lowest bid (provided payment successful)
- Applications with higher bids more likely to succeed

Implementation requirements: Investigate and make required legislative and regulatory changes, develop IT and payment systems, amend forms, processes and communications, establish revenue arrangements

Option 4: Proportional application volume

- Submit application within a specified window (apply for a volume of trade knowing only a proportion of that volume is likely to be approved)
- Calculate proportion of application volume each applicant will receive based onthe total trade opportunity divided by the total volume of trade requested
- Process in any order after adjusting down application volumes
- All applicants receive a share of the trade opportunity

Implementation requirements: Develop IT system, amend forms, processes and communications

Option 5: Proportional entitlement

- Prior to trade opening, entitlement holders' opt-in to receive a share of the available trade opportunity in proportion to their entitlement volume
- Calculate proportion of trade each opted-in holder will receive based on the total opportunity divided by the total entitlement volume of opted-in holders
- Process in any order after agency (or system) has created applications
- All entitlement holders who opt in receive a share of the trade opportunity

Implementation requirements: Review and Amend legislation, develop IT system, create new forms, processes and communications

Figure 3. Summary of options

The rationale for assessing these options is included and summarised below:

- **Option 1: First-in, first served** – This is the long-standing standard approach used since trade restrictions commenced. It is also the current "base case" arrangement for all trade opportunity openings except the more recent trials of scheduled Goulburn, and 1 July Barmah openings.
- **Option 2: Randomisation** – This method has been trialled since October 2024 in the Goulburn, and since July 2025 at Barmah. Feedback indicates this approach has addressed some of the issues previously identified with the first-in, first-served approach.
- **Option 3: Blind auction** – During framework consultation it was recommended we test an option whereby all eligible application have equal opportunity for success based on the amount applicants are willing to pay. See box 'types of auctions considered' below.
- **Option 4: Proportional application volume** – During framework consultation it was recommended we test an option whereby all eligible applications receive a proportional share of the available trade opportunity based on their application amount.
- **Option 5: Proportional entitlement** – During framework consultation it was recommended we test an option where everyone who has an entitlement in the seller zone(s), and opts to participate, gets proportionate access to trade opportunity and can choose what they want to do it. This option was proposed as a way to provide applicable holders equal opportunity of success in converting their allocation to a higher value allocation in a different zone.

Types of auctions considered

A blind auction – where participants make a bid on a share of the trade opportunity without knowing others' bids is considered the simplest form of auction to communicate and implement. Other types of options were not assessed for the following reasons:

- **Independent body matching buyers and sellers** (proposed by the ACCC in its 2021 *Murray-Darling Basin Water Markets Inquiry*) – involves the trade opportunity being provided to those willing to sell at the lowest prices with those willing to buy at the highest price. This type of auction was not considered because it would be a significant overhaul of the existing system, would have significant costs and prevent people from moving water between their own accounts.

- **Progressive auction** (similar to eBay) – involves participants placing open bids online for a share of the trade opportunity during a specified auction window, enabling people to respond to others' bids. This type of auction was not considered because it would be more costly for participants who would potentially need a more complex bidding strategy, to make multiple bids and remain engaged with the process over the full auction period.

Assessment findings

WaterNSW and DEECA engaged consultants to assess options against the principles-based assessment framework - Frontier Economics for Barmah and Goulburn, Ricardo (member of WSP) for Murrumbidgee. The option assessment outcomes for each principle of the framework for Barmah, Goulburn and Murrumbidgee is presented in Table 1 and summarised in this section. Full detail on the assessments is contained in Appendix 2 and Appendix 3.

Overall assessment findings

The high degree of competition for limited intervalley trade opportunity means that under any option to manage access to trade, there will be market participants that miss out, as the demand for trade exceeds the volume available. The assessment of different options also shows that under all options there will be certain types of market participants that are likely to be most successful in securing a proportion of the available trade opportunity.

In time, it is expected that market participants will develop strategies to improve their chances of success under most options. Previous market behaviour has shown that:

- market participants with greater resources are more able to invest in improving their strategy or absorb more costs to access a larger share of trade than others, and
- those with large water holdings can apply for a larger share, splitting applications where helpful, so are more likely to receive a larger share of the available trade opportunity.

Overall, given the uncertainty of how market participants will adapt in time, the options assessment showed that Option 2 (Randomisation) performs best against the assessment framework and the current systems in place for scheduled trades openings, because it:

- supports the efficient and equitable distribution of water through clear and repeatable processes which do not provide substantially unfair advantages or barriers to certain market participants, noting that larger traders may gain marginal benefit from splitting applications.
- is simple and can be clearly communicated, reducing the level of technical knowledge required to participate in intervalley trade openings.
- can be easily established, maintained and adapted to suit different state water registers and processing systems.

Randomisation is shown to also perform best for Murrumbidgee openings, however, without a randomisation tool that can secure public trust in the process, the implementation may be delayed until funds and/or resources become available to WaterNSW.

Option 1 (First-in, first served) is conceptually simple, practical to implement and supports efficient distribution of water, but does not perform as well against the equity principle. First-in, first served significantly favours technologically advanced participants that can place applications the fastest. Large volume applications can further accelerate the pace at which trade opportunities are fulfilled perpetuating inequity of access. Moreover, system performance can be affected by high-volume and competitive openings, and it would be costly to resolve Victorian Water Register limitations.

The other options (Blind auction, Proportional application volume and Proportional entitlement) performed poorly against most of the framework principles:

- In a Blind auction equity of access could be considered the major benefit because it provides equal opportunity for all participants to place a bid, but equity could be affected by well-resourced participants that may be more likely to succeed by absorbing higher bidding costs and investing more in a bidding strategy to optimise success. Additionally, smaller participants may be more likely to pay more than the market value for trade opportunity leading to inefficient market outcomes. An auction would also have very high upfront costs and require significant time, effort and resources to establish, including potential legislative and regulatory amendments. Extra administrative process could delay distribution of allocation and while the general concept of an auction is simple, details of how to participate in the auction could be complex to communicate.
- The Proportional application volume option supports equity of access by providing everyone equal opportunity to apply, however may have participation barriers for small traders given the fixed transaction

costs and small proportions they are likely to receive. It is a reasonably simple concept to understand, however may create confusion and uncertainty for participants given they will not know the apportionment volume at the time of application. It would also have very high upfront costs and significant time, effort and resources to establish, as well as high administrative costs if manual processing and approving of applications is required for a large number of trades.

- While the Proportional entitlement volume may require legal review to ensure consistency with water market and trading objectives under the Murray-Darling Basin Plan, it is conceptually simple to understand and, it gives water entitlement holders the chance to access a proportion of the opportunity based on their entitlement volume. However, it prevents people who do not hold any entitlement volume from participating directly and is likely to be less efficient due to the potential for numerous very small trades, and larger water holders are likely to have greater capacity to secure a larger share of available trades. It would also have very high upfront costs and significant time, effort and resources to establish. Specifically for Murrumbidgee, the option is particularly difficult to implement as it requires a complete redesign of the current Protocol.

Table 1. Option assessment outcomes

	Principle assessed	First-in, First Served	Randomisation	Auction	Proportional Application Volume	Proportional Entitlement
BARMAH	Alignment to water market objectives	Yes	Yes	Yes	Yes	Yes
	Efficient distribution of water	🟢	🟢	🟡	🟡	🟡
	Equity of access	🟡	🟢	🟢	🟡	🟡
	Transparency of information	🟢	🟢	🟡	🟡	🟡
	Practical to establish	🟡	🟢	🟠	🟡	🟠
	Practical to operate and maintain	🟢	🟢	🟡	🟡	🟠
GOULBURN	Alignment to water market objectives	Yes	Yes	Yes	Yes	Yes
	Efficient distribution of water	🟢	🟢	🟡	🟡	🟡
	Equity of access	🟡	🟢	🟢	🟡	🟡
	Transparency of information	🟢	🟢	🟡	🟡	🟡
	Practical to establish	🟡	🟢	🟠	🟡	🟠
	Practical to operate and maintain	🟢	🟢	🟡	🟡	🟠
MURRUMBIDGEE	Alignment to water market objectives	Yes	Yes	Yes	Yes	No[1]
	Efficient distribution of water	🟢	🟢	🟡	🟠	🟠
	Equity of access	🔴	🟢	🟡	🟢	🔴
	Transparency of information	🟢	🟢	🟠	🟢	🟠
	Practical to establish	🟢	🟡	🔴	🟠	🔴
	Practical to operate and maintain	🟢	🟢	🟠	🟠	🔴

Rating Scale	
🟢	Meets criteria
🟢	Meets criteria, with only some limitations
🟡	Some concerns or risk to meeting criteria
🟠	Large concerns or risks to meeting criteria
🔴	Does not meet criteria

[1] For the Murrumbidgee assessment Ricardo (member of WSP) did not pass this option through the preliminary assessment because it was deemed to contravene Basin Plan Water Trading Rules, and it says the option would require legal review before further policy assessment. For Barmah and Goulburn, Frontier Economics considered the option to pass because it aligns with water market objectives, but agrees the option is likely to contravene Basin Plan Water Trading Rules.

Specific considerations for Murrumbidgee trade openings

Establishing a randomisation option for the Murrumbidgee is considerably less practical than it is for Barmah and Goulburn. All Murrumbidgee openings are ad-hoc and linked to IVT balance triggers. If a randomised method was established, consideration would need to be given to the timing of scheduled trade openings, including adjusting the start time, extending the submission window.

WaterNSW business transformation

WaterNSW has undergone a major business transformation in late 2025 due to significant reduction in IPART funding and will be unable to continue delivering all its functions in the same way. For more information please refer to WaterNSW business transformation - WaterNSW. This poses a challenge in how WaterNSW can contribute to the development of new systems or operations required by some of the options presented in this report. The assessment has been done based on the general terms of how practical is to establish and operate, noting that implementation might be delayed due to lack of resources and capabilities from WaterNSW side.

Note on ad-hoc trade openings

The options assessment focussed on trade openings where there is a high level of competition. For the Goulburn and Barmah trade openings these are the scheduled openings. For ad-hoc openings in Goulburn and Barmah, we plan to continue to use the first-in, first served approach.

An alternative for these ad-hoc openings could be considered, whereby trade is held back until a minimum trade opportunity volume is reached (similar to how the Murrumbidgee trade currently operates) and then managed via a scheduled opening option. This would help address remaining equity concerns with using the first-in, first served approach. These concerns are more significant for Barmah because of faster processing in Victoria that results in almost all trades occurring between Victorian accounts.[2]

While holding back ad hoc trade opportunities could improve known equity issues, it would come with a trade-off in efficiency – by delaying access to trade opportunities and increasing administrative burden and costs to manage scheduled openings. Holding back ad-hoc trade openings for later scheduled openings may only be worthwhile if the opening is expected to be highly valued. Analysis by Frontier Economics has demonstrated that most of the time ad-hoc trade opportunities are created for Barmah and the Goulburn there is little price difference in allocation between upstream and downstream trading zones, noting occasional large volumes have occurred when differentials have been moderate. Frontier Economics conclude that while ad-hoc openings mostly occur when trade is unrestricted and prices between zones are at parity, the equity-related concerns are not enough to justify the administrative burden of holding back trade opportunities.

Refinements

After an assessment of the fundamental features of five options was complete, we considered a range of potential refinements, including volumetric limits on applications, the timing of trade opening application windows, the timing of openings in relation to resource announcements, the possibility of using joint or matched IT systems for Barmah.

Imposing volumetric limits on randomised applications increases perceived equity of options by preventing large water holders from taking a large amount of trade opportunity in a single transaction, but this is countered by the fact that for relatively low cost given any party (including larger water holders) can split their applications to increase the chances and this behaviour is already observed in current arrangements for Barmah and Goulburn openings.

Development of joint or matched IT systems is only relevant to Barmah openings where activities across Victoria and NSW are coordinated. Integration of applications into a single IT system could optimise cross-border cooperation, however the current method of combining eligible applications from Victoria and NSW prior to randomisation is sufficiently fit for purpose.

An application submission window of up to seven hours is the current approach for Barmah and Goulburn openings and could be sufficient for Murrumbidgee openings to lessen the effects of personal and business circumstances on applications. Trade openings could be delayed in relation to significant resource announcements (e.g. seasonal determination announcements, allocations and outlooks) to improve decision making of participants, but this could

[2] This does not prevent NSW traders from accessing this opportunity because allocation can generally be traded between NSW and Victoria with relatively low transaction costs, providing anyone the opportunity to trade allocation via Victorian systems.

impact the timeliness of trade distribution due to operational challenges of dealing with trade openings and resource announcements at the same time.

Have your say

WaterNSW and DEECA invite water market participants and the broader community to comment on the outcomes from the options assessment and help identify a preferred option for implementation.

Submissions can be made to either WaterNSW or DEECA via the channels below by **Sunday 14 June 2026** and will be shared between the agencies (unless requested otherwise) so you only need to submit once**.** Submissions will be made available on the WaterNSW website and Engage Victoria websites respectively, except where individuals specify they do not wish to make their comments public.

WaterNSW and DEECA will summarise the feedback received in a joint 'What We Heard' report and use this to inform any decisions about future options.

Have your say

1. Considering the assessment results, do you agree that randomisation is the most suitable option?

   Please explain the reasons for your opinion and make it clear if you are commenting in the context of Barmah, Goulburn, Murrumbidgee or all the systems combined.

2. Do you agree or disagree with the assessment against the assessment framework principles?
3. Is there any other information that has been overlooked in the options assessment or needs to be considered by WaterNSW and DEECA in developing a final recommendation for each trade limit?

Submissions to WaterNSW

- Online at Trading water - WaterNSW
- Email to Customer.Helpdesk@waternsw.com.au
- Post to *Water markets: access to intervalley trade*

  WaterNSW (c/o Ramona Nica)

  PO Box 398, Parramatta, NSW 2124

Submissions to DEECA

- Online at Engage Victoria
- Email to water.market.transparency@deeca.vic.gov.au
- Post to *Water markets: access to intervalley trade*

  Department of Energy, Environment and Climate Action (c/o Mark Toomey)

  PO Box 500, East Melbourne Vic 8002

Appendix 1 – Final assessment framework

IMPROVING ACCESS TO WATER ALLOCATION TRADE BETWEEN ZONES IN THE SOUTHERN MURRAY-DARLING BASIN

ASSESSMENT FRAMEWORK

WaterNSW

VICTORIA State Government | Energy, Environment and Climate Action

Disclaimer
For the purposes of this report, Victoria is represented by the Department of Energy, Environment and Climate Action (DEECA) and NSW is represented by WaterNSW, a State-owned Corporation.

Acknowledgements
DEECA would like to acknowledge the contributions of Frontier Economics in developing an initial version of the framework as well as reviewing earlier versions of this report.

WaterNSW would like to acknowledge the contributions made by Ricardo for the development of the initial framework and their contributions to the finalised framework as outlined in this report.

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ASSESSMENT FRAMEWORK

This assessment framework has been developed by NSW and Victoria as part of their joint project to improve access to intervalley trade opportunities. It is intended to be used to assess alternative options and inform decision-making on any future reform to current arrangements.

Phases of the assessment

The framework contains three phases as set out in the table below.

Phase	Objective	Means of assessment
Preliminary assessment	This phase ensures the option aligns with long-standing objectives for water markets that have governed the development of trade in the Murray-Darling Basin for more than two decades.	Yes/No with short justification. *If the preliminary assessment finds that the option contravenes the agreed water market objectives, no further analysis of that option will be performed.*
Full assessment	This phase ensures that the option is rigorously considered against each principle.	Qualitative assessment using appropriate data, information and analysis.
Conclusion assessment	This phase provides an overall summary of the assessment for the option to support decision-making on a preferred option for implementation.	Qualitative summary of the key outcomes from the full assessment.

Principles

The framework is based on six principles (including the preliminary assessment principle of 'alignment to water market objectives'). The table below presents these principles and explains why they are important for assessing options to improve access to intervalley trade opportunities.

Principle	Why it matters
Alignment to water market objectives Considers whether it aligns with agreed water market objectives	The option needs to be consistent with the agreed objectives of water market and trading objectives developed under the National Water Initiative and specified in Schedule 3 of the *Water Act 2007* (refer to Evaluation Considerations)
Efficient distribution of water Considers whether the option supports efficient distribution of water among water users	The option needs to consider whether it enables water to be transferred between water users and trading zones without unnecessary costs or barriers
Equity of access Considers whether the option supports equitable access to trade opportunities for all market participants	The option needs to consider whether it facilitates a level playing field for water markets and prevents advantages to certain types of market participants over others
Transparency of information Considers whether the option can be clearly communicated to support informed decision making by water market participants	The option needs to consider whether the trade arrangements can be communicated effectively (i.e. both clearly and transparently) to support trust in the process and to improve market confidence
Practical to establish Considers whether the option is practical to establish for both water market agencies and water market participants	The option needs to consider the establishment requirements, including any costs, changes to policies, procedures and/or amendments to existing technical infrastructure (e.g. state water registers) to both water market agencies and market participants
Practical to operate and maintain Considers whether the option is practical for both water market authorities and water market participants once the option has been established and become business-as-usual	The option needs to consider how practical it is to be operated and maintained into the future, in a way which minimises administrative burden and is cost-effective for governments and water market participants alike

For each principle, an outcome assessment based on the full assessment is made using a rating scale:

Evaluation considerations

Each principle will be assessed with regard to relevant evaluation considerations, as defined in the table below. The concluding assessment will be based on relevant considerations.

The principles "efficient distribution of water" and "equity of access" provide the primary assessment outcome relevant to the objective of the project while the other principles provide confidence that the option is feasible and provides public benefit.

Principle	Evaluation Considerations
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the *Water Act 2007*? i.e., does the option: a) Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b) Minimise the transaction cost on water trades, c) Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d) Recognise and protect the needs of the environment, and e) Provide appropriate protection of third-party impacts?
Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?
Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? *The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities.* 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?
Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?
Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?
Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain?

22. How practical is the option for water market participants to use?
23. How much will it cost water management agencies and water market participants to operate and maintain?
24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?

Appendix 2 – Options assessment for Goulburn and Barmah

frontier economics

Improving access to water allocation trade between MDB zones: Barmah and Goulburn options assessment

Report for DEECA & WaterNSW | April 2026

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Executive Summary

This report provides an assessment of options for improving access to inter-valley water allocation trade opportunities on the Murray from upstream of Barmah to downstream of Barmah (through the Barmah Narrows), and from the Goulburn system to the Murray system. This work follows the Water Market Reform Roadmap that commits NSW and Victoria to work in collaboration with the Murray-Darling Basin Authority to consider options to improve equity of access to inter-valley trade opportunities. An assessment for the Murrumbidgee is provided in a separate report.

The assessment framework and options have been refined and finalised by DEECA and WaterNSW, in light of consultation that occurred mid-2025. The purpose of this work is to consider introducing new/revised systems for inter-valley trade opportunities into the water market to encourage efficient and equitable market outcomes — recognising that a 'perfect' arrangement does not exist.

Various options were considered for *scheduled openings* of Barmah and Goulburn trade openings— trade opportunities that occur at times driven by pre-determined resource planning decisions. These options would all have a 'First-in, First Served' approach for *ad-hoc openings* — trade opportunities that occur at a time that is not scheduled or predetermined, typically due to market activity.

The options were assessed against the principles for the finalised assessment framework (and evaluation considerations under each of the assessment framework's principles) — see Table 1 and Table 2, using a 5-step colour score from red to dark green.

Table 1: Summary of option evaluation scores, for Barmah

Criteria	First-in, First Served	Random-isation	Auction	Proportional Application Volume	Proportional Entitlement
Alignment to water market objectives	Yes	Yes	Yes	Yes	Yes*
Efficient distribution of water					
Equity of access					
Transparency of information					
Practical to establish					
Practical to operate and maintain					

Source: Frontier Economics

Table 2: Summary of option evaluation scores, for Goulburn to Murray

Criteria	First-in, First Served	Random-isation	Auction	Proportional Application Volume	Proportional Entitlement
Alignment to water market objectives	Yes	Yes	Yes	Yes	Yes*
Efficient distribution of water					
Equity of access					
Transparency of information					
Practical to establish					
Practical to operate and maintain					

Source: Frontier Economics

The assessment has been conducted separately for the context of Barmah trade openings and Goulburn trade openings. **In both contexts, the option for randomisation of applications to scheduled openings is considered the option recommended as most suitable in current market settings**. This is due to the certainty of relying on an established arrangement, the equity of random access to trade opportunities, and the relatively low transaction costs of further reallocation of water allocation volumes (the ease and nominal fee for intra-system trade).

The option of randomisation improved upon a 'First-in, First Served' approach due to equity concerns for given scheduled trade openings that are highly sought after / competitive and more likely to be captured by well-resourced market participants.

The option of randomisation was also seen to be recommended as compared to the auction approach considered (a first price sealed-bid auction), due to concerns about auction costs (to government and water market participants) and significant complexity of a new approach. There are concerns that the informational and strategy costs of providing informed bids may be a barrier for holders of smaller volumes — preventing them from competing for trade opportunities (i.e. preventing their access).

Other options considered (Proportional Application Volume, and Proportional Entitlement) were found to have significant implementation challenges as well as efficiency and equity concerns.

None of the options were rated at the highest level (dark green) for efficiency, due to the continued reliance on cancel/issue allocation trade to trade water between systems. This was discussed in the consultation paper as an intrinsic characteristic of the existing water management system. As a result, the volumes of interregional trade may not be optimal, due to limits placed on trade to manage third-party impacts (such as spill risk or environmental risk) and the current arrangements for 'cancel/issue' water allocation trade between zones.

We note that all options have the potential for the use of strategy to advantage well-resourced participants, and over time people will learn strategies to improve their strategies on all options (except 5).

Further, we note there are continuing concerns regarding the use of the 'First-in, First Served' approach for ad-hoc openings, in particular for Barmah, which is assumed as a part of all options. The implications of the 'First-in, First Served' approach for ad-hoc openings is a key additional consideration in Barmah equity outcomes. However, the processing challenges as well as the expected limited value of trade at the time of an ad-hoc opening (as set out in Appendix B) suggest that the use of the 'First-in, First Served' approach for ad-hoc openings (as embodied in Option 2) for both Barmah and Goulburn is appropriate.

1 Introduction

This report provides an assessment of options for improving access to water allocation trade between zones in the southern Murray–Darling Basin (MDB) — specifically in the Murray from upstream of Barmah to downstream of Barmah (through the Barmah Narrows), and from the Goulburn system to the Murray system. These are known as inter-valley trades (IVTs). [1]

This work follows the Water Market Reform Roadmap[2] that commits NSW and Victoria to work in collaboration with the Murray-Darling Basin Authority to consider options to improve equity of access to IVT opportunities (Roadmap Recommendation 14).

The assessment framework and options have been refined by DEECA and WaterNSW in light of consultation that occurred mid-2025[3], and are presented in sections2 and 3, respectively.

The purpose of this work is to consider introducing new/revised systems for providing access to IVT opportunities to encourage good (efficient) and fair (equitable) market outcomes — in the context of knowing that 'perfect' arrangement do not exist. It is also expected that any new/revised system would be a proportionate response to the issues at hand — namely that the cost/effort to all parties (including government and market participants) is justifiable and defensible to achieve the expected outcomes.

The remainder of this section provides background and context for this assessment. Further information is provided in the preceding consultation papers, and throughout the DEECA and WaterNSW websites.

1.1 Context

Southern MDB water markets provide significant benefits to water market participants.[4] Extensive reforms undertaken by State governments have enabled the trading of water allocations and entitlements within and across state boundaries. Trades between water systems are a significant source of the benefits from trade.

The National Water Initiative (2004) supported the progressive removal of barriers to trade in water and other actions to facilitate the broadening and deepening of the water market, with an open trading market to be in place (cl23 v) — and this has been achieved in the southern MDB. A key caveat of the NWI support for markets is the need for systems to be physically shared or hydrologically connected and to protect the needs of the environment and third-party interests. (cl58 i). This requirement is also established in the Basin Plan Water Trading Rules (Chapter 12 of the Basin Plan), where facilitating the operation of efficient and effective water markets also requires protecting both third party interests and the needs of the environment.

Water markets have been increasingly subject to IVT restrictions that are put in place to manage the real and potential third-party impacts (to water entitlement holders and the environment) of

[1] The term 'intervalley trade' is used in this report to refer to the allocation trade from one trading zone into another trading zone, e.g. it includes trade from the Goulburn to the Murray trading zones, and trades from the Murray trading zones upstream of Barmah to the trading zones downstream of Barmah.

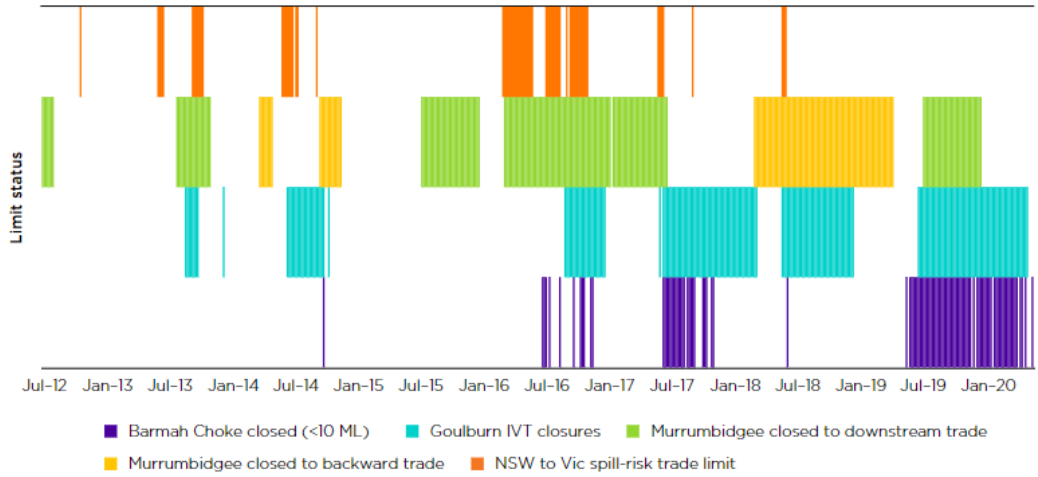
[2] Water Market Reform: Final Roadmap Report, https://www.dcceew.gov.au/sites/default/files/documents/water-market-reform-final-roadmap-report.pdf

[3] https://engage.vic.gov.au/improving-access-to-trade-in-the-southern-murray-darling-basin

[4] National Water Commission 2012, Impacts of water trading in the southern Murray–Darling Basin between 2006–07 and 2010–11, NWC, Canberra.

moving water between water systems/valleys. Further, the ACCC water markets inquiry[5] showed that in the many instances where a particular trade limit was binding (i.e. inter-zone trade was constrained in one direction) other limits were also constraining trade. For example, Figure 1 shows that for much of the first half of 2019-20 the Barmah Choke was closed, and trade to the Murray from the Goulburn and Murrumbidgee was also closed.

Figure 1: Inter-valley trade limits, Southern Connected Basin, 2012–13 to 2019–20



Source: ACCC 2021, Figure 3.17.

The ACCC water markets inquiry, the Water market reform roadmap[6], and stakeholders more broadly, have concerns with 'first in, first served' arrangements for managing access to restricted inter-system trade opportunities (including IVTs). In particular, the concern is that 'first in, first served' approaches to rationing IVT opportunities leads to these opportunities accruing to participants with advanced IT systems. This is seen as inequitable and inhibiting allocation of water to its most efficient use.

The fact that much of the benefits of IVT is being captured by select participants that are particularly well-placed to capture the arbitrage opportunities is contrary to the envisaged outcome of MDB water markets. The increasing incidence of IVT restrictions means that a portfolio of water entitlements held in different zones of a connected water system cannot be relied on by entitlement holders to provide water they need for use. This runs contrary to expectations of the benefits of an irrigator holding a portfolio of water entitlements in different zones of a connected water system, so that they may draw on this portfolio to meet their water requirements. For example, the ACCC's Issues Paper in 2009[7], prepared to inform the preparation of the Basin Plan Water Trading Rules, stated that:

> *Enable a mix of water products to develop [s4.3, p27]*
>
> *An increase in the choice of water products available can deepen the water market by generating more buyers and sellers; it can also provide increased flexibility to water users. Water products could include water access entitlements, water allocations, leases and option contracts.*

[5] ACCC 2021, Murray-Darling Basin water markets inquiry - final report, www.accc.gov.au/system/files/Murray-Darling%20Basin%20-%20water%20markets%20inquiry%20-%20Final%20report_0.pdf

[6] Quinlivan, D. 2023, Water market reform: final roadmap report, www.dcceew.gov.au/sites/default/files/documents/water-market-reform-final-roadmap-report.pdf

[7] ACCC 2009, Water trading rules: Issues paper, Advice to support the preparation of the Basin Plan Water Trading Rules, March.

For example, given the variability in water availability in Australia and that some irrigators need long-term access to secure supplies of water because of their cropping choices, these irrigators may wish to own higher reliability water entitlements. Some irrigators with annual crops may prefer to trade allocations, taking advantage of times when water is less expensive and more readily available. ***Other irrigators may wish to hold a portfolio of water entitlements from different connected water systems, to diversify the risks associated with low water availability in any one area****. [emphasis added]*

While the increasing incidence of IVT restrictions means that such a portfolio cannot be relied upon to provide water for use, there may, however, still be some benefit in holding a diversified portfolio across systems as it would still provide water that may be sold in order to provide a financial hedge.

While the original intent of water markets was to provide irrigators with improved tools to manage water supply risks and realise additional benefits from holding different water products across regions, water markets have evolved to support the transfer of water between regions (with associated economic efficiency benefits) in a way that is not widely accessible.

Arrangements that enable the benefits of IVT to be more easily captured by select participants seems counter to the intent of developing and enhancing water markets.

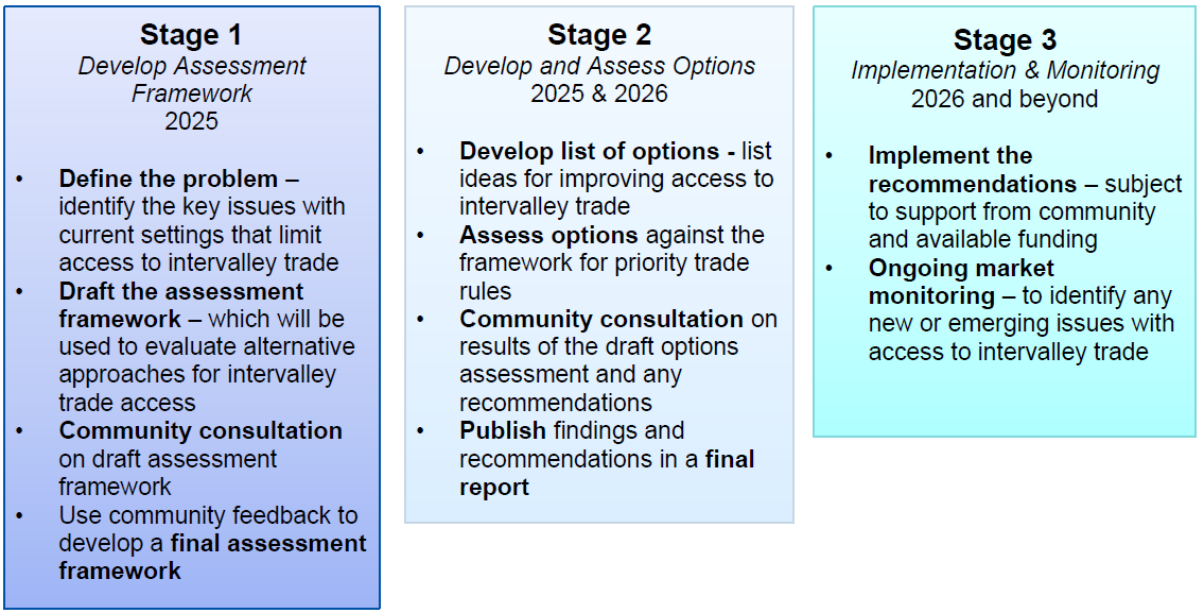
1.2 Scope

The DEECA and WaterNSW consultation paper set out the stages of the IVT Framework Project (Figure 2), and the July 2025 consultation paper represented Stage 1.

The objective of this report is to assess options for improving access to IVT opportunities against the agreed assessment framework and to identify a most suitable option for the short to medium term, under current market and regulatory settings (including the continuation of IVT trade using 'cancel /issue' allocation trade, as discussed in the consultation paper).

This paper is central to the delivery of Stage 2 by presenting an assessment of options against the framework for priority trade rules. Although Stage 2 considers options for accessing priority IVT opportunities (including between the Goulburn and Murray, Murrumbidgee and Murray and upstream/downstream of Barmah), this paper only considers IVT access for the Goulburn and Barmah contexts.

Figure 2: Three stages of the IVT Framework Project



Source: DEECA/WaterNSW 2025, Figure 2.

1.3 Types of trade openings

Trade openings can also be differentiated based on how they arise — such as through scheduled openings at the beginning of the water year or other scheduled times, or market movements that create opportunities through making space within net trade rules, such as Barmah openings during the water year:

1. **Scheduled openings** — trade opportunities that occur at a time driven by predetermined resource planning decisions, such as the opening of the season or pre-defined (and publicised) dates for reassessing trade opportunity (such as the Goulburn assessments of observed water use and 'quarantined' volumes).
2. **Ad-hoc openings** — trade opportunities that occur at a time that is not scheduled or predetermined, typically due to market activity or river operations — such as trade or tagged use that 'frees up' trade under a net trade limit, or downstream delivery of an IVT to free up trade under an IVT limit.
   Options for these ad-hoc openings are not addressed within this report — due to their unpredictable nature precluding the use of complex trade operations to take place. Nevertheless, both states agree there is a degree of inequitable access during these ad-hoc events (notably ad-hoc Barmah openings, see Appendix B) and while there are ways accessing the trade opportunity, collaboration between NSW and Victoria will continue beyond this project to address the issues at hand.

2 Assessment Framework

This assessment framework has been developed and finalised by NSW and Victoria as part of their joint project to improve access to IVT opportunities. It is intended to be used to assess alternative options and inform decision-making on any future reforms to current arrangements for making IVT trade opportunities available. WaterNSW and DEECA will publish this joint framework separately, alongside the options definitions used in the Barmah/Goulburn and Murrumbidgee reports.

2.1 Phases of the assessment

The framework contains three phases as set out in the table below.

Table 3: **Phases of the assessment**

Phase	Objective	Means of assessment
Preliminary assessment	This phase ensures the option aligns with long-standing objectives for water markets that have governed the development of trade in the Murray-Darling Basin for more than two decades.	Yes/No with short justification. *If the preliminary assessment finds that the option contravenes the agreed water market objectives, no further analysis of that option will be performed.*
Full assessment	This phase ensures that the option is rigorously considered against each principle.	Qualitative assessment using appropriate data, information and analysis.
Conclusion assessment	This phase provides an overall summary of the assessment for the option to support decision-making on a option recommended for implementation and most suitable in current market settings.	Qualitative summary of the key outcomes from the full assessment.

Source: DEECA/WaterNSW

2.2 Principles

The assessment framework is based on six principles (including the preliminary assessment principle of 'alignment to water market objectives'). The table below presents these principles and explains why they are important for assessing options to improve access to IVT opportunities.

Table 4: Principles for the assessment framework

Principle	Why it matters
Alignment to water market objectives Considers whether it aligns with agreed water market objectives	The option needs to be consistent with the agreed objectives of water market and trading objectives developed under the National Water Initiative and specified in Schedule 3 of the *Water Act 2007* (refer to Evaluation Considerations)
Efficient distribution of water Considers whether the option supports efficient distribution of water among water users	The option needs to consider whether it enables water to be transferred between water users and trading zones without unnecessary costs or barriers
Equity of access Considers whether the option supports equitable access to trade opportunities for all market participants	The option needs to consider whether it facilitates a level playing field for water markets and prevents advantages in access to certain types of market participants over others
Transparency of information Considers whether the option can be clearly communicated to support informed decision making by water market participants	The option needs to consider whether the trade arrangements can be communicated effectively (i.e. both clearly and transparently) to support trust in the process and to improve market confidence
Practical to establish Considers whether the option is practical to establish for both water market agencies and water market participants	The option needs to consider the establishment requirements, including any costs, changes to policies, procedures and/or amendments to existing technical infrastructure (e.g. state water registers) to both water market agencies and market participants
Practical to operate and maintain Considers whether the option is practical for both water market authorities and water market participants once the option has been established and become business-as-usual	The option needs to consider how practical it is to be operated and maintained into the future, in a way which minimises administrative burden and is cost-effective for governments and water market participants alike

Source: DEECA/WaterNSW

For each principle, an assessment is made using a coloured rating scale (Figure 3).

Figure 3: Rating scale

Source: DEECA/WaterNSW

2.3 Evaluation considerations in undertaking assessment

Each principle will be assessed with regard to relevant evaluation considerations, as defined in the table below. The concluding assessment will be based on these relevant considerations.

The principles "efficient distribution of water" and "equity of access" provide the primary assessment outcome relevant to the objective of the project while the other principles provide confidence that the option is feasible and provides public benefit.

Table 5: Evaluation considerations

Principle	Evaluation Considerations
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?
Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?

Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? *The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities.* 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?
Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?
Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?
Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?

Source: DEECA/WaterNSW

2.4 Incorporating stakeholder feedback

WaterNSW and DEECA received feedback on the problem definition, principles and draft framework and potential options. This is presented in the document *Improving access to water allocation trade between zones in the southern Murray-darling basin, What we Heard* which summarises the stakeholder consultation[8]. The final framework (above) has built on this feedback.

In relation to the problem statements the stakeholders identified equity and efficiency issues with the current 'first-in, first-served' approach to IVT access. This system favours well-resourced participants with advanced IT systems, disadvantaging smaller irrigators who often rely on brokers. Speed dominates access to IVT opportunities creating a "fastest finger first" dynamic rather than prioritising genuine water needs. Binding IVT limits and price differences between zones drive speculative trades and windfall gains, undermining trust and market confidence. Transparency and predictability are further challenged by operational disparities between states (especially for ad-hoc openings as noted in section 1.3). Concerns also arose about large water holders dominating trade, reinforcing the need for fairer, more transparent, and predictable mechanisms.

Survey feedback indicated strong support for the proposed assessment principles, with 69% of respondents agreeing they are appropriate for evaluating equity and efficiency in trade access. Stakeholders described the framework as clear and comprehensive, but many emphasised that equity of outcome should be considered (not just access to opportunity) to understand the distribution of benefits of each option. Concerns were also raised that current benefits resemble a "lottery," favouring those who secure IVT access, and it was suggested that the assessment principles should discourage arbitrage-driven behaviour disconnected from water use. Some recommended limiting eligibility for access to IVT opportunities to legitimate water users and ensuring options analysis identifies beneficiaries and their contribution to market value. This option assessment is concerned with the method for accessing IVT and so questions of eligibility for participation are beyond the scope of this paper.

The general sentiment for each of the three prominent options was varied.

- First in first served (FiFs) was deemed the most challenging of the three defined options as it favours better resourced market participants
- Randomisation was generally seen as fairer, but it was considered that adjustments could be made to improve the approach such as imposing volume limits
- Views on auctions were divided with some respondents concerned that auctions would favour only the wealthy or those with 'deep pockets'. However others observed that auctions would diminish the financial arbitrage opportunities which in turn means only genuine water users would be the predominant users of the system. The precise design of any auction was widely seen as having a major impact on how it was perceived. Additionally, many participants suggested that the equity of the auction option would be largely dependent on how the revenue from an auction process was distributed and looked far more favourably on it being distributed back to market participants.

Other options were also raised, including percentage-based allocation, access based on use and access based on entitlement.

[8] https://engage.vic.gov.au/download/document/42728

3 Options

This section describes each of the five options considered for accessing Goulburn–Murray and Barmah trade opportunities:

1. First-in, First Served (which is also the Base Case — similar to arrangements prior to the temporary arrangements established in October 2024)
2. Randomisation
3. Auction
4. Proportional Application Volume
5. Proportional Entitlement

The first three options were outlined in the consultation paper, and the remaining options were raised during the subsequent consultation.[9]

Following this, a number of refinements that could be applied to these options are described, including:

- Volumetric limits
- Timing of scheduled trade opening application periods
- Joint or matched IT system

3.1 Option 1 / Base Case — First-in, First Served

Under this option, applications are processed in the order they are received by the approval agency. Eligible applications are approved in the order they are received until the trade opportunity volume is exhausted.

For the Barmah opportunity, the option includes the process whereby Victorian and NSW applications are considered *in turn* upon the opening of the water year (1 July). Applications that exceed the available opportunity are refused. .

For the Goulburn opportunity, and Victorian processing of Barmah trade, the option would also involve addressing existing VWR technical issues — including consistency of payment methods and ability to manage high loads.

This option represents the long-standing standard approach used since IVT commenced.

Under this option, ad-hoc trade openings would continue to be managed on a first-in, first-served approach and where there is no process for 'in-turn' consideration between States — rather applications are processed independently in each State, and approved if the trade opportunity exists.

3.2 Option 2 — Randomisation

Under this option, for scheduled trade openings, all eligible applications submitted during a specified application period are randomly ordered for processing. Trades are processed in that randomised order until the available trade opportunity volume is exhausted. This option is the same as the temporary arrangements used for Barmah and Goulburn scheduled openings since October 2024 described in *Barmah Trade Opening Application Protocol for July 2025 (DEECA and*

[9] https://engage.vic.gov.au/download/document/42728

WNSW)[10], and *New Trade Application Procedure for July 2025*[11] — which notably include:

- an aligned process for Victoria and NSW
- a defined application period (typically 4-5 hrs)
- eligibility that is limited to the volume in the seller's account.

Under this option, however, ad-hoc trade openings would continue to be managed on a first-in, first-served approach (Option 1).

Although this method has been trialled since October 2024 in the Goulburn, and since July 2025 at Barmah, it has a temporary status and therefore is not considered the base case. Market participant feedback indicates this has addressed some of the issues previously identified with the first-in, first-served approach.

3.3 Option 3 — Blind Auction

Some market participants advocated for an auction option during the framework consultation because it would allow price signals to determine access.

We suggest a 'first price' sealed bid auction should be used — sometimes called a 'blind auction'. It would arguably be the simplest form of auction to communicate and implement. Key aspects include:

- Participants would submit a 'bid' in terms of 'per megalitre of trade access' on a new field on their trade application form. It could be noted on the form that bids do not need to be in whole dollars, and this would lessen the likelihood of 'ties'. Total application volumes must be equal to or less than the volume of allocations on the seller's licence/account.
- Trade applications would then be ordered in descending order of their bids (just as they are currently placed in order after randomisation, and were previously ordered by the time stamp of when they were received). This means that submitting a higher bid, even if by only a few cents, could alter an application's position in the ordered list.
- Trade applications would then be processed in this order, until the trade opportunity is exhausted.
- Successful applications would be required to pay their bid. This means that the trade application and bid would need to be accompanied by a means of payment. We also suggest that the bid amount (in $/ML) and the total bid value (applying this bid across the trade application volume) be required on the form so that participants are clear of the potential cost they would be obligated to pay.[12]

Again, under this option, ad-hoc trade openings would continue to be managed on a first-in, first-served approach (Option 1).

For Barmah trade opportunities, this option would involve a single process for the scheduled trade opening on 1 July — where trades are submitted with an associated 'bid' to vie for available trade opportunity. All trades in NSW and Victoria would be considered, and placed in order according to the $/ML bid. Bids would be processed in order, commencing with the highest bid, until the available trade opportunity is exhausted.

[10] https:/waterregister.vic.gov.au/images/documents/Barmah-Trade-Opening-Application-Protocol-for-July-2025-DEECA-and-WNSW.pdf

[11] https://waterregister.vic.gov.au/images/documents/New-Trade-Application-Procedure-for-July-2025.pdf

[12] We note that, in some cases, this may require large transfers of funds — and payment policies may need to be reviewed to confirm which forms of payment (such as credit cards) would be accepted.

For Goulburn trade opportunities, this option would involve a similar process for each scheduled trade opening. All trades would be considered, and placed in order according to the $/ML bid recorded on the trade application. Bids would be processed in order, commencing with the highest bid, until the available trade opportunity is exhausted.

Note on choice of auction type

In its MDB Water Markets Inquiry, the ACCC noted an auction-type mechanism that could be explored to improve efficiency and access to trade — whereby an independent body would match buyers and sellers based on their application prices to provide selling capacity to those willing to sell at the lowest price, and buying capacity to those willing to buy at the highest price. This version of an auction is not being considered here because market participants did not canvass this type of auction which would be a major overhaul of the current system for allocation trade, prevent people from moving water between their own accounts and would have a significant cost for all. Additionally, a mechanism such as this may not suitable in the current market settings because data from trade openings demonstrates that the vast majority of trades are from scheduled trade openings in the context of both Barmah and Goulburn — meaning that there are only a few periods of substantial trade, and trade is limited at other times and matching by the independent body would not be relevant.

For scheduled trade openings, applicants apply to access some of the available trade opportunity with a bid on how much they are willing to pay for that access. The highest bidders win the right to trade, provided they also submit valid trade application(s).

A key issue with an auction is determining what the auction revenue will be used for. Stakeholder consultation identified that, regardless of the auction-type selected, many participants considered that the equity of the auction option would largely depend on how the auction revenue was distributed and looked far more favourably on it being used to reduce bills for customers, instead of being captured by a government agency for example.[13]

The choice of auction mechanism would influence the performance of this option.

In our view, this 'first price sealed-bid' auction approach is most likely to be appropriate given challenges with alternative auction mechanisms, such as:

- Auction with progressive bidding
  - Although many people are familiar with auctions with progressive bidding, such as house auctions or eBay-type auctions, that allow bidders to respond to other bids (until the auction is completed), there may be higher transactions costs with this approach because participants would need to make a number of bids rather than a single bid and remained engaged with the auction process over an extended period (rather than a once-off bid).
  - A progressive auction may be costly to organise (auctioneer / costs of providing a secure platform to enter bids, view bids and the need to rebid if necessary). It may also be relatively costly for traders to participate in – in terms of time to engage with the auction process and time to formulate a bidding strategy (including their maximum willingness to pay/bid).
    - Established auction platforms could be utilised. Water Partners recently hosted the auctioning of water licences in Victoria's Gippsland region (see Box 1). Xpansiv (Box 2) has other options that were identified by stakeholders that are used for trade related

[13] DEECA/WaterNSW, p.17.

to environmental products, including water, gas (pipeline capacity) and carbon ACCUs.

- The use of an established platform may also readily allow for trade access opportunities that have been secured in the auction to be reallocated between water market participants since the volumes would be well-defined products already listed on the platform

- Further, if this auction approach was pursued, we suggest that DEECA and WaterNSW do not seek to develop their own auction platform, given that experiences such as for the Clean Energy Regulator suggest that development of a platform would be challenging (Box 3).

- A 'second price' auction with a single round (sealed bids)
  - The proposed 'first price' sealed bid auction could also be instead implemented as a 'second price' format whereby successful participants must pay the bid of the marginal/final bid that was accepted. This auction approach may be more difficult to communicate to stakeholders. This auction approach would affect the bidding strategies and also may affect the revenue raised by the auction.

Box 1: Southern Rural Water (SRW) auctions

Southern Rural Water (SRW) auctions differ from standard private trading. They are specifically used by the Victorian Government to release new or unallocated water (often created through modernisation savings or winterfill releases), rather than for trading between farmers. These auctions are conducted via the Southern Rural Water Exchange, an online platform currently operated by Water Partners.

This platform was recently used for an auction that commenced at 10:00 am on Tuesday, 28th October 2025. A Bulk Entitlement for 5.333 GL was granted to Southern Rural Water to support operations, expansion, or drought-proofing for irrigators in the Latrobe region. First, market participants had to lodge an application to participate to ensure all participants were eligible. This "gatekeeping" phase ensures only legal entities capable of using the water can participate.

This auction had 25 lots on offer, ranging from 35 ML to 500 ML, totalling 4,370 ML. The process opened bidding on all lots at 10:00 am and staggered the bidding end times in 10-minute intervals—Lot 1 ending at 10:10 am, and Lot 25 ending at 2:10 pm. SRW set a confidential reserve price (a minimum floor price per megalitre) based on recent market valuations and cost recoveries; bids below this threshold are invalid.

At the close of the auction, the highest bids above the reserve price are successful. Any lots that received no bids (or bids below reserve) are immediately moved to a "Buy Now" listing known as "The Shelf." The price for Shelf water is fixed, typically set at the average or highest clearing price achieved during the live auction to prevent bidders from waiting for the shelf to secure a bargain.

Successful bidders must pay a deposit (typically 10%) immediately upon the close of the business day, which includes an auction fee. The remaining balance is payable upon the formal issuing of the license (usually within 30–60 days). If the bidder fails to pay, the deposit is forfeited, and the water returns to the pool.

Source: https://www.srw.com.au/news-media/latrobe-river-farmers-score-more-water-through-online-auction

Box 2: Complex trading platforms

Xpansiv's platforms, specifically CBL and H2OX, differ significantly from periodic government auctions. They operate as continuous secondary markets, designed for high-frequency institutional trading rather than one-off release events. These platforms utilise a Central Limit Order Book (CLOB), allowing participants to view live market depth and execute trades instantly 24/7 rather than waiting for a specific bidding window.

On the CBL platform, participants trade standardised spot contracts like Global Emissions Offsets (GEOs) and complex gas products such as Methane Performance Certificates (MPCs). This effectively separates the "environmental attribute" from the physical commodity. Similarly, H2OX facilitates Australian water trading with live, firm execution, replacing older "bulletin board" systems where offers were non-binding.

Settlement is automated via Delivery-versus-Payment (DvP) technology. Unlike the manual invoicing of government tenders, DvP ensures the asset (credit or water allocation) and cash are exchanged simultaneously. This minimises counterparty risk and allows for T+0 (same day) settlement, vastly faster than the 30–60 day periods typical of primary auctions.

Source: https://www.xpansiv.com/trading-platforms/cbl; https://www.xpansiv.com/trading-platforms/h2ox

Box 3: Lessons from Clean Energy Regulator trading platform

The Clean Energy Regulator (CER) attempted to build the Australian Carbon Exchange (ACE), envisioning a government-run "stock market" to centralise ACCU trading. Their goal was to replace the opaque private contracts with a transparent, government-controlled platform that would lower transaction costs and create a single "official" price for carbon.

The initiative failed primarily due to speed and redundancy. The government process was too slow and by the time the CER was ready to develop the platform, the private sector (companies like Xpansiv) had already built functioning, high-volume exchanges. Industry participants ultimately rejected the government's proposal, arguing that the regulator should not compete with private markets.

The CER abandoned the plan to operate a trading exchange. Today, the government restricts its role to managing the Registry (the backend database of ownership), while all actual trading, price discovery, and auctions occur on private sector platforms.

Source: https://cer.gov.au/markets/interoperability-unit-and-certificate-registry

3.4 Option 4 — Proportional Application Volume

Some market participants suggested a 'Proportional Application Volume' approach during the framework consultation because it would ensure everyone who has an eligible application receives a share of the available trade opportunity based on their desired amount.

Under this option, the available trade opportunity is shared between those seeking access to trade (i.e. the trade applications received).

For scheduled trade openings, all eligible applications received during a specified submission window receive a share of the available trade opportunity volume in proportion to the volume they applied to trade. If requested eligible trade application volume exceeds the available trade opportunity, the share is proportional to the volume each applicant requested relative to the total volume requested by all applicants:

$$Allocated\ trade\ access\ volume_i = \left(\frac{Requested\ volume_i}{\sum Requested\ volume_{all}}\right) \times Available\ IVT\ Volume$$

As with the temporary randomisation approach that is being used, eligibility that is limited to the volume in the sellers' account.

In order to determine the total requested volume (the denominator in the above equation), all applications need to be assessed and processed. This is a key difference to the previous options (where trade applications are ordered and then the processing of trades stops when trade opportunity is exhausted).

For Barmah trade opportunities, this option would aggregate the eligible trade application volumes submitted in NSW and Victoria. Trade applications would be approved for adjusted volumes, based on the total requested volume and the total available IVT volume.

Similar for Goulburn trade opportunities, for each scheduled trade opening under this option eligible trade applications would be approved for adjusted volumes, based on the total requested volume and the total available IVT volume.

Under this option, ad-hoc trade openings would be managed on a first-in, first-served approach (Option 1).

3.5 Option 5 — Proportional entitlement

This final option was also raised during consultation, such that trade access is based on entitlement held. In this way, it recognises that part of the value in holding water entitlement in the seller zones is that it provides the holder the potential to convert some of their allocation to allocation in a different zone that has a higher value. This option implies that all holders of allocation in the seller zone that opt-in should have an equal chance of securing the higher value from moving the water.

For scheduled trade openings, the available trade opportunity will be distributed between entitlement holders in the seller zone that have chosen to opt-in to secure trade access. The trade opportunity will be assigned to entitlement holders in proportion to their entitlement volume:

$$Allocated\ trade\ access\ volume_i = \left(\frac{Water\ access\ entitlement\ volume_i}{\sum Water\ access\ entitlement\ volume_{all\ opted\ in}}\right) \times Available\ IVT\ Volume$$

Implementing this option would require further work to clarify:

- The process which entitlement holders use to opt-in to receive a share of available trade opportunity.
- The way in which different entitlement types in the seller zones are aggregated together to establish the total base of opted in water access entitlement. This could be based on the cap factors used to compare entitlement volumes for Basin Plan water recovery (long-term diversion limit equivalent factors), or other approaches.

- Any approach that may be available to entitlement holders to 'automatically' make use of the trade access granted, such as to automatically debit the volume in the seller zone and credit to a licence/account in the downstream zone. This may include a mechanism to automatically sell the trade access volume, such that the volume is debited in the seller zone and the entitlement receives a payment at the prevailing downstream water allocation price.

Ad-hoc trade openings would be managed on a first-in, first-served approach (Option 1).

3.6 Refinements

The following refinements could be applied to any or all of the above options.

3.6.1 Volumetric limits

Consideration could be given as to whether including a maximum volume that can be applied for in a single trade application (e.g., 25 ML or 100 ML per application) would improve the option. Variations on this could be a maximum volume that a water account/licence can apply for in an opening, or a maximum volume that a person/entity could apply for across any number of applications. This refinement could apply to all options except option 5 (proportional to entitlement).

3.6.2 Timing of scheduled trade opening application periods

Under any of the options consideration could be given to the optimal timing for commencing scheduled trade openings (i.e. is opening at 7am or 10am, would close extend beyond business hours, and are weekdays preferred over weekends) for each option, and where relevant, consider the optimal duration for an application period (i.e. is a few hours sufficient, or are multiple days appropriate).

3.6.3 Further, consideration could be given to the timing of trade openings in relation to significant resource announcements, such as seasonal determinations and trade relaxations. Joint or matched IT system

In the case for Barmah, consideration was given to whether the benefits of a shared digital platform or equivalent systems between jurisdictions for managing Barmah applications, approvals, and trade data would outweigh anticipated costs, or whether there are any simple shared IT systems to improve Barmah openings. This is not relevant to the Goulburn IVT since these trade openings are solely managed within the VWR.

3.7 Summary of options

Table 6: **Summary of options for making IVT opportunities available**

	Overview
Option 1 — First-in, First Served / Base Case	Applications are processed in the order they are received by the approval agency. Eligible applications are approved in the order they are received until the trade opportunity volume is exhausted. Similar to arrangements prior to the temporary arrangements established in 2024-2025, with NSW and Victorian applications for Barmah trade considered in turn. Victorian Broker and MyWater portals differences addressed
Option 2 — Randomisation*	For scheduled trade openings, all eligible applications submitted during a specified application period are randomly ordered for processing. Trades are processed in that random order until the available trade opportunity volume is exhausted. (Similar to temporary arrangements established in October 2024 and July 2025.) Volume eligible cannot exceed the volume of tradable allocation available NSW and Victoria have a joint randomisation process for Barmah opportunity
Option 3 — Blind Auction*	Trade opportunity is made available to market participants based on bids in a 'first price' sealed bid auction Bids determine the order applications are processed (jointly across NSW and Victoria)
Option 4 — Proportional Application Volume*	Trade opportunity is made available to market participants based the proportional reduction of all eligible application volumes
Option 5 — Proportional entitlement*	Trade opportunity is made available to market participants based on 'eligible' entitlements held in upstream system Could include an automatic conversion to downstream allocation and mechanisms for small trades

**ad-hoc openings still managed via 'first-in, first served', therefore two systems required.*

Source: Frontier Economics based on DEECA/WaterNSW material

4 Option assessment, in the context of trade through Barmah

This section provides an evaluation of each option, in the context of scheduled water allocation trade openings through Barmah Narrows, based on the evaluation considerations identified in section 2.3. Each option has been considered in an evaluation table (presented in full in Appendix A). This section summarises the evaluation and issues associated with the options are discussed.

The five options are then considered jointly in section 7, to compare their performance against the assessment criteria.

The assessment of options in the context of Goulburn to Murray trade is provided in section 5.

4.1 Assessment of Option 1 — First in, First served / Base Case, in the context of Barmah

FiFS/Option 1 was the arrangement in place for the Barmah scheduled trade opening up to and including 2024, and had been generally performing well to facilitate trade. It has been a robust system (and relatively easy to operate and maintain) for most trade openings over the past two decades. The option is currently still in place for ad-hoc trade opening of Barmah and other systems (including the NSW Murrumbidgee) and some scheduled trade openings in Victoria (such as the Broken). Table 7, highlights the critical pros and cons that factor into this ranking. Table 8 provides the scores based on the evaluation of principles in Appendix A (Table 29).

Table 7: **Option 1 Pros and cons, in context of Barmah**

Pros	Cons
• Supports basic water trading needs (distribution, timeliness) • Reasonably simple concept, is not hard to establish as it is a well-known concept • Highly practical to operate (once VWR improvements made), though NSWs system is still a limitation.	• System performance affected by high-volume openings. Costs to resolve VWR issues and maintain VWR capability for FiFs. • Larger/or well-resourced participants may have higher success rates

Source: Frontier Economics analyse

To understand in more detail how the option performs against the option assessment framework, Table 8 shows the performance of the option against each key component. This highlights the strengths and weaknesses of the FiFs option against the criteria set out in the assessment framework.

The FiFs option aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. It also performs reasonably well in the transparency and being practical to operate and maintain criteria. The FiFs option is simple and well-understood,

and provides clear and timely information about trade opportunities and outcomes. However, some participants may lack awareness of the steps needed to optimise fast application submission. Additionally, this option remains highly practical to operate with familiar processes and manageable costs, though manual cross-state coordination still adds staff effort despite improved system capacity and scalable server load management.-state coordination still adds staff effort despite improved system capacity and scalable server-load management.

The FiFs option has two moderate shortcomings. First regarding equity, well-resourced and technologically capable participants may be able to place applications the fastest in scheduled openings. Second, there would be practical challenges in managing high-volume openings that involve continued manual cross-state coordination.

Table 8: **Option 1 ratings, in context of Barmah**

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

Source: Frontier Economics

Assumptions and caveats that were considered when assessing this option were:

- It was assumed that the VWR upgrades are effective.
- This option has previously been the arrangement in place prior to 2024, and had been successfully implemented.
- Given the option was previously implemented and supported by communication materials, it would rank favourably on 'Practical to operate and maintain' principles once the necessary improvements were made.

4.2 Assessment of Option 2 — Randomisation, in the context of Barmah

The randomisation method has been trialled with scheduled trade openings since October 2024 in the Goulburn, and since July 2025 at Barmah, and market participant feedback indicates this arrangement has addressed some of the issues previously identified with the first-in, first-served approach, which were discussed above. Table 30 Table 9, highlights the critical pros and cons of this option. This is based on the evaluation of principles set out in the evaluation table for Option 2 in Appendix A (Table 30) under the Barmah evaluation.

Table 9: Option 2 pros and cons, in context of Barmah

Pros	Cons
• No barriers for any participants, and no advantage for market participants through technology 'arms race' • Simple, informed decisions, timely. • Practical to operate; participant interaction unchanged from current temporary system.	• Applications could be split to marginally increase the expected approved trade volume (and this strategy may be of most benefit to larger traders), but the associated trade is at the smaller application volume. • Still requires secondary trading to reach highest-value users. • Manual elements still create operational burden and risk.

Source: Frontier Economics analysis

Table 10 presents the performance of the Option 2 against each key criterion. This highlights the strengths and weaknesses of the randomisation option against the distinct criteria set out in the assessment framework.

The randomisation option aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives, whilst also performing reasonably well on other criteria, apart from the equity considerations.

This option generally supports efficient and low-cost water trading, enables timely redistribution of water across systems, and remains familiar and easy to operate, though some efficiency limits arise from reliance on secondary trades. It is relatively simple to communicate, offers moderately timely information, and can be established quickly at minimal cost using existing processes without legislative change. Once operating, it is practical and inexpensive to maintain, though higher application volumes may require more administrative effort. Overall, the approach functions reliably with strong cross-border coordination and minimal impact on participants.

For scheduled openings of Barmah (i.e. 1 July) Option 2 offers broadly equal access due to NSW and Victorian submitted trades being processed in turn and by randomisation reducing advantages from superior IT. Each State has their own submission channels, while a centralised platform could support consistent cross-border access. All participants can still marginally improve their chances of securing IVT opportunity by splitting volumes across multiple applications to increase the likelihood of trade access (discussed further in section 6), and participants with larger water holdings will have the greatest incentive to do so.

Table 10: Option 2 ratings, in context of Barmah

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	

Transparency of information	
Practical to establish	
Practical to operate and maintain	

Assumptions and caveats that were considered when assessing this option were.

- Human error may still be present in this system, affecting the efficiency of the option
- The option is currently in place and so establishment and operation and maintenance costs are low.

4.3 Assessment of Option 3 — Blind Auction, in the context of Barmah

Based on the evaluation of principles in the evaluation table for **Option 3** in Appendix A (Table 31), Table 11 presents this the pros and cons of this option. On balance the advantages of this option slightly outweigh its shortcomings.

Table 11: **Option 3 pros and cons, in context of Barmah**

Pros	Cons
• Distributional & allocative efficiency, informed decisions making • Equal opportunities for those who can participate in this free market concept • Generates revenue to put towards chosen purpose (e.g. bulk water management or environment) • Simple to convey, once established may be reasonable to operate	• Administrative and transaction cost barriers, potentially less timely • Challenging for participants to estimate what to offer (bid formulation) • Potential requirement for change in legislation and would involve a significant change in management practice

Source: Frontier Economics Analysis

To understand in more detail how the option performs against the assessment framework, Table 12 sets out the performance of the option against each key criterion. This highlights the strengths and weaknesses of the auction option against the criteria set out in the assessment framework.

The auction options aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. However the option does not perform well against a majority of the criteria, with its primary strength being equity of access — as a combined cross-border auction would ensure consistent access for both NSW and Victorian users. However, the upfront analytical and bidding costs may disadvantage smaller participants. It is not known how significant this disadvantage may be — less-resourced users may know the value of trade access (for them), or may struggle to estimate a competitive bid price themselves, or may choose to use a broker.

While auctions allocate trade access to those who value it most, they can be slower, costlier, and more complex to administer and participate in, with communication challenges and higher ongoing operational demands, though they are familiar to users and can support coordinated cross-border operation if centralised. Once the process has been established it would require some refinements and tweaks but overall would stay consistent.

The major drawback for the auction option is that establishing an auction would be complex and resource-intensive, requiring high upfront system, regulatory, and administrative effort and creating additional barriers for participants, though a centralised cross-border design could ensure consistent rules and require limiting approvals to trades supported by auction-allocated access

Table 12: Option 3 ratings, in context of Barmah

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

Assumptions and caveats that were considered when assessing this option were.

- Auction structured as a first-price sealed-bid.

4.4 Assessment of Option 4 — Proportional Application Volume, in the context of Barmah

Under Option 4, participants submit applications within a window to receive a share of the available trade opportunity volume in proportion to the volume they applied for. The share *is proportional to the volume each applicant requested relative to the total volume requested by all applicants.* Based on the evaluation of principles in the evaluation table for **Option 4** in Appendix A (Table 32), there are several significant concerns regarding this option. Table 13 presents this ranking and pros and cons. On balance the shortcomings of this option substantially outweigh the identified advantages.

Table 13: Option 4 pros and cons, in context of Barmah

Pros	Cons
• Everyone has the same opportunity to participate and distribution (share) to all market participants • Simple application process for participants • Encourages informed decision making (to a degree) • May reduce the need for brokers and allow smaller participants to function more autonomously	• Efficiency may be reduced by trade of small parcels due to over-subscription • Over-subscription puts extra administrative burden on to all parties, especially since all applications must be processed and approved • Uncertainty of trade volume, and not as timely. Particularly relevant for commercial trades which are based on an agreed price and volume • Moderately challenging to explain, establish, operate and maintain

Source: Frontier Economics analysis

Table 14 itemises the performance of the option against each key criterion. This highlight the strengths and weaknesses of the proportional application volume option against the criteria set out in the assessment framework.

The proportional application volume option aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. However, the option falls short in each of the five aspects of the assessment criteria.

This option provides equal proportional access but becomes increasingly inefficient and burdensome when over-subscribed, leading to many small trades, higher transaction costs, and slower processing given that all submitted applications in NSW and Victoria must be processed and approved (if valid). While broadly equitable, participants may receive less IVT opportunity than desired, which is harder to explain and constrains informed decision-making despite outcomes being delivered reasonably quickly. Establishing the approach requires significant system changes, added agency workload, and legislative amendments, although participant costs remain low. Ongoing operation is moderately practical but resource-intensive due to annual recalculations and tracking numerous small allocations, though cross-border coordination is straightforward under a shared proportional framework. This option is also expected to incentivise traders to apply to trade all the allocation they have in their account (and backtrade if they get more trade approved than desired), and therefore gives the most trade access to those with the most allocation.

Table 14: Option 4 ratings, in context of Barmah

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

4.5 Assessment of Option 5 — Proportional entitlement, in the context of Barmah

Under Option 5, all of the water entitlement holders in the seller trading zones (i.e. the Victorian and NSW zones upstream of Barmah) (will be allocated a portion of the Barmah trade opportunity in equal to the proportion of entitlement they hold. In essence their entitlement provides a right to trade a proportion of their allocation downstream if desired. Table 15 presents the pros and cons of this option. This is based on the evaluation of principles in the evaluation table for **Option 5** in Appendix A (Table 33). On balance the advantages of this option do not outweigh the shortcomings.

Table 15: Option 5 pros and cons, in context of Barmah

Pros	Cons
• Cross boarder collaboration • Automatic treatment of entitlements simplifies participation once established. • Highly equitable— option each entitlement holder receives a proportional share • Lower marginal participation costs for smaller users. • Transparent to the extent that volume able to trade are the same year to year • Less reliance on brokers	• Likely to contravene the Basin Plan Water Trading Rules • Very high establishment and administrative burden. • Inefficient distribution due to many small parcels requiring secondary trades. • Requires legislative reform and major structural changes. • Establishment and explanation may be difficult • Require agreement on equivalency of different entitlement types

Source: Frontier Economics analysis

To understand in more detail how the proportional entitlement volume option performs against the assessment framework, Table 16 shows the performance of the option against each key criterion specifically in the context of the Goulburn to Murray. This highlights the strengths and weaknesses of the proportional entitlement volume option.

Option 5 is considered to align with water market objectives because it is broadly consistent with the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007. However, a significant caveat on this is that Option 5 is likely to contravene the Basin Plan Water Trading Rules (BPWTRs) — the current embodiment of the Water Act 2007 water market objectives in the Basin Plan:

- This is because it could be considered a new, non-permissible trade barrier under the BPWTR 12.16, which requires free trade of surface water with the only permissible limitations being on a hydrological or physical basis or to protect the needs of the environment (12.18). It may also contravene BPWTR 12.07 which states: 'A person may trade a water access right free of any restriction on the trade that relates to the person being, or not being, a member of a particular class of person' as the option effectively precludes intervalley trades by those who are not entitlement holders (which may be considered discriminatory against persons who were not within this particular 'class of person').
- It may further contravene BPWTR 12.11 which requires free trade of carryover allocation.

This proportional-entitlement option supports the distribution of water between systems but becomes inefficient in practice due to the large number of small allocations that must be processed and tracked, creating delays and high transaction costs. It does however provide equity by giving every entitlement holder an opportunity to participate, with no barriers and equal access across States. However, allocative efficiency is weak because participants often receive less IVT opportunity than desired, and many small parcels must later be re-traded. The opt-in/opt-out process is conceptually simple but difficult to communicate clearly, limiting informed decision-making and making outcomes less intuitive for users, even though approvals can be issued relatively quickly once participation is finalised.

Establishing the option requires significant upfront effort, including agreement on entitlement types, substantial system changes, legislative reform, and large new administrative workloads to manage converted accounts and proportional volumes. While participant costs remain low, agencies face ongoing burdens from processing many small trades, tracking entitlements, and recalculating proportions each year. Operational practicality is moderate, in that once built, the system is inexpensive to run. However, reliance on proportional volumes, secondary-market reallocations, and continued administrative effort reduces usability. Cross-border alignment is possible if entitlement types are harmonised, but the overall model remains administratively burdensome, structurally inefficient, and difficult to maintain despite offering strong equity benefits.

Table 16: Option 5 ratings, in context of Barmah

Criteria	Evaluation scores
Alignment to water market objectives	Yes*
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

** Although aligned with the water market objectives, is likely to contravene the Basin Plan Water Trading Rules.*

In assessing option 5, it is important to note that the volume of trade opportunity in recent trade openings is only a small percentage of the total volume of water access entitlements in the Barmah seller regions. For example:

- In the most recent Barmah opening, on 2 July 2025, the MDBA opened the Barmah trade limit with 38,767.7 ML of trade opportunity available.
- In NSW, there are 1,875,282 ML of WALs across the various security types (such as high, general, conveyance and supplementary).
- In Victoria, there are 329,297.1ML of HRWS in zone 6, and 136,449.8 of LRWS.

This suggests that if trade access was made available in proportion to water entitlements held, this trade opportunity would be highly fragmented and spread across a large base of water entitlements.

This could mean that the available trade opportunity may be significantly underutilised. Further, processes to reallocate trade opportunity between parties would add further complexity and new administrative processes.

5 Option assessment, in context of Goulburn to Murray trade

This section provides an evaluation of each option, in the context of water allocation trades form Goulburn to Murray, based on the evaluation considerations identified in section 2.3. Each option has been considered in an evaluation table (presented in full in Appendix A). This section summarises the evaluation and issues associated with the options are discussed.

The five options are then considered jointly in section 7, to compare their performance against the assessment criteria.

5.1 Assessment of Option 1 — First in, First served / Base Case in context of Goulburn to Murray trade

Option 1 was the arrangement in place prior to 2024, and had been generally performing well. However, issues arose through the server not being able to handle the increasing amount of network traffic when trade opportunities were opened. Accordingly, the above assessment assumes that upgrades would take place to fix any constraints to receipt and approval of large numbers of applications. The first in first serve option is currently still in place for ad-hoc openings including the Murrumbidgee and some scheduled openings in Victoria. Table 7, highlights the critical pros and cons that factor into this ranking of the first in first served option for access to trade in through Barmah, in which the advantages overall do not outweigh the shortcomings expressed.

Table 17: **Option 1 Pros and cons, in context of Goulburn**

Pros	Cons
• Single Victorian system avoids cross-border differences and supports more timely access. • Outcomes and operation broadly similar to Barmah but simpler due to one platform. • Faster processing through automation with minimal participant burden. • Highly practical to operate (once VWR improvements are made).	• System performance affected by high-volume openings. Costs to resolve VWR issues and maintain VWR capability for FiFs. • Larger/or well-resourced participants may have higher success rates.

Source: Frontier Economics analyse

To understand in more detail how the option performs against assessment framework, Table 18 delves into the performance of the option against each key component specifically in the context of the Goulburn to Murray. This highlighting the strengths and weaknesses of the FiFs option against the distinct criteria set out in the assessment framework.

The FiFs options aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. Whilst also performing reasonably well in other criteria, apart from the equity of access concerns.

For the Goulburn–Murray trade, the FiFS option mirrors the Barmah assessment, with the added advantage that operating entirely within Victoria avoids cross-border system differences, however VWR improvements are still necessary.

The drawback in regard equity for the FiFs option consists improves from the previous analysis of the Barmah Choke — larger and well-resourced participants can still secure a disproportionate share of approvals, as reflected in a 27% success rate across 253 applications in 2023–24.

Table 18: **Option 1 ratings, in context of Goulburn to Murray trade**

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

Assumptions and caveats that were considered when assessing this option were.

- It was assumed that the upgrades are effective practical and well-resourced/suit to fit
- This option has previously been the arrangement in place prior to 2024, and had been successful used
- Given the option was previously implemented and supported by communication materials, they would rank favourably on 'Practical to operate and maintain' principles once the necessary improvements were made.

5.2 Assessment of Option 2 — Randomisation in context of Goulburn to Murray trade

This method has been trialled since October 2024 in the Goulburn, and since July 2025 at Barmah, and market participant feedback indicates this arrangement has addressed some of the issues previously identified with the first-in, first-served approach. Based on the evaluation of principles in the evaluation table for **Option 2** in Appendix A (Table 30), Table 19 presents this ranking and pros and cons, in which the advantages of this option slightly outweigh the identified shortcomings.

Table 19: Option 2 pros and cons, in context of Goulburn

Pros	Cons
• No barriers for any participants, and no advantage for market participants through technology 'arms race' • Simple, informed decisions, timely. • Practical to operate; participant interaction unchanged from current temporary system.	• Applications could be split to marginally increase the expected approved trade volume (and this strategy may be of most benefit to larger traders), but the associated trade is at the smaller application volume • Still requires secondary trading to reach highest-value users. • Manual elements still create operational burden and risk.

Source: Frontier Economics analysis

To understand in more detail how the randomisation option performs against assessment framework, Table 20Table 18 delves into the performance of the option against each key component specifically in the context of the Goulburn to Murray. This highlighting the strengths and weaknesses of the randomisation option against the criteria set out in the assessment framework.

The randomisation option aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. Whilst also performing reasonably well in all of the criteria.

For the Goulburn–Murray randomisation process, the assessment aligns closely with the Barmah findings, with the added benefits that operating entirely within Victoria removes cross-border equity and coordination issues and simplifies establishment and ongoing administration. Randomisation also results in a wider sharing of trade opportunities, with higher approval rates than FiFs, for example, 34% of 1,255 applications succeeded between October 2024 and October 2025 compared with 27% under FiFs in 2023–24. Overall, the option is more practical within a single-system environment (than across States) and performs strongly in both setup and operational practicality.

Table 20: Option 2 ratings, in context of Goulburn to Murray trade

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	●
Equity of access	●
Transparency of information	●
Practical to establish	●
Practical to operate and maintain	●

Assumptions and caveats that were considered when assessing this option were.

- The option is currently in place and so establishment, and operation and maintenance costs are low.

5.3 Assessment of Option 3 — Blind Auction system in context of Goulburn to Murray trade

Based on the evaluation of principles in the evaluation table for **Option 3** in Appendix A (Table 31), Table 21 presents this ranking and pros and cons. On balance the advantages of this option slightly outweigh the shortcomings expressed.

Table 21: **Option 3 pros and cons, in context of Goulburn**

Pros	Cons
• Distributional & allocative efficiency, informed decisions making • Equal opportunities for those who can participate in this free market concept • Generates revenue to put towards chosen purpose (e.g. bulk water management or environment) • Simple to convey, once established may be reasonable to operate.	• Disproportionately complex in a Victorian-only context; unnecessary relative to other options. • High administrative and participant costs. Challenging for participants to estimate what to offer (bid formulation) • Potential requirement for change in legislation and would involve a significant change in management practice

Source: Frontier Economics Analysis

To understand in more detail how the randomisation option performs against assessment framework, Table 22Table 18 delves into the performance of the option against each key component specifically in the context of the Goulburn to Murray. This highlighting the strengths and weaknesses of the randomisation option against the criteria set out in the assessment framework.

The randomisation option aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. Whilst performing poorly in regard to Transparency of information and practicality to establish the auction method. Further performing moderately poorly regarding equity and operating and maintaining criteria. Whilst only performing moderately well in efficiency considerations

For the Goulburn–Murray auction option, the assessment mirrors the Barmah findings, with the only notable difference being that operating entirely within Victoria removes the need for cross-border coordination, simplifying administration but not materially changing the broader equity or access outcomes. Although the process operates entirely within Victoria and avoids cross-border complications, this simplicity does not ease the substantial establishment and implementation challenges, nor does it address the broader issues identified in access, cost, and administrative burden.

Further the considerable draw backs for the Goulburn–Murray auction option, the assessment remains consistent with the Barmah findings, with the added observation that conducting the

auction entirely within Victoria removes cross-border considerations but does not ease the substantial establishment or implementation challenges. In this context, the auction mechanism may also be unnecessarily complex and difficult to justify compared with simpler alternatives, offering no meaningful reduction in administrative burden or operational difficulty despite the absence of interstate coordination requirements.

Table 22: Option 3 ratings, in context of Goulburn to Murray trade

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

Assumptions and caveats that were considered when assessing this option were.

- Analysed from a combined perspective of a progressive auction and a sealed first bid option.

5.4 Assessment of Option 4 — Proportional Application Volume in context of Goulburn to Murray trade

Under Option 4, participants submit applications within a window to receive a share of the available trade opportunity volume in proportion to the volume they applied for. The share *is proportional to the volume each applicant requested relative to the total volume requested by all applicants.* Based on the evaluation of principles in the evaluation table for **Option 4** in Appendix A (Table 32), there are several significant concerns regarding this option. Table 23presents this ranking and pros and cons. On balance the shortcomings of this option substantially outweigh the identified advantages.

Table 23: Option 4 pros and cons, in context of Goulburn

Pros	Cons
• Everyone has the same opportunity to participate and distribution (share) to all market participants • Concept can be communicated if proportional method is clear. • Simple application process for participants	• Significant registry changes are required to approve reduced volumes. • Challenge to establish due to change to trade application forms to ensure they are clear to customer and represents a legally valid application. • Uncertainty of trade volume, particularly relevant for commercial trades which are based on an agreed price and volume

Source: Frontier Economics analysis

To understand in more detail how the proportional application volume option performs against assessment framework, Table 22Table 18 delves into the performance of the option against each key component specifically in the context of the Goulburn to Murray. This highlighting the strengths and weaknesses of the proportional application volume option against the criteria set out in the assessment framework.

The proportional application volume option aligns well with the water market objectives as it does not contradict the Basin water market or trading objectives. Whilst also performing moderately poorly all of the assessment criteria.

For the Goulburn–Murray proportional application volume option, the assessment remains broadly consistent with the Barmah findings, with the key added point that operating entirely within Victoria removes cross-border considerations but does nothing to address the fundamental shortcomings of this approach. The absence of interstate issues does not improve its effectiveness or practicality, and the option continues to face the same structural limitations identified in the wider analysis.

Table 24: Option 4 ratings, in context of Goulburn to Murray trade

Criteria	Evaluation scores
Alignment to water market objectives	Yes
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

5.5 Assessment of Option 5 — Proportional entitlement in the in context of Goulburn to Murray trade

Under Option 5, all of the water share owners in a system (e.g. the Goulburn) will be allocated a portion of the downstream trade in a way that reflects their entitlement holdings. In essence they have a separate water product on their account (Murray allocation) thus they can sell this water and if needed buy Goulburn water back. Based on the evaluation of principles in the evaluation table for **Option 5** in Appendix A (Table 33), there are considerable concerns about this option. Table 25 presents the pros and cons. On balance the advantages of this option do not outweigh the shortcomings

Table 25: **Option 5 pros and cons, in context of Goulburn**

Pros	Cons
• Highly equitable option —each entitlement holder receives a proportional share. • Automatic treatment of entitlements simplifies participation once established. • Lower marginal participation costs for smaller users. • Internal Victorian operation removes cross-border complexity • Transparent to the extent that volumes able to trade are the same year to year • Less reliance on brokers	• Likely to contravene the Basin Plan Water Trading Rules • Very high establishment and administrative burden. • Inefficient distribution due to many small parcels requiring secondary trades. • Requires legislative reform and major structural changes. • Ongoing operational burden tracking small converted volumes. •

Source: Frontier Economics analysis

To understand in more detail how the proportional entitlement volume option performs against assessment framework, Table 26Table 18 delves into the performance of the option against each key component specifically in the context of the Goulburn to Murray. This highlighting the strengths and weaknesses of the proportional entitlement volume option against the criteria set out in the assessment framework.

Option 5 formally aligns with the high-level objectives in the Water Act 2007, but in practice is likely to breach several Basin Plan Water Trading Rules. It could be viewed as creating a non-permissible trade barrier, restricts access based on membership of a particular class of participant (entitlement holders), and may limit free trade of carryover allocation. Together, these issues mean that despite its conceptual alignment, Option 5 is unlikely to be compliant with the Basin Plan's operational rules.

These issues are fully reflected and identical to the findings discussed for Option 5 in the Barmah analysis in Section 4.5.

The Goulburn–Murray proportional-entitlement option, the assessment remains consistent with the Barmah findings, with the only additional observation being that operating entirely within

Victoria removes cross-border considerations but does nothing to address the fundamental shortcomings of the model. Despite the absence of interstate complexities, the approach continues to face the same structural limitations including complexity, administrative burden, and practical constraints highlighted in the broader analysis, with no material improvement in performance or feasibility.

Table 26: **Option 5 ratings, in context of Goulburn to Murray trade**

Criteria	Evaluation scores
Alignment to water market objectives	Yes*
Efficient distribution of water	
Equity of access	
Transparency of information	
Practical to establish	
Practical to operate and maintain	

In assessing option 5, it is important to note that the volume of trade opportunity in recent trade openings is only a small percentage of the total volume of water shares in the Goulburn seller regions. An example of this dilution is if the 31.5GL (as per 15 October 2025) or 99.8GL (as per 2 July 2025) of trade opportunity would be spread across 1,015.9GL of water shares in the Goulburn (in HRWS in 1A, plus there are additional in 1B and 3 and LRWS to be considered).

This could mean that the available trade opportunity may be significantly underutilised. Further, processes to reallocate trade opportunity between parties would add further complexity and new administrative processes.

6 Potential refinements of options

This section examines a number of potential refinements to the broad options discussed in preceding sections.

6.1 Volumetric limits

Imposing volumetric limits on trade applications could increase the perceived equity of the options — by preventing larger water holders taking up a greater amount of water trade in single transaction.

However, this is countered by the fact that any party (including larger water holders) can split their applications into smaller amounts to increase the probability of getting the maximum amount of trade volumes. There is already an incentive for this to occur under option 2 (Box 4) and this behaviour was already observed since randomisation was introduced — although noted in the Goulburn to Murray Post Trade Opening Report for October 2024, this would be expected to apply in the context of Barmah trade openings:

> *In July 2024 the median trade volume of applications was 1000.0 ML, on 14 November the median was 325.0 ML. The smaller median volume applied for indicates that applicants adapted their application strategy to the new rules. (p.3)*

Box 4: Splitting large trades, such as under Option 2

If there is a limit on the maximum volume of a trade for which each participant can nominate, a larger volume to be traded may be split into smaller parcels. The cost of doing so is the additional transaction cost of the additional trade (which represents a low hurdle as compared to the price premiums often observed).

Even in the absence of a limit, there are benefits in splitting trade applications due to an increased likelihood of a bid being accepted, and an increase in the expected volume of trade accessed (% likelihood of being accepted multiplied by the volume applied for). For example, consider three participants: A (wishing to trade 1,000ML), B (500ML) and C (500ML); and a total of 1000ML of trade available:

- If A submits a single application for 1,000ML, A's expected volume of trade is 333ML — due to a 1 in 3 chance of being the first application processed (1000ML).
- If A submits a pair of applications both for 500ML, A's expected volume of trade is 500ML — due to a 2 in 4 chance of being the first application processed (500ML) as well a subsequent chance[14] of being the second application processed (500ML).

This effect is driven by the rule that a bid can be accepted or rejected (and applications for trade for 'remaining available' are not accepted) — i.e. late-ballot trades can only be accepted if the full volume can be approved.

As the number of total number of applications increases (such as in the hundreds observed in trade openings) the increase in the expected volume of trade from splitting across multiple applications reduced, and may only be a marginal increase.

[14] Of 50%, since there is a 1 in 3 chance of being the second application processed if theirs was also first processed, as well as a 2 in 3 chance if one of theirs was not first processed.

Volumetric limits on trade applications in the context of other options may also not be effective:

- under Option 1, limits may result in a larger number of applications being accepted — however in the VWR applications can be batched so that multiple applications from a single market participant are submitted simultaneously. Application limits given the *in turn* arrangements for approvals between States may lead to some equity improvements.
- Under Option 3, limits would not be expected to be effective since applications are ordered by bid and a large sale could be spread across multiple applications with a similar bid.
- Under Option 4, limits would not be expected to reduce the total volume of trade applied for — which is the basis for proportional sharing of trade opportunities.
- Under Option 5, limits would be expected to have no effect since the access to trade opportunity is related to entitlement.

Rather than volumetric limits on application volumes, volumetric limits on licences/accounts/persons may contravene the Basin Plan Water Trading Rules (BPWTRs) because it could be considered a new, non-permissible trade barrier under the BPWTR 12.16, which requires free trade of surface water with the only permissible limitations being on a hydrological or physical basis or to protect the needs of the environment (12.18). On this basis, they are not considered a feasible refinement.

Overall, we do not consider that it is appropriate to impose volumetric limits of any type — since limits per application would have be expected to have little impact, and limits per owner/account would be in contravening of the BPWTR.

6.2 Timing of scheduled trade opening application periods

Any of the options could accommodate a change in the timing of scheduled trade openings, in both the context of Barmah and Goulburn to Murray trade. Timing of trade openings could be adjusted in relation to significant resource announcements, such as seasonal determinations (Box 5) and trade relaxations (Box 6).

Box 5: Timing, with respect to seasonal determination announcements and outlooks

There are potential issues with scheduled openings that coincide with seasonal determination announcements (for Barmah and Goulburn) and seasonal outlooks (for the Goulburn). This can mean that:

- Market participants do not know how much water is in their account
- It may take a few hours after the announcement, for water to be credited into licences/accounts
- For Goulburn December announcements, seasonal outlook uncertainty can mean that market participants face uncertainty about how much trade opportunity there will be ahead of time.

There may also be operational challenges for state registers/systems in dealing with a trade opening and a seasonal determination at the same time.

Overall, a delay to a trade opening may reduce complexity and allow trade decisions to be made on a more informed basis. Delaying openings, however, would be impact on timeliness of distributing available trade.

Box 6: Timing, with respect to announced relaxation of the Barmah trade restriction

There is a default trade restriction in place for trade through Barmah. The MDBA monitors the situation and will 'lift or adjust the restriction if conditions permit'.

There is limited public information regarding the criteria for this removal or adjustment. This means that the potential likelihood of Barmah trade restriction removal or adjustment is not well understood by market participants.

Through the Millennium drought, the trade restriction was relaxed and trade occurred freely from above to below the Barmah Narrows. However, knowing whether (and under what circumstance) this might happen again provides a transparency challenge for the market.

We expect that an MDBA decision to adjust the Barmah limit would be an ad-hoc opening, however, with greater clarity about the timing of these announcements, this type of trade opening could potentially be managed as a scheduled trade opening.

6.3 Joint or matched IT systems

The potential for joint or matched IT systems is only relevant to options for Barmah where activities in the two States could be more integrated. For example, this could be implemented through entering applications from both States into a single randomisation system to ensure optimal cross-border co-operation.

Given the financial situation of WaterNSW[15], there is little capability for NSW to adopt digital systems to improve the management of Barmah openings. Therefore, our understanding is that there are no resources available for co-development and implementation of joint or matched IT systems.

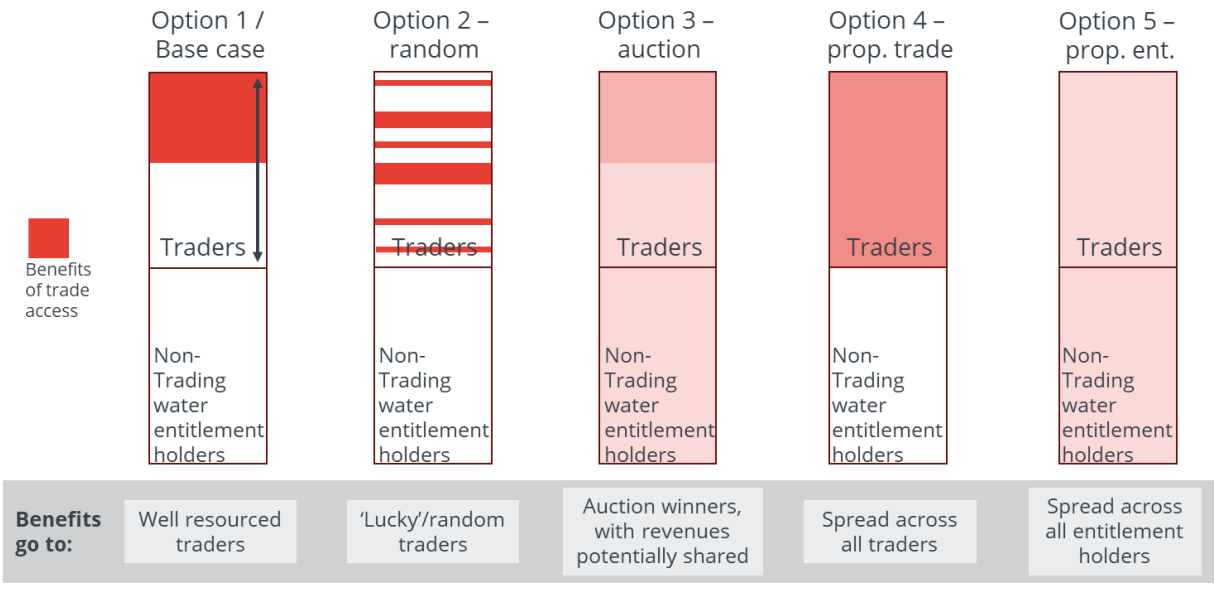
[15] www.waternsw.com.au/community-news/media-releases/waternsw-business-transformation

7 Comparison of option evaluations

A key difference in the equity outcomes between options is the distribution of benefits between potential traders, and water entitlement holders more broadly. Figure 4 represents this for the case of zero/limited transactions costs (including costs of establishing and operation and participation in the option). Namely:

- Under Option 1 — trade access and benefits may be captured by those with the fastest technology for submitting applications.
- Under Option 2 — trade access and benefits may be shared by a lucky few traders who participate and whose applications are selected to be early in the randomisation process.
- Under Option 3 — trade access and some benefits of trade (net of the auction bid payment) going to those with the highest bid/valuation. The diagram presents the case where auction revenue is distributed to water entitlement holders (such as via reduced bulk water fees).
  - The figure does not include a representation of the cost of running an auction mechanism, nor the costs of bid formation and auction participation of traders.
- Under Option 4 — trade access and benefits are shared between traders that submit an application
  - The figure does not include a representation of the significant potential of reduction to transaction volumes, therefore transaction costs to manage/respond to this.
- Under Option 5 — trade access and benefits are made available to all water entitlement holders in the seller zone
  - The figure does not include a representation of an opt-in mechanism for an automated mechanism for implementing this option, nor the transaction costs of all entitlement holders finding buyers for their IVT traded water.

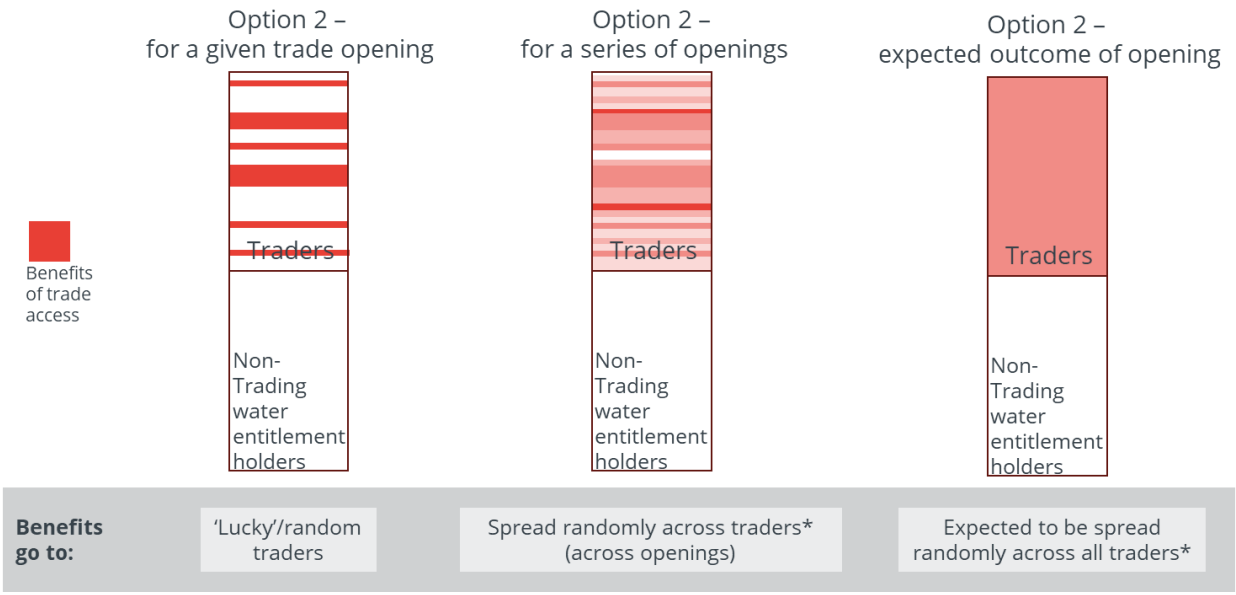
Figure 4: Distribution of trade benefits for a given trade opening – with zero transaction costs



Source: Frontier Economics

Figure 5 further examines the outcomes of Option 2, given that randomisation over repeated trade openings would be expected to distribute the benefits of trade access more widely than observed in one particular opening event.

Figure 5: Distribution of trade benefits for ongoing trade opening events



** Random distribution influenced by the volume of tradeable water held and how this is packaged into applications (i.e. disaggregated across multiple applications)*
Source: Frontier Economics

A key difference in the equity outcomes of the options is the type of stakeholders who benefit:

- In option 1, well-resourced participants may be able to capture trade access opportunities through use of technology for faster application submission.
- In options 1, 2 and 4, competition for the trade access is linked to and thus affected by volumes of water allocation held — and may advantage participants that hold relatively high volumes for potential trade. This volume of water allocation held can differ from the relative water entitlement held (Box 7) that is the basis for trade access in option 5.
- Option 3 is not expected to benefit participants with faster submission systems or larger tradeable water holdings — however the role of auction strategies may advantage more knowledgeable and well-resourced participants. Participants with larger tradeable water holdings may also have a larger potential payoff from forming an auction strategy that maximises their expected gains — whereas participants with smaller holdings may not find it worth learning the auction rules/platform. The latter group may therefore run the risk of employing a simple bidding strategy which may be too low (and is not competitive) or is too high (and wins trade access that costs more than the price premium in the downstream zone).

Box 7: Water entitlement held vs volumes of water allocation held

There are potential differences between water entitlement held and volumes of water allocation held on an ABA/licence and available for trade.

Water allocation volumes can be traded on to an ABA/licence (with the zone, at a low fixed transaction cost per trade) and then used to seek access to IVT opportunities. In fact, a key limitation placed on Options 2, 3 and 4 is to limit 'eligible' applications to those applications which have sufficient volumes available for trade at a point in time prior to the scheduled trade opening. In the case of Option 2, this prevents a deluge of applications to the randomised process which are not supported by water allocations available for trade (which could increase participants' chances in the process, for a low application transaction cost).

To consider the net benefits of options, the impact of transaction costs and cost of implementation of the options also need to be considered. Option 2 raised the least concerns regarding implementation costs given it is currently adopted as the temporary arrangement for IVT access. Other options raised significant concern/uncertainty regarding implementation in terms of costs to both government and water market participants.

All options were ranked highly for the efficiency of allocation of water between systems and users (Box 8) — because they enable interregional trade to occur up to available opportunities. The transaction costs of additional intra-regional trade that may be required to reallocate volumes within a system (as required for all options except option 3) were considered a limited concern in Options 1 and 2 since volumes of individual IVT trades were large, and of some concern for Options 4 and 5 since volumes of trade will be small given dilution by the proportionate access approach.

Box 8: Efficiency of interregional trade outcomes, given ease of intraregional trade in up- and downstream systems

The assessment of interregional trade must be undertaken in the context of current arrangements for intra-regional trade — which allows for the reallocation of interregionally traded volumes to other parties.

The assessment of efficiency considers the allocative efficiency benefits of making water available for use between zones. The resource use benefits of water trade between systems are aligned with the volume of transfers that can be facilitated from 'low value' systems to 'high value' systems[16] — as long as it does not lead to third-party impacts on water users or the environment. As there is trade of water allocations, the water allocation prices will move towards equalisation.

While as identified by the ACCC[17], the 'first in, first served' system does not necessarily allocate the capacity to those who value it most (unlike a market-based mechanism), further reallocation within each trade zone is readily available. The scope for subsequent trade of these IVT opportunities in the market means that ultimately the method for managing IVT opportunities may not undermine the efficient allocation of water between users. This subsequent trading would incur transaction costs; however, these costs are relatively low for southern MDB water allocation trades.

16 For example, in the economic assessment for the Goulburn to Murray trade rule review, an increase in volumes of trade opportunity (made available subject to limits based on third-party impacts to other water users and the environment) was considered an increase in the economic benefit from irrigated agriculture.

17 ACCC 2021, Water Markets Inquiry.

This suggests that the efficiency of the outcome will depend on how much of the 'available' trade opportunity is released for access by water users at the time it is available, and that this opportunity is taken up fully and in a timely manner.

The water market objectives alignment of the options was scored similarly, and all options supported interregional water allocation trade. The primary reason that they did not all receive the highest rating in the evaluation was the continued reliance on cancel /issue allocation trade. This was discussed in the consultation paper as an intrinsic characteristic of the existing water management system. The implications of this are noted in Box 9. None of the options were rated at the highest level (dark green) for efficiency, due the continued reliance on cancel /issue allocation trade to move water between systems.

Box 9: Cancel /issue allocation trade

In order to facilitate the development and implementation of trade, water allocation trade between zones required simplifying assumptions trade to be made — as discussed in the consultation paper, including that water allocation trade between zones in the southern MDB occurs on a 'cancel/issue' basis.

This 'cancel/issue' water allocation trade between zones alters the characteristics of the water allocation — it does significantly more than just enable the use of the water in a hydrologically connected system. IVT trade is replacing water allocation in the selling system with a different allocation with different properties in the buying system.

Rules for water trading that limit movement between zones have been necessary to restrict the movement of water between zones by limiting allocation trades given the reliance on cancel/issue allocation trade (and the associated accounting and separation of water ownership from use).

Further, it is also important to note that, under current cancel/issue allocation trade, and current associated trade rules, the 'optimal' amount of trade opportunity may not be being made available. ABARES[18] note:

> *… it is not clear that the current system is arriving on the most efficient volume of inter-regional trade: that is there is potential for either too much or too little trade to be occurring at different times (p.17).*

This insight suggests that the volumes of interregional trade may not be optimal, due to limits placed on trade to manage third-party impacts (such as spill risk or environmental risk) and the current arrangements for 'cancel/issue' water allocation trade between zones. There may be other approaches to managing trade and water access arrangements that enable even more economic benefits of water trade within a system that protects against third-party impacts.

[18] ABARES 2020, Options for water market reform: ABARES submission to the ACCC Murray-Darling Basin water markets inquiry, authored by Neal Hughes, Mihir Gupta and David Galeano, November.

Another common feature of the options was the reliance on water management decisions to determine the limit for IVT access. In the Goulburn, this is determined by the long-term rules that came into effect from 1 July 2022. For Barmah, the trade limit is determined by the MDBA:

- There is a default trade restriction in place.
- The MDBA also monitors the situation and will lift or adjust the restriction if conditions permit. Our understanding is that the criteria for this removal or adjustment is not well understood by market participants.
- Under normal operations, the balance available for trading from above to below Barmah is cleared at the end of each water year. Then, at the beginning of the next water year, a volume is credited to the Barmah trade balance to be made available in a trade opening. This annual adjustment takes into account water savings downstream of Barmah which are transferred to the Snowy scheme — known as the Snowy Adjustment Scheme.

The evaluation of transparency and implementation (establishment and ongoing operation and maintenance) of the options found that options that had been implemented in the past (options 1 and 2) were easiest to understand, and that the option that is currently in place (option 2) was the most straightforward to implement.

The full set of evaluation findings and the overall rankings are provided in Table 27.

Table 27: Summary of option evaluation scores, for Barmah

Criteria	First-in, First Served	Random-isation	Auction	Proportional Application Volume	Proportional Entitlement
Alignment to water market objectives	Yes	Yes	Yes	Yes	Yes*
Efficient distribution of water					
Equity of access					
Transparency of information					
Practical to establish					
Practical to operate and maintain					

Source: Frontier Economics

Table 28: Summary of option evaluation scores, for Goulburn to Murray

Criteria	First-in, First Served	Random-isation	Auction	Proportional Application Volume	Proportional Entitlement
Alignment to water market objectives	Yes	Yes	Yes	Yes	Yes*
Efficient distribution of water					
Equity of access					
Transparency of information					
Practical to establish					
Practical to operate and maintain					

Source: Frontier Economics

When analysing the option in regard to granting access to trade from the Goulburn to Murray, a large part of the assessment crosses over between the assessment of the options against the framework in the context of the trade in the Barmah. In essence the overall assessment of each of the options has stayed consistent between scenarios, apart from the FiFs option. This is due to one key factor that affects some of the assessments of the criteria, mainly stemming from the internal nature of the Goulburn to Murray trade. The two options that this impacted the most were option 1 FiFs and option 2 randomisation in the context Goulburn to Murray, as seen inTable 28.

The main driver for this improved assessment of these options is due to the fact that Goulburn to Murray trade occurs internally in Victoria — meaning that the barriers surrounding cross-border collaboration is not required. Operating Options 1 and 2 entirely within Victoria removes the complexity and delays created by cross-border coordination with NSW, leading to faster, more consistent, and more reliable trade processing. Without NSW's manual systems and alternating joint processing steps, Victoria gains a streamlined single-system workflow that avoids technical bottlenecks, improves timeliness of access, and eliminates inequities caused by differing state processing speeds. For both FiFs and Randomisation, the absence of cross-border requirements makes the options simpler to establish, easier to operate, and less administratively burdensome, with no need for joint system alignment, pooled applications, or manual reconciliation between agencies. This results in clearer communication, smoother operation, and fairer, more predictable outcomes for Victorian market participants.

While removing cross-border coordination provides clear administrative benefits, this factor was not strong enough to offset the broader disadvantages of Options 3–5. For these options, the major weaknesses, discussed previously remained dominant. Because these drawbacks directly undermine efficiency, equity, or practicality, the internal-only operation had little material impact on their overall performance or rankings compared with Options 1 and 2.

This contextual shift also highlights that an auction mechanism becomes unnecessarily complicated relative to the scale and purpose of the task. Without cross-border harmonisation requirements, the added administrative load, system complexity, bidding strategy requirements, and higher participation costs of an auction are no longer proportionate to the problem being solved. In this context, an auction risks becoming an over-engineered mechanism that introduces substantial burden without delivering commensurate benefits, especially compared with simpler and already-familiar approaches such as FiFS or Randomisation.

Based on the assessment findings and looking across the principles:

- Option 4 and Option 5 raised significant concerns and received the lowest overall assessment.
- Options 1 and 3 were identified as options that showed significant merit but also significant concern/uncertainty regarding implementation in terms of costs to both government and water market participants.
- Option 2 showed the most merit in the current water market settings (including the least uncertainty regarding implementation).

8 Findings/recommendations

This report identifies the option(s) for managing IVT access from the upper Murray to the lower Murray (through the Barmah Narrows), and access from the Goulburn system to the Murray system that are recommended as most suitable in current market settings:

- On balance, Option 2 — Randomisation is recommended for scheduled openings of both Barmah and Goulburn.
- The certainty of an existing system, the fairness of random access to trade opportunities, and the relatively low transactions costs of further reallocation of water allocation volumes (the ease and nominal fee for intra-system trade) suggest that Option 2 is recommended.
- Option 3 — Blind Auction may have the potential for superior outcomes in terms of the equity of access to trade opportunities — however these potential benefits are not expected to be sufficient to override the auction costs (to government and water market participants) and significant uncertainties remain. Further, there are concerns that the informational and strategy costs of providing informed bids may be a barrier for holders of smaller volumes — preventing them from competing for trade opportunities (i.e. preventing their access and reducing the equity of access of this option).
- Option 1 — First in, first served raises equity concerns for trade openings that are highly sought after / competitive, such as the scheduled openings for Barmah and the Goulburn.

We note there are continuing concerns regarding the use of the FiFS approach for ad-hoc openings, in particular for Barmah, and additional costs and complexity of maintaining two systems for trade (which are being managed under current arrangements). The processing challenges as well as the expected limited value of trade at the time of an ad-hoc opening (as set out in Appendix B) suggest that the use of the FiFS approach for ad-hoc openings (as embodied in Option 2) is appropriate.

A Evaluation tables for the options

A.1 Option 1 / Base Case — First-in, First Served

Table 29: Evaluation of Option 1 / Base Case — First-in, First Served (FiFs)

Principle	Evaluation Considerations	Evaluation Barmah Choke	Evaluation Goulburn to Murray
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	• Supports efficient markets and trading • Minimal transaction costs given small transaction costs for applying for trade, and for subsequent intraregional trades • Supports water allocation trade to enable a mix of water products • Operates within operational rules, constraints and limits based on third-party impacts to other water users and the environment • Reasonable third-party impact protection, to an extent the system allows *This evaluation assumes that this option would address the 2024 issues of overwhelmed systems to permit water trade to occur.* • Alignment = Yes	When assessing the internal Victorian system for the FiFs approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. *This evaluation assumes that this option would address the 2024 issues of overwhelmed systems to permit water trade to occur.* • Alignment = Yes

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• The FiFs option supports the distribution of water between water systems/valleys. Interregional/IVT opportunities for trade can be taken up to the extent available • Access is timely as the process can be operated in an orderly fashion and outcomes known quickly — in Victoria via automation on the VWR, and in NSW via manual processing of emailed applications. This can be compromised if systems cannot cope with traffic of applications (as occurred in 2024) or if technical issues occur. • Supports allocative efficiency by enabling interregional/IVT opportunities for trade (up to allowed limits) and subsequent reallocation of water volumes can occur via intraregional trade (in established markets and at low transaction costs). • Minimises transaction costs through a simple application process, however transaction costs of reallocation via allocation trade are also incurred. Some participants also choose to invest in technology to optimise trade submission speeds to increase their chances of application success. • **Ranking=**	When assessing the internal Victorian system for the FiFs approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that, because the process occurs entirely within Victoria, only a single system is used. This avoids cross-border system differences and supports more timely access to trade opportunities. Ranking =

Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	• FiFs leads to greater opportunity for well-resourced participants. These being parties that can build technology to support and mobilise their applications, parties with better internet speeds and technological processing advantages, as well as those parties whom have resources sitting at a desk at the moment of the trade exactly or automated processes[19]. Participants who are unable to undertake the required administrative steps to submit a trade application at the immediate opening time (such as due to other commitments) are unlikely to be successful. • For the scheduled opening, alternate state processing of applications is used to address differences in processing speeds between states. • Some barriers exist as mentioned, with large and well-resourced participants potentially able to increase their likelihood of success above an average user. **Ranking=**	When assessing the internal Victorian system for the FiFs approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Two additional considerations apply. • First, the consistency of operating within a single system eliminates the discrepancies in successful applications that previously arose between the two States. • Second, some barriers remain, as larger and well-resourced participants may still be able to increase their likelihood of success. **Ranking=**

[19] Knowledgeable and well-resourced participants are more likely to be successful in accessing trade opportunities. These are also likely to be participants with large volumes of tradeable water on their accounts/licences. Participants may seek to use brokers to submit trades, and these dealing must be in good faith (under the, now binding, Water Markets Intermediaries Code).

Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• The option is simple, has been readily communicated in the past and is easy to understand so a representative water market participant would readily understand this option. • All water market participants could understand this option and that trades placed soon after the opening are more likely to be successful. However, not all participants would know all the steps/actions they could take to increase the timeliness of their application — which may be complicated and not widely available. • This option allows for clear communication of volumes of trade opportunity and when they will be made available for scheduled openings. • The nature of the quick results in the FiFs system would provide outcomes in short timeframes and thus easy and timely access to information regarding application status is promoted. • **Ranking=** 	When assessing the internal Victorian system for the FiFs approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that, while the steps and actions required under this option would be familiar and consistent for all users due to a single platform, some participants may still face technological literacy barriers. **Ranking=**

Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	• This option has been used and could be reinstated — however in the past, as the number of applications increased this contributed to a technical disruption during the submission window. Additional supports would be required to cope with highly competitive openings. We expect these could be established relatively quickly. • There will be significant costs to upgrade the VWR to manage application traffic during highly competitive. An approach to manage MyWater and Broker Portal differences could be expected to have a relatively low cost. • Limited/no change for agency processes if there was a return to the July 2024 approach. For Barmah, separate collection of applications then alternative processing between the states is a highly manual process and precludes automated solutions. An integrated joint approach would represent a large change management challenge. • Water markets participants could readily return to the approach used in July 2024, but may struggle to adjust to tight submission times — having to target the opening time immediately, rather than	When assessing the internal Victorian system for the FiFs approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that, as the process operates entirely within Victoria, no cross-border coordination is required, which makes the overall establishment of the option simpler. **Ranking=**

the 7-hour submission window used in the 2025 openings.

- Water market participants would not be expected to incur additional financial costs.
- The July 2024 approach for Barmah included an aligned and coordinated method that relied on State-specific submissions, and then processing of applications in an alternating fashion between states.
- Has been previously used and still aligns with legislation and regulatory frameworks
- **Ranking=** 

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	• Initially this option was practical to operate and maintain. With the additional investments to (re)establish this option, it would continue to be highly practical • Highly practical given previous familiarity, assuming all operations run smoothly. • Costs would be limited, other than capacity management to avoid technical disruptions in the application submission process. - Ongoing reliance on manual cross-state coordination results in continued staff costs and limits automation under current arrangements, noting that more automated cross-border solutions could be pursued where there is a positive investment case. • The July 2024 approach for Barmah included an aligned and coordinated approach that relied on state-specific submission approaches, and then processing of applications in an alternating fashion between states. • Ranking= (once VWR fixes have been made)	When assessing the internal Victorian system for the FiFs approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that no cross-border alignment or coordination is required, which simplifies the process and makes it easier to operate within a single jurisdiction Ranking=

Source: Frontier Economics and DEECA/WaterNSW

A.2 Option 2 — Randomisation

Table 30: Evaluation of Option 2 — Randomisation

Principle	Evaluation Considerations	Evaluation Barmah Choke	Evaluation Goulburn to Murray
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	• Reasonably supports efficient markets and trading, to an extent when system allows • Minimises transaction costs • Supports water allocation trade to enable mix of water products • Adheres to environmental constraints • Reasonable minimisation of third-party impacts Alignment = Yes	When assessing the internal Victorian system for the randomisation trade allocation mechanism between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Alignment = Yes

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• Efficient distribution since the option supports the distribution of water between water systems/valleys. Interregional/IVT opportunities for trade can be taken up to the extent available • Arrangements rate well in supporting distribution of water since they enable the movement of water resources between systems (subject to limits based on third party impacts to other water users and the environment). • It would be assumed that the application and randomisation process in itself only takes up to a few days as the application process and the randomisation could be automated in the future • Trade access may not initially be obtained by those water users that place the highest value on water use in the buyer regions. Achieving allocative efficiency therefore relies on subsequent intra zone water trading, which is expected to involve a larger number of additional transactions than under some other options, however trade application costs are low. • While randomisation introduces additional processing steps relative to a pure first-in, first-served approach, the transaction costs associated with applying for access to trade remain relatively low, as the application	When assessing the internal Victorian system for the randomisation trade allocation mechanism between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. **Ranking=**

process is simple and does not require price discovery or bid formulation.

- Some participants may choose to submit multiple applications to marginally increase their likelihood of success, which can increase application fees incurred by those participants, but this reflects individual participation strategies (rather than a structural feature of the option) and application fees are low.
- Other factors: There are some concerns with this option regarding other aspects of efficiency, given that the reliance on secondary trade incurs transaction costs. However current charges for water trades/approval are low ($53.80 on MyWater in 2025/2026 for trades via the My Water portal).

Ranking=

Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	• All market participants have an equal opportunity to submit their applications (up to the limit in the sellers account) and access the random ballot process. Larger traders may choose to split volumes across multiple applications to marginally increase the expected volume approved for trade. • Compared to the base case, more trade applications might be approved which shares trade access more widely — in the randomised Barmah opening in July 2025, 96 of 235 applications were successful (41%, compared to the FiFS in 2024 of 37%). • Because the randomisation is conducted on a centralised platform, equitable cross border opportunities are enabled. • Other factors: Given randomisation, water market participants would no longer be able to 'advantage' themselves with high performing IT systems — in scheduled openings. **Ranking=**	When assessing the internal Victorian system for the randomisation trade allocation mechanism between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Additional considerations. • Compared to the base case, a greater proportion of trade applications are approved under randomisation, which results in trade access being shared more widely. For example, in randomised Goulburn openings from October 2024 to October 2025, 432 of 1,255 applications were successful (34%), compared to 27% under the FiFS approach in 2023–24. **Ranking=**

Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• The option is relatively simple and has already been used as a temporary measure • Decisions will be more informed to a degree that participants enter into the randomisation but not as much as other options • Easy and timely access to information regarding trade opportunities • Easy and timely access to information application status/outcome **Ranking=**	When assessing the internal Victorian system for the randomisation trade allocation mechanism between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. **Ranking=**

Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	• This option would take little time to establish as it has already been established and conducted in July of 2025. • Minimal establishment costs given the option is already functioning as a temporary measure • Required change management would be limited, to make the current temporary arrangements more permanent. • Market participants would be able to engage with option in the same way as the existing temporary arrangements. • No transition costs involved as all done as per current system, • Cross-border collaboration seems to be strong due to past experience, • No required change in state or federal legislation. • **Ranking= (Issues remain with current process)**	When assessing the internal Victorian system for the randomisation trade allocation mechanism between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that, as no cross-border collaboration is required, the option is more practical to establish within internal Victorian systems. **Ranking=**

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	• The randomisation option is practical to implement with the current process being used. However, increasing the number of applications may require more time and resources to finalise. • Operating and maintenance costs should be relatively minor since the system has run successfully since October 2024 in Goulburn and in July 2025 for Barmah. • Extremely practical as the interaction on the participant side will be unchanged from the current application process. • Operating and maintenance costs should be relatively minor since the system has run successfully (although in a relatively manual way). Water market participants can readily engage. • Randomisation will allow for alignment for cross-border alignment and coordination. The current approach is to pool applications from NSW and Victoria for a joint approach to randomisation. • **Ranking=** (Still risk of human error in process)	When assessing the internal Victorian system for the randomisation trade allocation mechanism between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that, as the process operates entirely within Victoria, no cross-border coordination is required; this simplifies administrative arrangements and supports the practical operation and maintenance of the system. **Ranking=**

Source: Frontier Economics and DEECA/WaterNSW

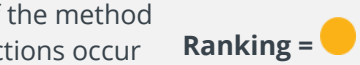
A.3 Option 3 — Blind Auction

Table 31: Evaluation of Option 3 — Auction

Principle	Evaluation Considerations	Evaluation Barmah	Evaluation Goulburn to Murray
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	• Supports efficient markets and trading, to the extent the system allows • Transaction costs may reduce due to reduced need for re-allocations via intraregional trades (because the trade access goes to the participants that value it most highly). However, transaction costs may increase compared to the base case due to costs of information/strategy required by market participants to inform bids. • Supports water allocation trade to enable a mix of water products • Operates within operational rules, constraints and limits based on third party impacts to other water users and the environment • Reasonable third-party impact protection, to the extent the system allows Alignment = Yes	When assessing the internal Victorian system for the auctioning of trade access between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Alignment = Yes

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• An auction supports the distribution to participants that are willing to pay the highest price, thus allocating the water trade access to the users who place the highest value on these opportunities. • May be less timely than the base case if administrative burdens slow the process down overall (such as matching successful bids for access, to applications) • Highly supports allocative efficiency as facilitates water trade access to the users who place the highest value on these opportunities. Intraregional trade is also available if further reallocation is sought. • Transaction costs minimised under a simple sealed-bid approach. **Ranking =** assuming that auctions may be less timely and have significant costs for auction implementation and participation (such as analysing data to support bidding and working out bid strategies).	When assessing the internal Victorian system for the auctioning of trade access between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah Choke assessment. • One additional consideration is that, in this context, the auction mechanism may be unnecessarily complex and potentially disproportionate relative to alternative approaches, thereby reducing overall efficiency. **Ranking =**

Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	• Bidding provides participants with equal opportunities to access trade opportunities. As noted below, participants with larger holding of water, water entitlements and/or financial resources may be more likely to be successful and willing to incur. • The upfront costs associated with providing an informed bid (such as support analysis of water market data to estimate price premiums that may be available to successful bidders, as well as the strategy of forming a bid) may exclude participants with smaller water holdings or lead to them placing uninformed bids that are uncompetitive (too low) or risk 'winners curse' (too high). The upfront costs of engaging with auction approach may also for a barrier for these participants. • A combined auction for Barmah trade access would allow equal access to participants in both NSW and Victoria. **Ranking=** (Note: this ranking would be yellow if there are relative high participation costs for smaller users)	• When assessing the internal Victorian system for the auctioning of trade access between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that, as the auction process would be conducted entirely within Victoria, cross-border collaboration is not required; however, this simply simplifies administrative coordination and does not materially alter the broader assessment of access and equity. **Ranking=**

Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• Auctions would be reasonably simple to convey to participants as auctions are not new concepts. However communicating the reasoning behind the auction, the justification of charging a price, and identifying where the revenue goes may be harder. • Auctions will encourage informed decision making as there is now a financial cost to applicants that will discourage uninformed access to trade opportunities. • Auction constraints may decrease the ease and timeliness of opportunities (compared to the base case) depending on f the method of the auction — progressive auctions occur iteratively and successful bids must be administratively linked to trade applications for approval processes. • The first price sealed-bid auction approach is timely and outcome readily known. **Ranking=** 	When assessing the internal Victorian system for the auctioning of trade access between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. **Ranking =** 

Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	• May be more difficult to establish as the auction must be cross-border functional plus auction mechanics would have to be agreed and communicated. • High upfront costs compared to other options as significant effort would be required to ensure all systems are set up properly and meet all regulatory and ethical requirements. • An auction will be a significant change to management practices for agencies as it will require establishing and administering auctions, maintaining functionality as well as ensuring fair and compliant results. This is a step-up in resourcing compared to other options • This option would have a significant impact on water market participants as there will be a lot more barriers both administrative and fiscal to overcome to participate. • The agency administrative costs that presumably will be passed onto participants (or paid by auction revenues) which will increase the financial cost as well as the cost of administration, • If the auction is centralised so participants in both States are bound by the same terms and conditions this will support cross-border coordination	When assessing the internal Victorian system for the auctioning of trade access between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not make the auction approach any easier to establish, nor does it meaningfully lessen the implementation challenges identified in the broader analysis. **Ranking =**

- Potential change would be required to specify that only IVT trade applications with supporting trade access (from the auction) can be approved.

Ranking = 

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	• Once the auction system is established, it would require effort to ensure the system operates adequately with the amount of traffic on the system, as well as updating annually, along with ensuing cost are passed on and adjusting based on previous auction outcomes. • Will cost more than most options to maintain and operate due to above reasons. Platform payments would be required if an auction platform is used. • Reasonably practical as most participants will have experience in auctions in other sectors. • Costs to agencies will include establishing, operating and maintain auctions although these costs will presumably be passed on to market participants and/or funded by auction revenues. Cost to participants will fall through the time and effort in working out willingness to pay and processing the auction. Agency costs make also be incurred to prevent collusion, if not acceptably managed under Water Markets Intermediaries Code. • A centralised auction platform will benefit cross boarder operations, but may need to be orchestrated by a third party. **Ranking=**	When assessing the internal Victorian system for the auctioning of trade access between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not make the auction approach any easier to establish, nor does it meaningfully reduce the implementation challenges identified in the broader analysis. **Ranking =**

Source: Frontier Economics and DEECA/WaterNSW

A.4 Option 4 — Proportional Application Volume

Table 32: Evaluation of Option 4 — Proportional Application Volume

Principle	Evaluation Considerations	Evaluation Barmah Choke	Evaluation Goulburn to Murray
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	• Market still runs efficiently, but there may be limitations on efficiency due to the smaller marginal amounts of water available to participants due to over-subscription. • This option will result in more individual trades to track as all applications get an equal chance to make trade increasingly an issue if over-subscription occurs • Yes, although the opportunity to trade is now dispersed. • Operates within operational rules, constraints and limits based on third-party impacts to other water users and the environment. Reasonable third-party impact protection, to the extent the system allows. Alignment = Yes	When assessing the internal Victorian system for applying a proportional application volume approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Alignment = Yes

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• Reasonably supports the distribution of water, however, may not be entirely efficient as over-subscription under this option can lead to small parcels for water market participants. • Processing all these differing accounts as well as tracking all the trades to the range of different holdings may not be timely if oversubscribed. • Allocative efficiency is supported with trade opportunity made available to enable the movement of water resources between systems (subject to limits based on third party impacts to other water users and the environment). . • This option does not rank well in terms of transaction costs, lots of applications for smaller amounts of water traded so assumed the transaction costs are greater, especially since all applications must be processed and approved. **Ranking=**	When assessing the internal Victorian system for applying a proportional application volume approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Processing issues would be expected to be less given Victoria's automated systems. **Ranking=**

Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	• There are equal opportunities to all participants that want to partake, and receive a share of available trade opportunity. However, this share may be a small volume for small traders, and of limited value given fixed transaction costs. • Reduced barriers as all participants have equal opportunities to participate. However trade barriers will arise to an extent if oversubscribed • Equitable to an extent, as the proportionate calculation is based on all water holders on either side of the river that want to participate. **Ranking=**	When assessing the internal Victorian system for applying a proportional application volume approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not mitigate the substantive shortcomings identified in the broader analysis. **Ranking=**

Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• The concept itself will be somewhat challenging to communicate, and the share of trade access is unknown at the time trade applications are placed. • Informed decision making to a degree for all participants, but not knowing exactly how much they are able to trade may constrain informed decision making. • Provided the proportional nature of the arrangement is clearly explained, this option should ensure access to information about this approach is available in a timely manner. • The outcome of the process can be communicated reasonably quickly to applicants, once proportional share is calculated. **Ranking=**	When assessing the internal Victorian system for applying a proportional application volume approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. **Ranking=**

Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	• Moderately longer time to establish, working out and applying proportions given that each year differs. • Upfront costs for the calculation of proportional volumes would be limited. However, the VWR changes required to approve the proportionally reduced volume could require significant resources — given the current approach to either accept in full, or reject fully. • Change to agencies' operations expected to be significant due to VWR changes for approval processes and greater application processing for smaller amount of water. • Establishment would include investment in automated processing to manage this efficiently. • Changes to trade application forms to ensure clear to customer, and represents a legally valid application. • Not much change from participants apart from the restrictions of trade, given the application process remains the same. • Minimal costs to participants, however the proportionally reduce volumes may be insufficient to secure water needs.	When assessing the internal Victorian system for applying a proportional application volume approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not mitigate the substantive shortcomings identified in the broader analysis. **Ranking=**

- All participants get an equally proportionate opportunity to participate in trade, but marginally declines as the trades go on.
- Considerable legislative changes needed.

Ranking= 

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	• There are some implementation issues to address due to the application and water volume proportion issue. Potential oversubscription leads to constraints on all factors. • Cost to operate and maintain will be moderate as once calculations or algorithms are developed they should be reasonably easy to maintain. • Somewhat practical for water market participants, however due to not knowing exactly the quantity they can trade makes this option a little less practical to trade • Moderate cost as each year as proportions and amount of participants will have to be recalculated. Time costs would be significant as well as tracking trades to accounts. • Yes, alignment and coordination for cross-border cooperation's is optimal as proportionately shared demand across all applicants. **Ranking =**	When assessing the internal Victorian system for applying a proportional application volume approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not mitigate the substantive shortcomings identified in the broader analysis. Ranking =

Source: Frontier Economics and DEECA/WaterNSW

A.5 Option 5 — Proportional entitlement

Table 33: Evaluation of Option 5 — Proportional entitlement

Principle	Evaluation Considerations	Evaluation Barmah Choke	Evaluation Goulburn to Murray
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	• Market still runs efficiently, however if water that is converted is needed to be used, participants must purchase in secondary market is needed thus decrease in efficiency. • Transaction costs are increased due to need to participate in a secondary market as well as large administrative burden. • Operates within operational rules, constraints and limits based on third-party impacts to other water users and the environment • Reasonable third-party impact protection, to the extent the system allows • Likely to contravene the Basin Plan Water Trading Rules because it could be considered a new, non-permissible trade barrier under the BPWTR 12.16. It may also contravene BPWTR 12.07 (discriminatory against those that are not water entitlement holders) and 12.11 (no free trade of carryover allocation). Alignment = Yes* (Although aligned with the water market objectives, is likely to contravene the Basin Plan Water Trading Rules)	When assessing the internal Victorian system for applying a proportional entitlement approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. Alignment = Yes* (Although aligned with the water market objectives, is likely to contravene the Basin Plan Water Trading Rules)

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• Arrangements rate well in supporting distribution of water since they enable the movement of water resources between systems (subject to limits based on third party impacts to other water users and the environment). • Processing the large number of differing accounts as well as tracking them to the range of different holdings may not be timely. • The allocative efficiency of outcomes would be limited by the challenge/cost of reallocating many small parcels of water, given the transaction costs. • Lots of applications for smaller amounts of water traded so transaction costs may be high. **Ranking=**	When assessing the internal Victorian system for applying a proportional entitlement approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. **Ranking=**

Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	• This option provides trade access to all participants. This would provide participants, including those who traditionally have not sought IVT access (such as VEWH/CEWH), with a share of available trade opportunities. However, this share may be a small volume for small traders, and of limited value given fixed transaction costs. • No barriers in place for any market participants • Equal trade opportunities across States as entitlement proportion calculation is based on all water holders on either side of the river. **Ranking=** all users have access, but relatively high transaction costs for small parcels	When assessing the internal Victorian system for applying a proportional entitlement approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not mitigate the substantive shortcomings identified in the broader analysis. **Ranking=**

Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• The concept itself will be reasonably easy to explain, but the clarity and justification around why this is being done may be a little bit more complex. Additional trying to convey the complexity and reasoning behind the opt in and opt out mechanisms may be difficult to some. • Does not help informed decision making. The opt in and opt out mechanism does give holders a choice to participate but doesn't allow them to understand how much they can/should be trading • To a degree both ease and timeliness are supported as the water that is going to be traded on a participants account is going to be the same, unless more water is added to their account or if the number of people participating changes • Yes as applications are always approved for that set amount if participating changes via opt outs may be only small. **Ranking=**	When assessing the internal Victorian system for applying a proportional entitlement approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. **Ranking=**

Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	• Contravene the Basin Plan Water Trading Rules • Requires agreement on how to consider different types of entitlements (within a State, as well as between States) — for example, by using raw volumes or by using cap factors. • Upfront costs could be significant, including communication and development of opt-in arrangements and any automatic conversion. Agencies and users would be required to deal with new water accounts, and therefore entail significant administrative costs. • Establishment would include investment in automated processing to manage this efficiently. • This would be a significant impact, as agencies now have a large volume of water to track across a large number of entitlements. • Market participants that used trade a source of revenue and relied on trading large quantities for returns would not be able to do so. All entitlement holders now can access trade to a degree. A larger overall change to all participants • Not a significant change in cost apart from the foregone revenue for some but this	When assessing the internal Victorian system for applying a proportional entitlement approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not mitigate the substantive shortcomings identified in the broader analysis. **Ranking=**

merely a transfer, in fact a possible decrease in costs as smaller participants move away from brokers etc

- Apart from potential lost opportunity cost for other participants who want to trade larger amounts none really as process is automatic.
- Yes as all participants get an equally proportionate opportunity to participate in trade
- Yes, reform of current legislation will be required.

Ranking=

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	• Contravene the Basin Plan Water Trading Rules • Not extremely practical due to the application and water volume proportion issue • Cost to operate and maintain will be moderate as once system is developed ensuring that all runs smoothly will be reasonably inexpensive to calculate volumes. • Reasonably practicable as water can be automatically sold to a degree but if this water is needed for use participation in secondary market needed • After establishment, administrative costs of managing small volumes trades would continue after each trade opening. • Alignment and coordination could occur if treatment of different entitlement types can be agreed (i.e. the pool of entitlements, and the relative contribution of low/general/high entitlement types). **Ranking=**	When assessing the internal Victorian system for applying a proportional entitlement approach between the Goulburn and Murray, the overall advantages and disadvantages are broadly consistent with those identified in the Barmah assessment. • One additional consideration is that cross-border issues are not relevant in this context; however, this does not mitigate the substantive shortcomings identified in the broader analysis. • **Ranking=**

Source: Frontier Economics and DEECA/WaterNSW

B Outcomes from ad-hoc trade access

Ad-hoc trade openings through Barmah and in the Goulburn arise from upstream trade that has occurred. Such trade generally creates an equal volume of downstream trade opportunity, which may be taken up by water market participants (if they choose to seek to trade).

The following two sections consider the issues associated with the processing of trade from an ad-hoc trade opening, and the potential value of the trade made available.

The final section draws conclusions regarding management of ad-hoc trade opportunities openings through Barmah and in the Goulburn, given the current water market settings.

B.1 The processing of trade from an ad-hoc trade opening

In the analysis of options in this report, it has been assumed that all options would use the 'first-in, first-served' for access to trade opportunity during ad-hoc trade openings.

In the Barmah, there is a degree of inequitable access to trade due to the differing capabilities of processing systems in NSW and Victoria. Given there is no 'in-turn' consideration between States (as per the scheduled opening in Option 1), applications are processed independently in each State, and approved if the trade opportunity exists. This effectively means that applications submitted via Victoria will be approved before applications via NSW are considered — this is because trades submitted in NSW (submitted by email and subsequently processed manually) are not competitive on a speed basis as trades submitted in Victoria (submitted by web portals and processed automatically by the VWR). A mitigating factor for this concern is that NSW water market participants can generally readily trade their allocations into Victorian zone 6 to participate via the VWR.

In the Goulburn, there are no cross-border system issues but there remains potential advantages to those users who can identify that an ad-hoc trade opening has occurred, and quickly submit a trade application.

It could be possible to hold back ad-hoc trade openings to make them available in the scheduled trade opening manner (under any of the options identified). This could be done on a regular basis, i.e. every month, or be held back until a minimum volume was reached. For example, an approach to delay the release of trade opportunity may allow for an organised event (such as a submission window for applications to be randomised or proportionally adjusted, an auction, or a release in line with water entitlement holdings) but would forgo the opportunity for an earlier trade opportunity of equivalent volume through an ad-hoc process.

This type of action to achieve a minimum volume can be observed in NSW, where trade out of the Murrumbidgee valley opens when the IVT balance reaches 85 GL (or lower) until it next reaches 100 GL, and trade into the Murrumbidgee valley opens when the balance reaches 15 GL (or greater) until it next reaches 0 GL (see Ricardo 2026 companion report of options for the Murrumbidgee IVT).

Given the administrative burden and complexity of managing the options for scheduled opening (such as manual *in turn* processing for Barmah openings under Option 1, creating a randomisation event for Option 2, or facilitating an auction for Option 3), hold back of ad-hoc trade openings should only be considered if the opening is expected to be highly valued.

B.2 The 'value' of trade from an ad-hoc trade opening

The charts below show water allocation prices in the two connected zones, and instances of upstream trade.

In general, when there are large price differences, limited upstream trade is observed. Market participants have a clear incentive not to trade back to the upstream system because the value of the water allocation is reduced. There are some occasions when there are significant price differentials and substantial volumes of upstream trade have occurred — most recently for example at Barmah in October and November 2024 — but it is not possible to predict the timing of these instances because they occur at the discretion of water owners undertaking their trades.

Whereas when price in the two systems converge, upstream trade may be expected — especially if there are other reasons to motivate the trade, such as concerns of spill and loss of water due to carryover rules.

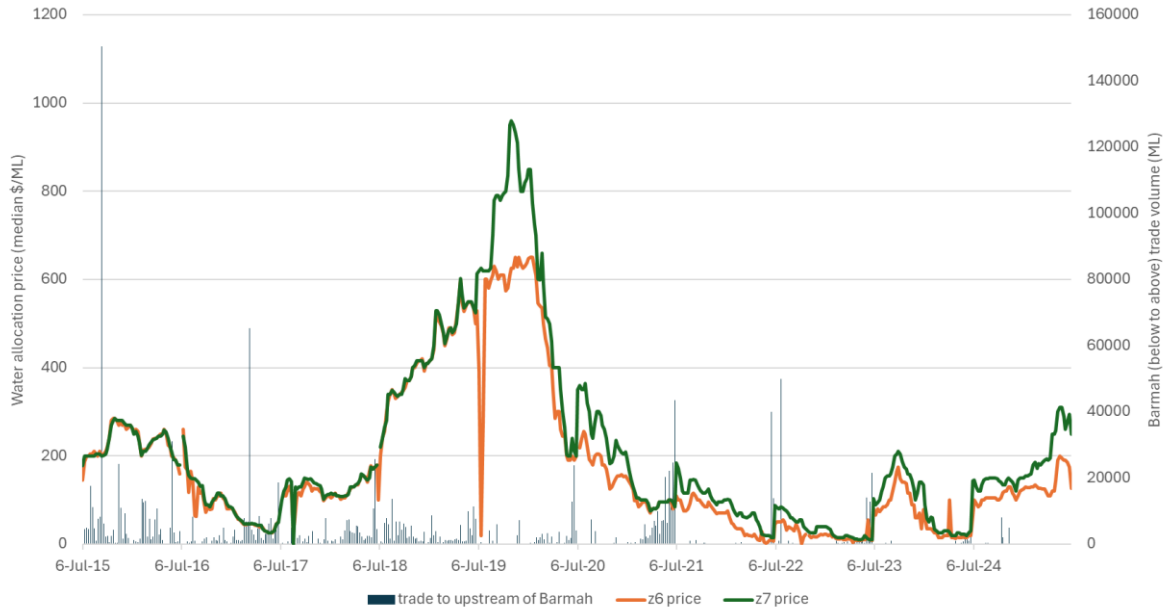
Figure 6 illustrates the price of water allocations in zone 7 (green line), the price of water in zone 1A (blue line) and upstream trade (columns). It is observed that upstream trade often occurs when prices in the two systems converge, and upstream trade is often limited when there are large price differences.

Figure 6: Historical price fluctuations of Zone 1A and 7 and Goulburn upstream trade volumes

Note: Observations of low/zero prices are due to limited/zero trade and the charted median is not representative.
Source: Frontier Economics analysis of DEECA data

These same characteristics are displayed in Figure 7, for Barmah trade between zones 6 and 7.

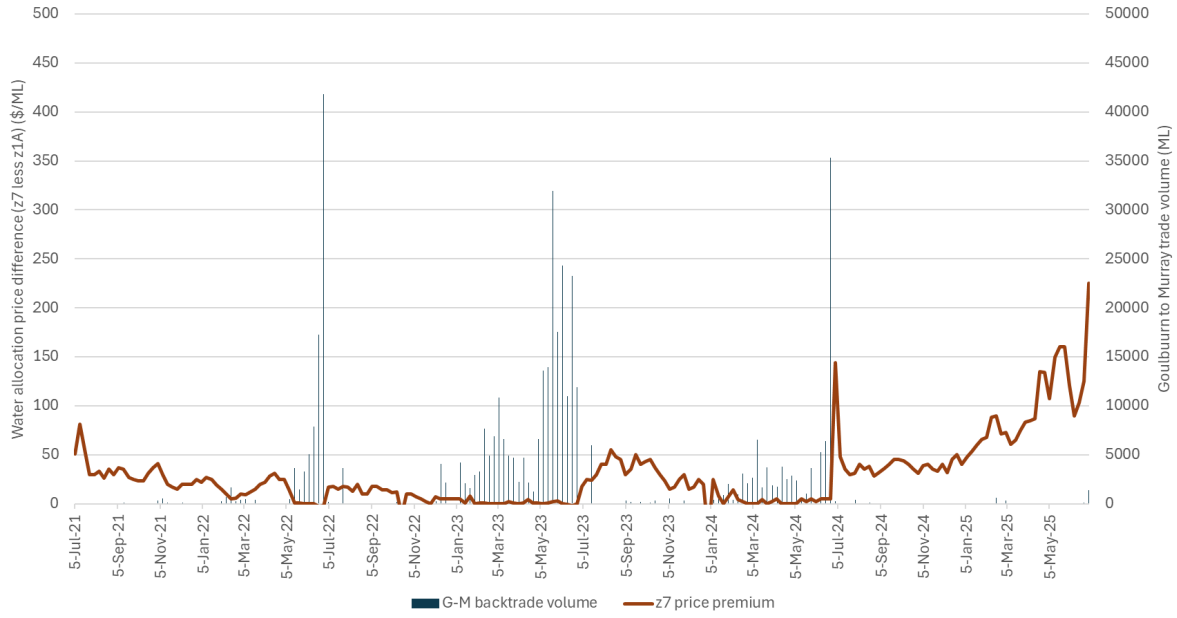
Figure 7: Historical price fluctuations of Zone 6 and 7 and Barmah upstream trade volumes



Note: Observations of low/zero prices are due to limited/zero trade and the charted median is not representative.
Source: Frontier Economics analysis of DEECA/MDBA data

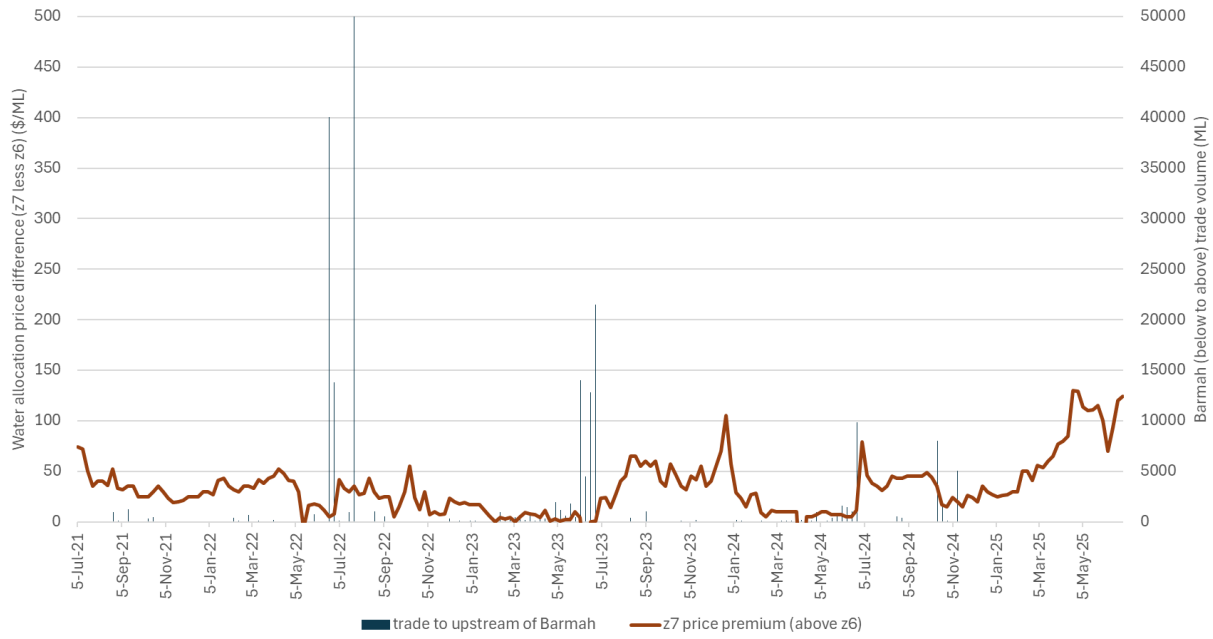
Figure 8 and Figure 9 present the same data but focus on the **price premium** observed in the downstream zone. It can be seen that recent upstream trade in the Goulburn aligns with periods when there is little/zero premium associated with IVT downstream trade access. This is also often the case for Barmah, however it can also be seen that there have been some substantial volume trades when price differentials have been moderate, such as in October and November 2024.

Figure 8: Price premium in Zone 7 (compared to Zone 1A) and Goulburn upstream trade volumes



Source: Frontier Economics analysis of DEECA data

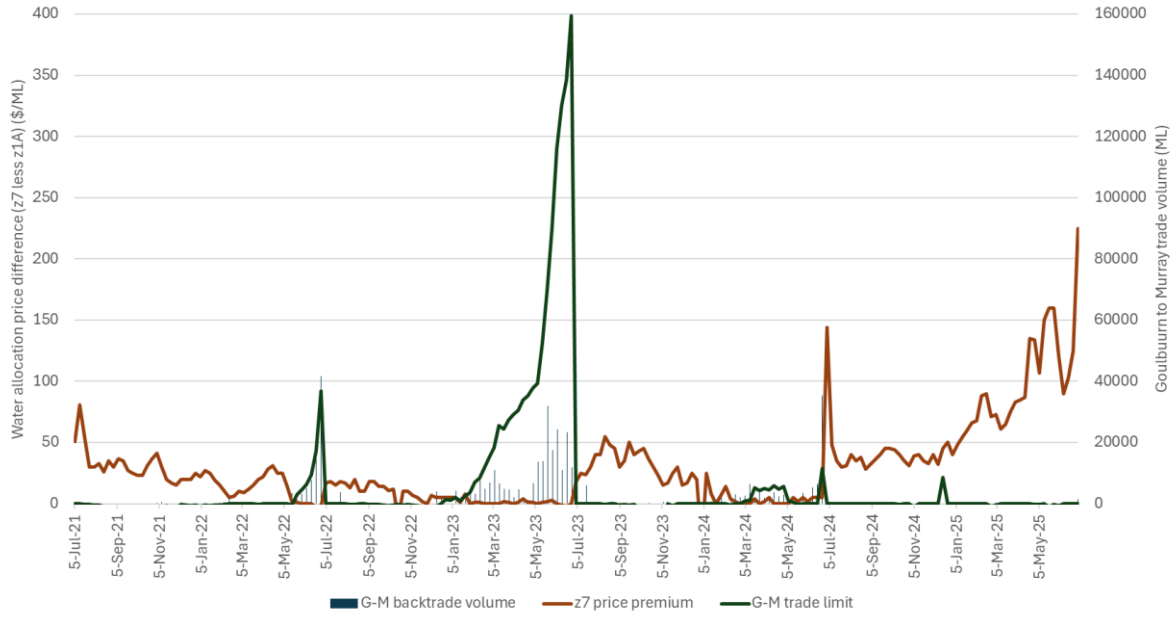
Figure 9: Price premium in Zone 7 (compared to Zone 6) and Barmah upstream trade volumes



Source: Frontier Economics analysis of DEECA/MDBA data

Further, Figure 10 illustrates during these periods when price premiums are zero and upstream trade occurs, the trade limit / trade opportunity (green line) generally remains above zero — meaning that available opportunities for trade are not being utilised.

Figure 10: Price premium in Zone 7 (compared to Zone 1A) and Goulburn trade limit



Source: Frontier Economics analysis of DEECA data

Of the types of trade openings listed in section 1.3 (Scheduled openings and Ad-hoc openings), this suggests that ad-hoc trade openings of Barmah or the Goulburn are often associated with little price premium.

B.3 Suggested treatment of ad-hoc trade openings

We have limited equity-related concerns regarding outcome of accessing ad-hoc trade opportunities because most ad-hoc openings occur when trade is unrestricted and prices are at parity. Some alternative instances exist, but may not be sufficient concern to modify IVT access approach. Equity concerns remain for Barmah, given trades submitted in NSW are not competitive on a speed basis as compared to trades submitted in Victoria, however, a mitigating factor for this concern is that NSW water market participants can generally readily trade their allocations into Victorian zone 6 to participate via the VWR.

In our view, a proportionate response would be to focus reform on the access approach for the more sought after scheduled openings.

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Appendix 3 – Options assessment for Murrumbidgee

Murrumbidgee IVT options assessment report

Client: WaterNSW
Ref No: 1.0

Classification:
CONFIDENTIAL

Ricardo ref: 2026A-0109
Issue: v1.0
Date: 12 March 2026

A note about Aither and Ricardo (member of WSP)

The contracting entity for this engagement is **Aither Pty Ltd**, an Australian company established in 2012 and specialising in strategic advisory services in water, natural resources and public policy. In March 2023, Aither Pty Ltd was acquired by **Ricardo,** a global strategic environmental and engineering consultancy based in the UK.

In October 2025, Ricardo was acquired by **WSP**, a global engineering and professional services firm. As a result, Ricardo now operates as part of the WSP group while retaining its established advisory teams, systems and delivery models.

For this engagement:

- The contractual relationship is with **Aither Pty Ltd**.
- The project team is drawn from personnel operating under the Ricardo brand (member of WSP).

Acknowledgement of Country

Ricardo acknowledges Aboriginal and Torres Strait Islander people as the First Peoples of Australia and the Traditional Custodians of its lands and waters. We pay respect to the deep connection First Nations people hold with Country, and celebrate the continuing effect of cultural knowledge and practices on Country and communities across Australia.

We pay our respect to Elders past and present, whose knowledge and leadership has protected Country and allowed First Nations spirituality, culture and kinship to endure through the ages.

We recognise the injustices and hardship faced by First Nations communities and reflect on opportunities for all Australians to play a part in reconciliation and the development of mutual understanding and respect across cultures.

Left: Artwork by Eastern Arrernte artist Scott 'Rusted Tin' Rathman

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Ricardo's commitment to reconciliation is outlined in our Reflect Reconciliation Action Plan, endorsed by Reconciliation Australia, which guides our efforts to build respectful relationships and create meaningful opportunities with Aboriginal and Torres Strait Islander communities.

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Date:
12 March 2026

Executive Summary

This report has been prepared for WaterNSW as part of Stage 2 of the joint Inter-Valley Trade (IVT) Framework program being delivered collaboratively with the Victorian Department of Energy, Environment and Climate Action (DEECA). The overarching objective of the program is to improve the **efficiency, equity, and transparency** of access to IVT opportunities across the southern connected Murray–Darling Basin (sMDB). Stage 2 focuses on assessing options to improve trade opening and administration arrangements for water allocation trades from the Murrumbidgee River, the Goulburn River and upstream of the Barmah Choke, to connected downstream trading zones.

Within this broader program, this report presents WaterNSW's independent assessment of options to improve the operation of the Murrumbidgee IVT only, applying a common assessment framework agreed jointly with DEECA. The assessment reflects the specific governance, operational responsibilities, and institutional context of WaterNSW, noting that the Murrumbidgee IVT differs from the Barmah and Goulburn IVTs in its reliance on *ad hoc*, unscheduled trade openings and its current "first in, first served" application processing arrangements. Consistency across jurisdictions has been supported through parallel reporting by DEECA on Barmah Choke and Goulburn IVT options, and through WaterNSW's input into DEECA's Barmah assessment.

The report uses a coloured rating scale to illustrate the assessment findings against the assessment criteria for each option, as follows

The report evaluates five options for allocating Murrumbidgee IVT trade opportunities. On balance, Option 2 (Randomisation) is considered to represent a proportionate and defensible improvement to current practice and is therefore identified as the most suitable option in the short to medium-term.

To support effective implementation and stakeholder confidence, the report also proposes refinements to Option 2, including adjusting the timing of application lodgement to allow participants adequate preparation time, extending the submission window, and clearly communicating the randomisation process and outcomes.

Implemented alongside existing volumetric trigger limits, these changes would be relatively straightforward for WaterNSW to operationalise and align closely with prior stakeholder feedback, while delivering meaningful improvements in equity, transparency and market confidence.

A summary of the assessment findings for each option is below.

Option 1: First-in, first-served
The assessment found that while the current first-in, first-served approach remains efficient and low-cost to administer, it has limitations in high-demand conditions and performs poorly against equity and transparency objectives. On this basis, Option 1 is considered to have material limitations.

Option 2: Randomisation
Randomisation of applications submitted within a clearly defined application window was found to perform strongly across all key criteria. By removing speed-based advantages, this option materially improves the fairness of access while maintaining efficient allocation of available IVT capacity. When combined with a short delay between the IVT opening trigger and the commencement of application lodgement (around one business day), and a defined submission window (approximately 4–7 hours), randomisation represents a proportionate and defensible improvement to current arrangements. Importantly, this option can be implemented with relatively minor changes to existing systems and aligns with temporary arrangements successfully applied for the 1 July 2025 Barmah opening**. On balance, Option 2 is considered to represent a proportionate and defensible improvement to current practice and is the most suitable option in the short to medium term based on analysis undertaken.**

Option 3: Auction:
Following the assessment, the most practical auction option was a blind auction, which was therefore selected for evaluation. The blind auction option was found to pose significant practical and policy risks, including increased transaction costs, potential market power concentration, reduced accessibility for smaller participants, and greater implementation complexity. These risks outweigh the potential allocative efficiency benefits in the Murrumbidgee IVT context. On this basis, Option 3 is considered to have material limitations.

Option 4: Proportional application volume:
Similarly, proportional allocation based on application volume was found to offer some equity benefits but to perform less strongly against efficiency and practicality criteria. The additional complexity and slower allocation of available IVT capacity make this option a disproportionate response to the identified equity concerns. On this basis, Option 4 is considered to have material limitations.

Option 5: Proportional entitlement volume:
The proportional entitlement option did not pass the preliminary assessment gateway due to likely inconsistencies with the Basin Plan Water Trading Rules, as it would introduce a new, non-permissible trade barrier and restrict participation based on entitlement holdings. This option is therefore not recommended for further consideration.

A number of refinements were considered throughout the assessment that would likely further improve the ratings of Options 1, 2 and 4. These were:

- Improving the notice period for, and duration of, IVT openings
- Volumetric limits per application *(not per licence)*
- Enhanced transparency

Contents

1. Introduction

1.1 Purpose and context

This report has been prepared for WaterNSW as part of Stage 2 of the joint Inter-Valley Trade (IVT) Framework program being delivered collaboratively by WaterNSW and the Victorian Department of Energy, Environment and Climate Action (DEECA). The broader program seeks to improve the efficiency, equity and transparency of access to IVT opportunities across the southern connected Murray–Darling Basin (sMDB).

Stage 2 of the program focuses on the assessment of IVT improvement options for water allocation trades from the Murrumbidgee River, the Goulburn River and upstream of the Barmah Choke to connected downstream trading zones in the sMDB (Figure 1). Although these IVTs present distinct operational, institutional and market considerations, because of their different locations, governance, trade rules, IVT opening types and trade application and administration arrangements (refer Section 1.2), they have a similar approach in how the Framework is structured and the options considered. Therefore, they are being examined through a common assessment Framework that has been jointly agreed between WaterNSW and DEECA.

WaterNSW, supported by Ricardo, has focused its reporting and assessment on Murrumbidgee IVT options, applying the agreed Framework and reflecting WaterNSW's operational responsibilities and context (as outlined in this report). Similarly, DEECA, supported by Frontier Economics, has focused its reporting and assessment on Goulburn IVT options and, with input and collaboration from WaterNSW, on the Barmah Choke Openings.

The structure, terminology, and level of detail in this report reflect an agreed approach to reporting, enabling efficient consolidation of information into a joint final reporting product.

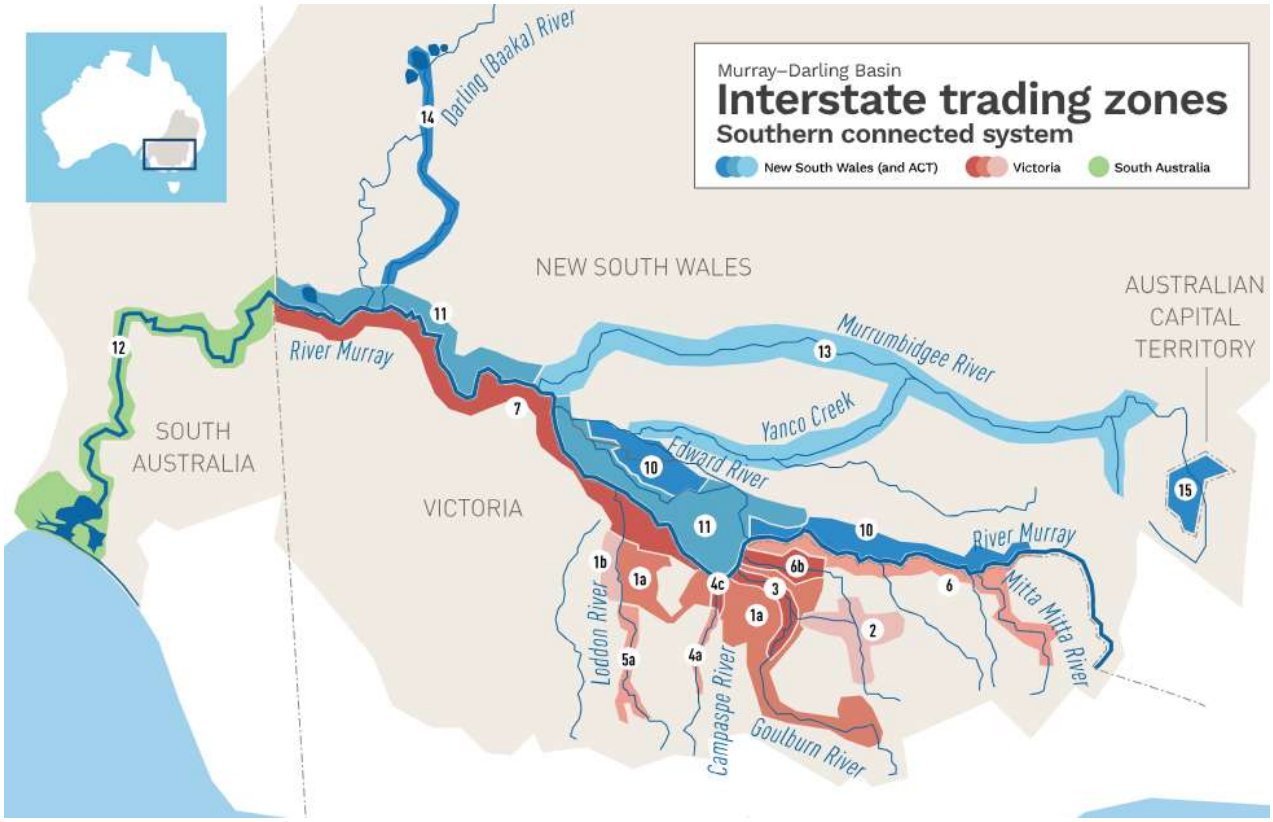

Figure 1 Illustration of the southern connected Murray-Darling Basin and the associated trading zones. Source: MDBA, www.mdba.gov.au/water-use/water-markets/interstate-water-trade.

1.2 Background

1.2.1 IVT Framework program

WaterNSW and DEECA's multi-year IVT Framework program comprises three stages (Figure 2). Stage 1 (*Develop Assessment Framework*) has concluded with a well-supported, principles-based draft assessment framework (Framework) and a clear understanding of stakeholder views on the shortcomings of current IVT arrangements. Feedback in a 'what we heard report'[1] emphasised concerns with equity of access under first-in, first-served arrangements, the disproportionate advantages accruing to well-resourced market participants, and emerging expectations around transparency, system reliability, and predictable trade opening processes.

Stage 2 (*Develop and Assess Options*) involves: assessing a refined list of feasible improvement options against the Framework for each IVT and developing clear, evidence-based recommendations for short- to medium-term reform.

[1] https://engage.vic.gov.au/download/document/42728

Stage 2 assessments are required to draw on the Stage 1 consultation insights (including views on equity and efficiency), remain aligned with broader market reforms, and ensure consistency with Victoria's parallel processes. Overall, Stage 2 must:

- Apply the assessment Framework consistently and transparently.
- Respect operational and institutional constraints, including cross-jurisdictional differences in application processing systems and capabilities that could influence practical implementation,
- Provide clear, defensible recommendations, and
- Support joint governance and future public consultation in early 2026 to inform Stage 3 (Implementation and Monitoring).

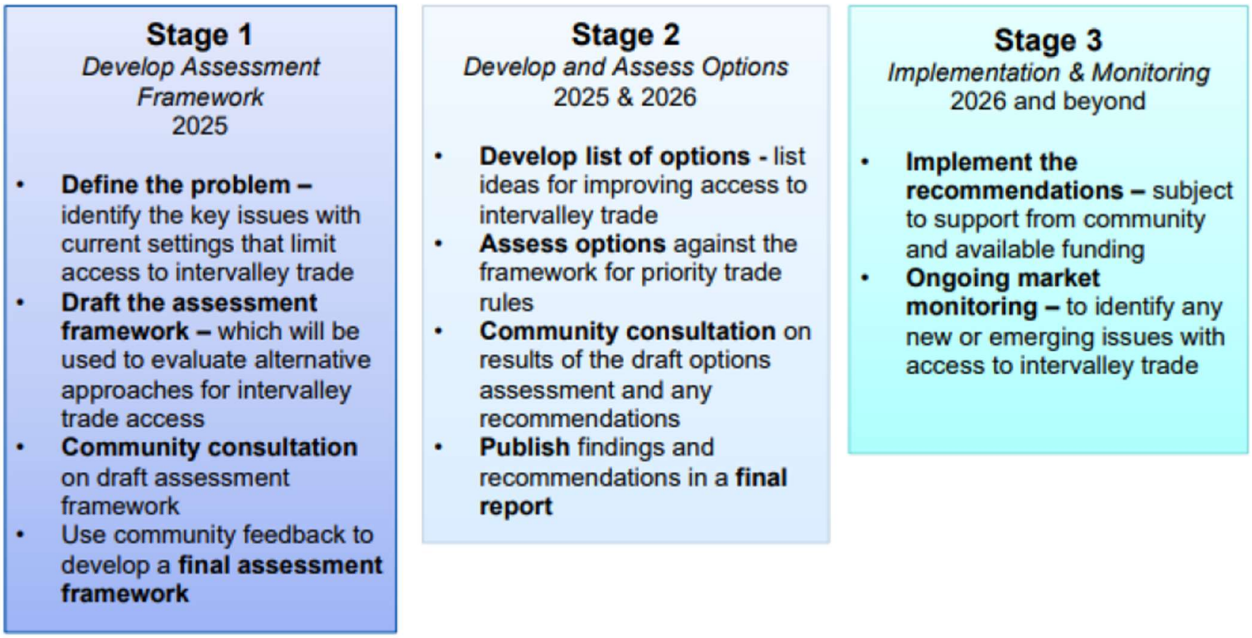

Figure 2 Three stages of the IVT Framework program.

This report focuses on the assessment of improvement options for the Murrumbidgee IVT, which is solely administered by WaterNSW. WaterNSW also jointly administers Barmah Choke IVT with DEECA and the Murray-Darling Basin Authority, and therefore has also provided separate input to the assessment of IVT options for the Barmah Choke in the full joint report.

NOTE: DEECA is solely responsible for the administration of Goulburn IVT, and WaterNSW has not provided input to the assessment of IVT options for the Goulburn.

1.2.2 Murrumbidgee IVT operations

Key aspects of Murrumbidgee IVT operations are as follows:

- **Location**: The Murrumbidgee River Valley is in southern NSW and the Australian Capital Territory. It starts in the Australian Alps and flows generally westward through NSW before joining the Murray River near Boundary Bend.

- **Governance**: WaterNSW is solely responsible for the administration of Murrumbidgee IVT, including in relation to trade application processing and approvals.

- **Trade rules**:
  - Water allocation can be traded between the Murrumbidgee River and connected trading zones, including the NSW Murray, NSW Lower Darling, Victorian and South Australian regulated river water sources.[2]
  - The Murrumbidgee IVT account[3] reflects the net balance of surface water volume that has been traded out of the Murrumbidgee at any point in time and is still 'owed' to the Murray.[4]
  - WaterNSW aims to keep the IVT balance within the range 0-100GL, by restricting water allocation trades that cause the balance to exceed these limits.
  - Trade out of the Murrumbidgee valley opens when the IVT balance reaches 85 GL (or lower) until it next reaches 100 GL. Trade into the Murrumbidgee valley opens when the balance reaches 15 GL (or greater) until it next reaches 0 GL.[5]

- **IVT opening type(s)**: All Murrumbidgee IVT openings are *ad-hoc* e.g. unscheduled (market-based) releases linked to market activity or river operations. None are scheduled (resource-based) releases like in the Barmah (e.g., the 1 July opening) and Goulburn IVTs (multiple set opening dates per year).

- **Current trade application and administration arrangements**:
  - trade applications can be submitted electronically via email from 10:00 am AET on the day that trade opens (announced at 9:00 am).
  - applications are processed in a 'first-come first-served' manner until the trade opportunity is exhausted (when the IVT account limit is reached e.g., 100 GL or 0 GL), or there are no more applications.
    - WaterNSW's servers determine the order of the list, based on the order in which WaterNSW's systems identify those applications as having been received.
  - Valid applications are maintained in a queue for 7 days.
  - Queued applications will be returned if they cannot be processed within 7 days of trade closing.[6]

[2] Schedule D of the Murray Darling Basin Agreement and its Protocols set out the zones between which trade is permitted.

[3] https://www.waternsw.com.au/customer-services/ordering-and-trading/murrumbidgee-ivt

[4] https://www.waternsw.com.au/customer-services/ordering-and-trading/murrumbidgee-ivt

[5] https://www.waternsw.com.au/customer-services/ordering-and-trading/murrumbidgee-ivt

[6] https://www.waternsw.com.au/customer-services/ordering-and-trading/murrumbidgee-ivt

2. Methodology

2.1 Assessment approach

The assessment has been undertaken using the jointly developed IVT Framework agreed by WaterNSW and DEECA. The Framework applies a structured, principles-based approach to evaluating options for improving access to IVT opportunities, with a focus on supporting efficient water markets, equitable access, transparency, and practical implementation.

Each option has been assessed for the Murrumbidgee IVT through a staged process comprising:

1. A preliminary screening to confirm alignment with established water market objectives, and for consistency with the Basin Plan Water Trading Rules (BPWTR).
2. A qualitative assessment against a defined set of principles and evaluation considerations, informed by available data, operational knowledge and stakeholder feedback, and
3. An overall synthesis of strengths, limitations and key trade-offs to support comparative evaluation.

2.2 Assessment findings

The assessment findings are documented in the following sections of this report, including:

- **Section 3: Murrumbidgee options assessment — summary outcomes**, which provides a high-level synthesis of the assessment results and emerging findings across the options considered; and

- **Section 4: Murrumbidgee options assessment — detailed assessments**, which document the full application of the Assessment Framework to each option, including the underlying rationale, evidence and qualitative judgements supporting the assessment outcomes.

3. Murrumbidgee options assessment — summary outcomes

This Section summarises the overall evaluation findings for each option, based on the Framework's evaluation principles and considerations.

Each option has been considered in detail against the Framework in an evaluation table (refer Section 4). Section 5 summarises the key findings and outcomes.

The options considered for enhancing the administration of the Murrumbidgee IVT included:

1. First-in, First Served (which is also the Base Case for Murrumbidgee IVT),
2. Randomisation,
3. Blind auction,
4. Proportional Application Volume, and
5. Proportional Entitlement.

Where relevant, several refinements that could be applied to these options were also considered, including:

A. The timing of trade application opening periods e.g., make the trade application opening period to be on the next business day(s) after the IVT opportunity is announced, as opposed to on the *same* day per current arrangements,
B. The duration of the trade application opening window e.g., several hours (or longer) versus one or more days,
C. Maximising transparency about how the option works to build confidence and trust among market participants, and
D. Volumetric limits per trade application.

NOTES:

- The Barmah IVT assessment considered 'Joint or matched IT system' and 'Holding back non-scheduled trade opportunities' as possible refinement options. These are not relevant to the Murrumbidgee IVT and were not assessed, as the Murrumbidgee IVT is solely administered by WaterNSW and already operates in a way that holds back non-scheduled trade opportunities (refer Murrumbidgee trade rules in Section 1.2.2).
- Potential additional refinements were judged to be beyond the scope of this project — as they would need significant additional resourcing and/or to be informed by further policy work and analysis — but may be considered in the longer term. These include:
  - introducing scheduled opening dates/times e.g. 1 July and then potentially on other select dates like the current operation of the Goulburn IVT, or
  - amending the Murrumbidgee IVT opening limits (currently 15 GL and 85 GL), or
  - introducing an electronic trade portal to receive and manage trade applications in NSW.

3.1 Option 1 — First in, First served / Base Case

The first in, first served option is the current method used to determine trade across the Murrumbidgee IVT and is based on the evaluation framework in section 4.1 (Table 6) is considered to have "some concerns or risks to meeting criteria". The option works by approving trade applications in the order they are submitted once the trade application window opens. Due to the high demand for trade across the Murrumbidgee IVT, application volumes can fulfil the IVT capacity within seconds, making this option efficient but highly competitive. Table 1 highlights the pros and cons of this option that have led to the assigned ranking.

Table 1 Option 1 Pros and cons

Overal option assessment	Pros	Cons
First-in, First-served (current state)	• This is the base case, meaning no costs to establish, participants are already familiar with the process, and it is suitable to operate and maintain. • Aligns with water market objectives. • Efficient allocation of trade opportunities,	• Fast paced environment that requires availability and readiness on the day the limits are triggered • Opening of trade opportunities has been poorly communicated in the past. • Concentrates successful trade towards better resourced participants and those who utilise brokers.

Several additional refinements to this option have been considered to further improve this option, although to note they would improve other options as well, e.g.:

Timing of trade openings: As trade opportunities are typically fulfilled within a matter of seconds, this refinement refers only to *when* the trade window opens. Under current arrangements, WaterNSW announces IVT openings at 9:00 am, with applications accepted from 10:00 am on the same day. Adjusting this one-hour interval alone is unlikely to materially affect outcomes. In contrast, introducing a pragmatic delay between the IVT opening announcement and the start of application lodgement—such as commencing applications on the following business day—would materially improve the fairness of access by allowing market participants time to become aware of the opening and prepare applications, without affecting overall trading volume.

Imposing volumetric limits: This would involve setting a maximum trade volume per application, meaning those wishing to trade larger volumes would need to submit more than one (and potentially many) applications. While this would likely provide better opportunities for smaller users to submit applications, larger users with better resources would be able to develop systems that allow them to submit applications for their desired volumes at a near-equal rate to what they can currently do in a single application. Additionally, the volumetric limit would increase email traffic and the number of applications WaterNSW must process.

Transparency: Transparency has largely been addressed for the first-in, first-served approach by relatively recent improvements. The process for announcing IVT openings and ordering applications based on system-recorded receipt times is well established and generally understood by market participants.

WaterNSW's publication of queue and post-opening information supports clarity and confidence in the process.

3.2 Option 2 — Randomisation

This option proposes that, when Murrumbidgee IVT is open, all eligible applications submitted during the specified application period be randomly ordered for processing. When the opening is oversubscribed (i.e., the total volume of water applied to trade exceeds the total IVT opportunity volume), trades are processed in random order until the available trade-opportunity volume is exhausted or there are no more applications. This option is like the temporary arrangements used for the 1 July 2025 Barmah opening. If an opening is undersubscribed, trades are processed on a first in, first served basis.

Table 2 Option 2 Pros and cons

Overal assessment	Pros	Cons
Randomisation	• Improves equity of access by removing advantages associated with faster submission times, or use of brokers. • Provides all eligible participants an equal opportunity to access available IVT capacity within the application window. • Addresses long-standing concerns about perceived unfairness under first-in, first-served arrangements, supporting confidence in the market and regulatory process. • Can be implemented using existing administrative systems with limited additional establishment costs. • Precedent exists, with a similar approach successfully applied under the temporary arrangements for the 1 July 2025 Barmah opening.	• May reduce allocative efficiency, as trade outcomes are not prioritised based on willingness to pay or economic value of the trade. • Includes an element of uncertainty for participants, as submission does not guarantee processing before capacity is exhausted (not unlike the first in, first served approach). • Requires clear and proactive communication to ensure participants understand the application window, randomisation process, and timing of outcomes. • Potential for increased administrative complexity compared to first-in, first-served, particularly where large volumes of applications are received simultaneously. • Presents additional challenges for ensuring transparency with regard to randomisation, this includes the selection and implentation of a randomisation tool.

In addition to randomisation, the following refinements were considered as options to further improve the assessment rating for this option:

Timing of trade openings: As trade opportunities are typically fulfilled within a matter of seconds, this refinement refers only to *when* the trade window opens. Under current arrangements, WaterNSW announces IVT openings at 9:00 am, with applications accepted from 10:00 am on the same day. Adjusting this one-hour interval alone is unlikely to materially affect outcomes. In contrast, introducing a pragmatic delay between the IVT opening announcement and the start of application lodgement—such as commencing applications on the following business day—would materially improve the fairness of access by allowing market participants time to become aware of the opening and prepare applications, without affecting overall trading volume.

Duration of trade openings: The duration of the trade application window also influences equity of access, as it determines the period during which market participants can submit applications, which can be affected by personal and business circumstances. Extending the application window before any randomisation would give participants more time to prepare and submit applications, particularly when trade openings occur unexpectedly. While the option description does not specify a proposed duration for the application window, 4–7 hours may be sufficient to balance improved access with operational efficiency.

Transparency: Transparency is essential to the effectiveness and credibility of a randomisation approach. Market participants must clearly understand how the process operates, including when applications are eligible, how the submission window is defined, and how applications are randomised and processed. Clear, consistent communication of these rules in advance, supported by transparent reporting after each opening, will be critical to building confidence that the process is fair, rules-based and applied consistently. Ensuring participants understand and trust the randomisation process is therefore fundamental to its integrity and acceptance.

3.3 Option 3 — Blind Auction

Under Option 3, an auction would be conducted to allocate trade opportunity volumes to the highest bidders. The highest bidders win the right to trade allocations through the Murrumbidgee IVT, provided their application to trade is valid (i.e., available volume to trade, authority, etc.).

The mechanics of this option were not clearly defined; several potential auction mechanisms were proposed. For this assessment, we consider a blind auction in which participants make their best and final offers without knowing competitors' bids. The rationale for this mechanism was that it is the most feasible within WaterNSW's constraints (technical and financial).

That said, this option still presents considerable challenges for both participants and WaterNSW, as an additional form will likely need to be developed to accept formal bids. WaterNSW would also need to develop a method to enable the instantaneous payment of an accepted bid, in addition to the transfer fee. It was noted that this sum could be substantial and may not be feasible or practical for many participants to pay via credit card (as is the existing method for authority fees).

Table 3 Option 3 Pros and cons

Overal assessment	Pros	Cons
Blind auction	• Distributional and allocative efficiency, and promotes informed decision making	• Increased cost for successful participants • Challenging (and costly) for all participants to formulate their bid,

	• Market efficiency through auctions • Equal opportunity for participants who choose to participate • Simple to convey, once established, may be reasonably simple to operate	particularly for smaller water holders. • Potential requirement for a change in legislation, and would involve a change in management practice. • Would require significant changes to existing practices and potentially new systems.

Aside from the increased costs borne by successful participants, a key concern for any auction mechanism is how the revenue will be allocated. WaterNSW may require some proportion of the proceeds to help recover the costs of establishing, operating and maintaining the new arrangements. However, stakeholder consultation revealed that, regardless of auction type, many participants believed that auction fairness largely depended on revenue distribution and favoured using the proceeds to lower customer bills rather than having them captured by a government agency.[7]

A blind auction could operate relatively simply:

- Participants submit a bid within a designated window, as is the current practice. Each bid would detail the donor account, destination account, preferred volume, minimum volume and price per ML they are willing to pay to move that water through the Murrumbidgee IVT.
- Trade applications would then be ordered in descending order of the bids (price per ML).
- Trade applications would then be processed in this order. If the remaining IVT opportunity volume is below the minimum stated in the application, the opportunity would proceed to the next application in line.
- Successful applications would be invoiced for their bid, which is processed upon payment of all fees.

Successful applicants must pay the full cost of their submitted bid upon acceptance. Accordingly, trade applications should be accompanied by an approved payment method. To ensure transparency and informed participation, application forms should require both the bid price (in $/ML) and the total bid value, calculated by multiplying the bid price by the nominated trade volume. This would ensure participants are fully aware of the maximum financial obligation associated with their application.

As an alternative, the auction could be implemented using a second-price format, in which successful participants pay the price of the marginal (final) accepted bid rather than their own submitted bid. For instance, in the example below, Farmers A, B and C are all successful, but rather than paying their individual offer price, they all pay the lowest accepted price. In this example, that would mean Farmer A and B pay less than their offer price.

[7] https://www.waternsw.com.au/documents/publications/customer-services/guides/What-we-heard-IVT.pdf

IVT OPPORTUNITY = 300 ML		
	Offer volume (ML)	Offer price ($/ML)
Farmer A	100	$75
Farmer B	80	$72
Farmer C	120	$67
Farmer D	300	$40
Farmer E	280	$39

Figure 3 Second price format example

While this approach may encourage more aggressive or truthful bidding, it would alter bidding strategies and could affect overall auction revenue.

Additional effort will likely be required in how the auction results are publicised, to ensure confidence and transparency in the process. This will be especially important when a bid is unsuccessful because the minimum volume exceeds the available volume.

3.4 Option 4 — Proportional Application Volume

Under Option 4, where an IVT opening event is 'oversubscribed' (where the total volume of water that has been applied to trade exceeds the total IVT opportunity volume), the available IVT trade volume would be shared equally among valid applications on a pro-rata basis. The share would be calculated based on the total IVT opportunity volume divided by the total volume that is applied for e.g., the sum of all IVT application volumes. For example, if the sum of all IVT application volumes for a specified opening was 12.5 GL for a total IVT opportunity of 10 GL, then eligible applications could be granted 80% of their trade application(s) volume.

This option was proposed by stakeholders as part of the Stage 1 feedback, to address some equity concerns with randomisation (the chance to consistently miss out by chance) and auctions (potentially favouring large or wealthy participants).[8]

Based on the evaluation of principles in the evaluation table for **Option 4** in Section 4 (Table 9), there remain concerns about how practical and costly this option would be for WaterNSW to establish, operate and maintain. Table 4 presents the pros and cons.

Table 4 Option 4 Pros and cons

Overal assessment	Pros	Cons
Proportional Application Volume	• Distributes available IVT capacity across all valid	• Introduces additional complexity to the assessment and processing

[8] https://engage.vic.gov.au/download/document/42728, p. 17.

	applications when demand exceeds supply, supporting more equitable access to trade opportunities. • Limits the extent to which individual applications can secure a disproportionate share of available IVT capacity in contested openings.	of IVT applications during opening events. • Reduces the speed with which available IVT capacity can be allocated in time-critical trade openings. • Presents practical implementation challenges within existing operational and administrative arrangements, which is an important consideration for WaterNSW (resource-constrained). • Has a higher potential to be 'gamed' if appropriate controls are not implemented (the total of multiple applications must not exceed the volume available on the applicant's account)

In addition to applying a pro-rata assignment, the following refinements were considered as options to further improve the assessment rating for this option:

Timing of trade openings: As trade opportunities are typically fulfilled within a matter of seconds, this refinement refers only to when the trade window opens. Under current arrangements, WaterNSW announces IVT openings at 9:00 am, with applications accepted from 10:00 am on the same day. Adjusting this one-hour interval alone is unlikely to materially affect outcomes. In contrast, introducing a pragmatic delay between the IVT opening announcement and the start of application lodgement—such as commencing applications on the following business day—would materially improve the fairness of access by allowing market participants time to become aware of the opening and prepare applications, without affecting overall trading volume.

Duration of trade openings: The duration of the trade application window also influences equity of access, as it determines the period during which market participants can submit applications, which can be affected by personal and business circumstances. Extending the application window before any randomisation would give participants more time to prepare and submit applications, particularly when trade openings occur unexpectedly. While the option description does not specify a proposed duration for the application window, 4–7 hours may be sufficient to balance improved access with operational efficiency.

Transparency: Essential to the effectiveness and credibility of a pro rata approach. Market participants must clearly understand how the process operates, including when applications are eligible, how the submission window is defined, and how applications are prorated and processed. Clear, consistent communication of these rules in advance, supported by transparent reporting after each opening, will be critical to building confidence that the process is fair, rules-based and applied consistently. Ensuring participants understand and trust the pro rata process is therefore fundamental to its integrity and acceptance.

3.5 Option 5 — Proportional Entitlement

Under Option 5, only holders of Murrumbidgee entitlement that opt-in would be allocated a portion of the downstream IVT opportunity, based on their entitlement volume(s). Zero share WAL holders would be precluded from accessing these types of trade opportunities.

This option was proposed by stakeholders as part of the Stage 1 feedback.[9]

Based on the evaluation of principles in the evaluation table for **Option 5** in Section 4 (Table 10), this option has considerable concerns about compliance with the BPWTR. It did not pass the Framework's preliminary assessment gateway because it was deemed to contradict evaluation consideration 1a—*the operation of efficient water markets and trading opportunities*. Table 5 presents the pros and cons.

Table 5 Option 4 Pros and cons

Overal assessment	Pros	Cons
Proportional Entitlement	• N/A	• Likely significant inconsistencies with the BPWTR.

On balance, we do not recommend that this option be considered further in Stage 3 of the broader program. However, if so, we recommend legal review before any further policy assessment. If undertaken, legal review should focus on the following concerns:

- As an entitlement-based restriction (volumetric limit) on access to IVT opportunities, it would likely be considered a new, non-permissible trade barrier under Section 12.16 of the BPWTR.
- It is also likely to be inconsistent with Section 12.07 of the BPWTR, as it would effectively provide for access to IVT by Murrumbidgee entitlement holders only, which is likely to be considered discriminatory against persons who were not within this particular 'class of person'.

[9] https://engage.vic.gov.au/download/document/42728, p. 18.

4. Murrumbidgee options assessment — detailed assessments

Table 6 to Table 10 present the detailed findings of the assessment of each improvement option against the evaluation Framework principles and criteria.

4.1 Option 1 / Base Case — First-in, First Served

Table 6 Evaluation of Option 1 / Base Case — First-in, First Served (FiFs)

Principle	Evaluation considerations	Evaluation
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	This option: • is the existing base case for the Murrumbidgee IVT and facilitates efficient, low-cost trade while meeting third-party impact obligations, including for the environment. • successfully facilitates the operation of efficient water markets and trading opportunities within and between basin states. • minimises transaction costs by minimising the necessary mediation of trading opportunities. • enables the free development and mix of water products, thus supporting the evolution of trading options over time. • meets recognition and protection obligations towards relevant third parties, including the environment. Ranking = 

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	This option: • allows for efficient distribution of water between zones. • facilitates timely access to trade opportunities by minimising the trade delays required in other options. • provides allocative efficiency, allowing for interregional trade to move water to where it is most valuable. However, the favouring of better resourced participants means allocative efficiency is not necessarily maximised. • Moderately minimises transaction costs for participants; however, there are the indirect costs of the resources required to be successful. **Ranking =** 
Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	This option: • does not provide equal opportunities to trade for all market participants. Those with greater resources (knowledge and technology) can submit applications more quickly. Murrumbidgee IVT openings can be filled within seconds, particularly at the start of the water year. Therefore, a market participant must possess the knowledge and technology to prepare for the trade opening with an hour's notice and submit applications within seconds. • favours those with large volumes of tradable water on their licences, who usually have dedicated resources to water trading. These larger volumes can further accelerate the pace at which trade opportunities are fulfilled, perpetuating inequity of opportunity. • creates inequity of access **Ranking =** 
Transparency of information	9. Can the option be communicated/ explained in a way that a representative	This option:

	water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• is simple and easy to understand for all water market participants and is widely understood already amongst water market participants. • does not account for the methods that can be utilised to increase application speeds. These may not be widely understood, creating a disadvantage for participants with fewer resources. • has a short timeframe provided (1 hour) between the announcement of a trade opening and the opening of the trading period means clear communication is necessary to ensure all water market participants are aware of the trade opening. Whilst this is posted on the WaterNSW website and SMS alerts are available to those who sign up, it does give better-resourced participants an advantage. • provides easy and timely access to information about application status and/or outcome. Participants are informed of the final outcome within 7 days of trade closure, and of their position in the application queue in real time. **Ranking =** 
Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition?	This option: • is the existing base case already in operation. • would not require further investment as the option is already operational. No change management impacts would need to be considered. • would not facilitate interstate trade due to the short timeframe within which trading opportunities are fulfilled • requires no changes to State or Federal legislation or regulatory frameworks are necessary. **Ranking =** 

	18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	
Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	This option: • is practical to operate and maintain. • is the existing option in use, it is practical to use, given that participants are already familiar with it. • Costs to operate and maintain would be minimal for management agencies. However, market participants may need to fund personal technological improvements to improve application speeds if they wish to remain competitive with better resourced participants. **Ranking =** 

4.2 Option 2 — Randomisation

Table 7 Evaluation of Option 2 — Randomisation

Principle	Evaluation considerations	Evaluation
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	This option: • complies with the water market and trading objectives set out in the *Water Act* 2007 and the BPWTR. • supports efficient water markets and trading; however, the administration of a randomisation is less efficient than the base case. • minimises transaction costs for water market participants, and the additional cost of administration is less than most other options. • supports water trade to enable the appropriate mix of water products. • operates within the operational rules, constraints and environmental obligations, including protection of third-party impacts Ranking = 
Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated?	This option: • supports the distribution of water by enabling the movement of water between water systems, theoretically, to its highest value use. • this option supports efficient water markets and trading; however, the administration of a randomisation is slightly less efficient than the base case.

	4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• means that trade opportunities might not be obtained by the end user in the destination zone; however, the additional on-trade (if necessary) has a relatively low impact on the allocative efficiency. • minimises transaction costs for participants, the cost of administering randomisation is likely to be low, transaction fees are only applicable to successful applications, and there are no additional costs required to submit an application. Ranking = 
Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	This option: • provides equal opportunity for all market participants, it is highly unlikely to favour any participant over another. • to some extent, removes the advantage of those with more resources and better technology access. This could be improved by delaying the processing of an opening until the day after the opportunity announcement; *see potential refinements in Section 3.2*. • has no barriers for any willing participant, which could encourage participation and increase the volume of applications (compared to the base case). • If the opportunity is for trade from the Murrumbidgee to the Murray, it would only be available to participants who hold a Murrumbidgee water account. If the opportunity is for trade from the Murray to the Murrumbidgee, participants in both States are bound by the same terms and conditions, thereby supporting cross-border coordination. • may encourage participants to issue multiple applications that in aggregate exceed the volume of water in their account – unless specific control measures are put in place. Ranking = 
Transparency of information	9. Can the option be communicated/ explained in a way that a representative	This option:

	water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• could be easily communicated. Market participants are likely familiar with it, as it has previously been used for IVT openings in the sMDB. • reduces the complexity of decision making, thus meaning decisions are more likely to be more informed than some other options. • does not improve or impair the timeliness or ease of accessing information about trade opportunities compared to the base case. • is likely to have a slight delay when compared to the base case; however, post-trade information is likely to be easily accessible and timely. Ranking = 
Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	This option: • is likely to be able to be established quickly; this methodology has been used previously for IVT openings. • is likely to have some establishment costs, however the process is already in operation for July 1 Barmah Choke openings. • will require some change management to incorporate the option into Murrumbidgee IVT openings. • will allow market participants to interact with IVT opportunities just as they do now. • has no additional costs for market participants compared with the current system. • does not require legislative change; however, additional transparency may be required to ensure confidence in the randomisation process. Ranking = 

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	This option: • is practical to operate and maintain; however, it should be noted that there could be an increase in the volume of applications for individual openings. • should be relatively cost-efficient to operate and maintain; however, with increased volume of applications, WaterNSW could investigate system improvements to further reduce the burden on the trade team. • is very easy and practical for market participants to engage with. Ranking = 

4.3 Option 3 — Blind Auction

Table 8 Evaluation of Option 3 — Auction

Principle	Evaluation considerations	Evaluation
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	This option: • complies with the water market and trading objectives of the BPWTR. • supports efficient water markets and trading; however, the administration of a blind auction is less efficient than the base case. • will mean that transaction costs are likely to be significantly higher than the base case for successful participants. There are likely to be additional 'hidden' costs associated with informing all participants of any individual bid. • is neutral (compared to the base case) in enabling the appropriate mix of water products. • operates within the operational rules, constraints and environmental obligations, including protection of third-party impacts Ranking = 
Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated?	This option: • supports the distribution of water to participants who are willing to pay the highest price. Therefore, theoretically, water is allocated to the highest-value use. • may be less timely than the base case due to the requisite administration effort. However, this is likely to be marginal.

	4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	• allocates water to participants who value it most highly; therefore, it is highly allocatively efficient. • is more costly for all participants as they now need to pay an additional fee to access a trade opportunity. likely to be more costly for participants than the base case due to the additional research and strategy required to formulate a bid. Ranking = 
Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	This option: • provides all market participants with the opportunity to access a trade opportunity. • favours larger water holders who are more likely to be willing and have the ability to absorb the additional cost and be willing to research and strategise an informed bid to increase their chances of success. Smaller water holders are less likely to have the resources to prepare well-informed bids, thereby reducing their chances of success or increasing the risk of overpaying; this may also discourage participation by this cohort. • If the opportunity is for trade from the Murrumbidgee to the Murray, it would only be available to participants who hold a Murrumbidgee water account. If the opportunity is for trade from the Murray to the Murrumbidgee, participants in both States are bound by the same terms and conditions, thereby supporting cross-border coordination. Ranking = 
Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand?	This option: • would be reasonably simple to communicate to participants. However, communicating the reasoning behind the auction and identifying where the revenue goes may be more difficult.

	10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	• would encourage informed decision making as there is a financial cost to bear. • may decrease the ease and timeliness of opportunities compared to the base case. Additional administration will likely be required compared with the base case. • would likely be less timely than the base case; however, this is likely to be marginal. Ranking = 
Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	This option: • would be relatively simple to establish, and not too dissimilar to the base case mechanics. • is likely to result in higher upfront costs; setting up a system to receive and process blind auction bids. • would require administrative changes, including ensuring appropriate transparency when reporting auction results. • would significantly affect market participants through the additional costs involved in participating in an auction of a trade opportunity. • could result in higher fees, as administrative costs are passed onto participants (or paid by auction revenues), which will increase the financial cost as well as the cost of administration. • supports interstate trade: If the opportunity is for trade from the Murrumbidgee to the Murray, it would only be available to participants who hold a Murrumbidgee water account. If the opportunity is for trade from the Murray to the Murrumbidgee, participants in both States are bound by the same terms and conditions, thereby supporting cross-border coordination. • may require legislative change to specify that only IVT trade applications with supporting trade access (from the auction) can be approved. Ranking = 

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	This option: • would require some additional effort from WaterNSW, however, it is not too dissimilar from the base case. • if it is implemented at every opening, it is likely to be marginally more expensive to operate than the base case. • is reasonably practical, as most market participants will have experience in auctions in other sectors. • will involve additional costs for WaterNSW: including establishing, operating and maintaining auctions, although these costs will presumably be passed on to market participants and/or funded by auction revenues. • will result in significantly higher costs for market participants under this option compared to others. Ranking = 

4.4 Option 4 — Proportional Application Volume

Table 9 Evaluation of Option 4 — Proportional Application Volume

Principle	Evaluation considerations	Evaluation
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the Water Act 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	This option: • would facilitate IVT when an IVT opportunity arises, • is unlikely to materially affect transaction costs from the status quo, as market participants are already subject to the IVT application fee, and subsequent costs to trade water allocation on secondary markets from the destination valley are relatively low. • enables the free development and mix of water products, thus supporting the evolution of trading options over time, and • meets recognition and protection obligations towards relevant third parties, including the environment. NOTE: provided the pro-rata mechanism is applied to allocate a fixed, hydrologically constrained IVT opportunity volume only, and does not restrict who can trade or the total volume they may apply for, it would not constitute a new barrier to trade under the BPWTR. Ranking = 
Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated?	This option: • does support the distribution of water to market participants. • will inherently reduce all requests, sometimes below practical-use thresholds. – Note: this concern may be somewhat ameliorated if the trade application form included an option for applicants to nominate their desired trade volume, as well as the minimum trade volume they are willing to accept (as identified in

	4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	the option description). In this way, trade applications would only be processed in accordance with the applicants' needs. • may result in some delays in access to trade opportunities before applicants are notified of the outcome of their application, as all trade applications would need to be processed to determine the total trade application volume against the IVT trade opportunity volume, and to calculate proportional volumes for all individual trade applications and then process the applications. – The extra administrative burden would need to be able to be resourced by WaterNSW and would increase with the total number of applications to be processed. It could also be increased if applicants are able to nominate the proportion of their application volume they are willing to accept — in this way, additional trade applications may be rejected once the proportional volumes are determined, if those proportional volumes are less than an applicant has signalled they are willing to accept; therefore new totals and proportions would need to be calculated — and this could repeat over multiple cycles. However, the delay is likely to be relatively minor if appropriately designed and therefore unlikely to discourage trade by market participants. • allocative efficiency could be supported if the trade application form included an option for applicants to nominate their desired trade volume, as well as the minimum trade volume they are willing to accept (refer above), which may not be preferred by applicants due to the uncertainty of outcome. Otherwise, this option is unlikely to maximise allocative efficiency, as it may preclude participants from trading to the extent they wish. • is unlikely to materially affect transaction costs for participants, who are already subject to the relevant IVT application fee; although depending on the complexity of processing, some fee increases may be required to offset the additional costs. Ranking = 
Equity of access	6. Does the option provide equal opportunities to access trade to all market	This option:

	participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	• does provide equal opportunities to access trade to all market participants, • does not present barriers for some market participants and not others, and • does provide equitable access to trade opportunities by all market participants that hold relevant tradeable water rights. Ranking =
Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	This option: • should be able to be communicated in a way that a representative water market participant can easily understand, especially if the communication is accompanied by one or more worked examples. • If communicated well, and if participants are enabled to assign their preferred trade volume as well as the minimum volume they are willing to accept, then this option could help support informed decision making • If communicated well, then this option should ensure that access to information about this approach is available in a timely manner. • Should allow the outcome to be communicated reasonably quickly. Ranking =

Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective? 17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	This option: • would take some time and effort for WaterNSW to establish, depending on the exact arrangements to be adopted, including in relation to necessary changes to trade application forms, website updates, the desired technology/approach to calculating apportionment volumes, and any additional administrative changes required to accurately determine valid trade application forms and process them. • would require additional resources for WaterNSW to establish, depending on the exact arrangements to be adopted (tbc, per previous point), • would include change management impacts that WaterNSW would need to consider for this transition (refer point 1) • would present minimal impacts or additional costs to water market participants, as the trade application process and costs would be the same. The only difference would be whether applicants are required to complete additional fields on their trade application form(s). • does provide equitable access to trade opportunities by all market participants that hold relevant tradeable water rights, and • would not require legislative changes. Ranking = 

Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain? 24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	• Refer commentary in the assessment of the previous principle, which highlights some considerations for WaterNSW relating to the exact arrangements to be adopted under this option and therefore how practical it would be for WaterNSW to operate and maintain. • The uncertainties present some concerns or risks to meeting criteria, which is reflected in the ranking for this principle. Ranking = 

4.5 Option 5 — Proportional Entitlement

Table 10 Evaluation of Option 5 — Proportional Entitlement

Principle	Evaluation considerations	Evaluation
Alignment to water market objectives	1. Does the option contradict any of the agreed Basin water market and trading objectives set out in clause 3 of Schedule 3 of the *Water Act* 2007? i.e., does the option: a. Facilitate the operation of efficient water markets and trading opportunities within and between Basin States? b. Minimise the transaction cost on water trades, c. Enable the appropriate mix of water products to develop, and support trading options to evolve over time, and d. Recognise and protect the needs of the environment, and e. Provide appropriate protection of third-party impacts?	This option does not pass the preliminary assessment, as it contradicts Evaluation Consideration *1a — the operation of efficient water markets and trading opportunities*. The rationale for this is as follows: • As an entitlement-based restriction (volumetric limit) on access to IVT opportunities, it would likely be considered a new, non-permissible trade barrier under the BPWTR (Chapter 12 - refer Section 12.16). • It is also likely to be inconsistent with Basin Plan Section 12.07 — '*A person may trade a water access right free of any restriction on the trade that relates to the person being, or not being, a member of a particular class of person*' — as the option effectively precludes trades by those who are *not* entitlement holders, which may therefore be considered discriminatory against persons who were not within this particular 'class of person'. Given the above: • the evaluation Framework states that, '*if the preliminary assessment finds that the option contravenes the agreed water market objectives, no further analysis of that option will be performed*'. Despite this, this option has been assessed against the other principles and evaluation criteria to provide guidance post further legal review. • we recommend legal review of this option ahead of any potential further policy assessment. Ranking = 

Efficient distribution of water	2. Does the option support the distribution of water to meet the needs of water market participants? 3. Is timely access to trade opportunities facilitated? 4. Does the option maximise allocative efficiency between water users? 5. How effectively does the option minimise transaction costs for market participants?	This option: – does support the distribution of water to meet the needs of water market participants. – The extra administrative burden would need to be able to be resourced by WaterNSW and would likely increase with the total number of applications to be processed. This is likely to result in a significant delay in trade processing. • allocative efficiency may not be achieved through this option. • is likely to materially affect transaction costs for all participants, who are already subject to the relevant IVT application fee. Ranking = 
Equity of access	6. Does the option provide equal opportunities to access trade to all market participants? The assessment will include identifying whether any types of market participants are more likely to be successful in accessing trade opportunities. 7. Are there any barriers in place for some market participants and not others? 8. If applicable (e.g. Barmah), is access to trade opportunity provided equitably to market participants in Victoria and NSW?	This option: • does not provide equal opportunities to access trade to all market participants, • does present barriers for some market participants and not others, and • does not provide equitable access to trade opportunities by all market participants that hold relevant tradeable water rights. Ranking = 

Transparency of information	9. Can the option be communicated/ explained in a way that a representative water market participant can easily understand? 10. Will the option support informed decision making by all water market participants? 11. Does the option promote easy and timely access to information about available trade opportunities? 12. Does the option promote easy and timely access to information about the application status and/or outcome?	This option: • is likely to be difficult to communicate in a way that a representative water market participant can easily understand i.e. Why must I opt-in? Which entitlements are eligible to trade under this option? Why are other entitlements/water products not eligible)? Why can't I transfer allocations that I own without entitlement? Is it available to only NSW Murray entitlement holders when the IVT is closed for trade into the Murrumbidgee? • this option is unlikely to support informed decision making • May allow the outcome to be communicated reasonably quickly, however the mechanics of this option are too poorly defined currently. Ranking = 
Practical to establish	13. How long is the option likely to take to establish? 14. What are the estimated costs of establishing the option? 15. What are the change management impacts that agencies would need to consider for this transition? 16. How would water market participants be impacted from a change management perspective?	This option: • Is not practical to establish because it would breach BPWTR. • would likely take significant time, effort and resourcing for WaterNSW to establish, depending on the exact arrangements to be adopted, including in relation to the opt-in process and requirements, necessary changes to trade application forms, website updates, the desired technology/approach to calculating apportionment volumes, and any additional administrative changes required to accurately determine valid trade application forms and process them. • would include change management impacts that WaterNSW would need to consider for this transition (refer point 1) • would present some impacts or additional costs to water market participants that miss out (do not hold relevant entitlements) as well as to those that are required to opt-in and to understand any new processes an requirements.

	17. What are the estimated costs to water market participants to transition? 18. Does the option support practical alignment and coordination of establishment across state borders? 19. Would establishment of the option require changes to State or Federal legislation or regulatory frameworks?	• does not provide equitable access to trade opportunities by all market participants that hold relevant tradeable water rights, and • would require legislative changes. Ranking = 
Practical to operate and maintain	20. How practical is the option for agencies to operate and maintain? (for example: technical and business systems, resource capability and availability) 21. How much will it cost to operate and maintain? 22. How practical is the option for water market participants to use? 23. How much will it cost water management agencies and water market participants to operate and maintain?	This option: • is not practical to operate or maintain as it would breach BPWTR. • Is not practical from a technical, business system and resource capacity perspective. • . • This would necessitate the creation of a system where access to trade capacity can be traded, which is also impractical. • Is likely to be considerably more costly for agencies and participants. Ranking = 

24. If applicable, describe whether the option will allow for practical alignment and coordination of operations across state borders?	

5. Key findings and outcome

5.1 Key findings

Table 11 provides a visual summary of the overall assessment findings for each option against the rating scale:

Following Table 11 is a text summary of the key findings for each option and the refinements that were considered in this assessment.

Table 11 Overall assessment findings

Criteria	First-in, First-served	Randomisation	Auction	Proportional Application Volume	Proportional Entitlement
Alignment to water market objectives					
Efficient distribution of water					
Equity of access					
Transparency of information					
Practical to establish					
Practical to operate and maintain					

5.1.1 Option 1 — First-in, First Served (Base Case)

The current first-in, first-served approach is relatively efficient and simple for WaterNSW to administer. It aligns with core water market objectives, with no additional establishment or operational costs. However, the assessment and prior stakeholder feedback confirm persistent equity concerns under high-demand conditions, as access to available IVT capacity is disproportionately captured by well-resourced market

participants and intermediaries who can submit applications most quickly. Indeed, equity concerns about the first-in, first served approach are a key reason for the broader review of IVT improvement options in the sMDB.[10]

While this option supports rapid allocation, outcomes may not reflect true allocative efficiency. On this basis, the base case is considered to have material limitations.

5.1.2 Option 2 — Randomisation

Randomisation performs strongly against equity, efficiency, transparency and market integrity criteria by removing speed-based advantages inherent in the first in, first served approach. When combined with a pragmatic delay in the time between the IVT opening and the commencement of application lodgement (around one business day), and a clearly defined application window (approximately 4–7 hours), this option materially improves equity of access while maintaining efficient allocation of available IVT capacity. Clear and consistent communication of the randomisation process, including eligibility, timing and processing rules, would be critical to ensure market participants understand the approach and have confidence in its integrity.

The assessment indicates that randomising applications received within the defined submission window can be implemented with relatively minor changes to existing arrangements. **On balance, this option is considered to represent a proportionate and defensible improvement to current practice and is the most suitable option in the short to medium term based on analysis undertaken**, subject to final refinement of application timing and window duration.

5.1.3 Option 3 — Blind Auction

A blind auction has the potential to reveal willingness to pay and improve allocative efficiency; however, the assessment identified significant practical and policy risks. These include increased transaction costs, potential concentration of market power, and concerns regarding transparency, accessibility, and participant confidence, particularly for smaller or less sophisticated traders.

Implementation complexity and the risk of unintended market distortions outweigh the potential efficiency benefits in the current Murrumbidgee IVT context. On this basis, this approach is considered to have material limitations.

5.1.4 Option 4 — Proportional Application Volume

Proportional application volume is intended to improve equity by distributing available IVT capacity across all valid applications when demand exceeds supply, rather than allocating capacity sequentially. However, the assessment found that this approach performs less strongly against efficiency and practicality criteria in the Murrumbidgee IVT context. It would likely add complexity to the application, assessment, and processing processes for Water NSW (resource-constrained) and market participants, and reduce the speed with which available IVT capacity can be allocated.

On balance, while the option offers some equity benefits relative to the base case, it does not represent a sufficiently efficient or practical improvement. It may be a disproportionate response to the identified equity

[10] https://engage.vic.gov.au/download/document/42728

issues, potentially imposing additional unintended consequences. On this basis, this approach is considered to have material limitations.

5.1.5 Option 5 — Proportional Entitlement

Option 5 did not pass the preliminary assessment gateway due to likely legal inconsistencies with the BPWTR. This is because, as a proposed entitlement-based volumetric limit on access to Murrumbidgee IVT opportunities, it is likely to constitute a new, non-permissible trade barrier under the BPWTR (Section 12.16). It may also be inconsistent with BPWTR Section 12.07, which requires that water access rights be tradeable without restrictions based on a person's status or class, as such a restriction would effectively exclude non-entitlement holders from participating in these IVT opportunities. On this basis, this option is not recommended for further consideration or analysis in Stage 3

5.2 Outcome

This paper identified a suitable improvement option for managing Murrumbidgee IVT:

On balance, Option 2 (Randomisation) is considered the most suitable improvement option in the short to medium term based on analysis undertaken. The fairness of a transparently specified application window, combined with the random processing of applications submitted within that window, provides a proportionate and defensible improvement to current arrangements.

In addition, this assessment identified three other refinements for Option 2, to enhance the administration of Murrumbidgee IVT that deserve further consideration. These include:

- Adjusting the timing of the commencement of the trade opening window e.g., the trade application window could commence on the business day(s) *after* the volumetric trigger is met, rather than at 10am on the *same* day that IVT opens per current arrangements. This would allow time for market participants to *i*) know or find out that trade has opened and *ii*) prepare their trade applications for submission.
- Adjusting (increasing) the duration of the trade opening window ahead of randomisation, as the longer the duration, the more opportunity market participants will have to prepare and submit their applications. While the option did not nominate a proposed duration, around 4-7 hours may be appropriate.
- To ensure integrity and stakeholder confidence, WaterNSW should also clearly communicate how any new randomisation process for Murrumbidgee IVT will operate, including eligibility, timing and processing rules, and provide transparent reporting after each opening to support understanding, trust and acceptance of the approach.

Notably, implementing Option 2 alongside the proposed refinements, while maintaining the existing volumetric trigger limits for opening Murrumbidgee IVT (15 GL and 85 GL), would be relatively straightforward for WaterNSW to implement, operate and maintain, as it would require minimal changes to current policy and operational arrangements. Moreover, they align with prior stakeholder feedback on Murrumbidgee IVT improvement options.[11]

[11] WaterNSW (2021). Review of the Murrumbidgee inter-valley transfer application and assessment approach: Issues and Options Paper for public consultation. 12 pp.