Managing groundwater extraction to limits - Presentation 3e

Exploring options in the Upper Namoi Zone 3 Mooki Valley (Breeza to Gunnedah) groundwater source

January 2021

We seek your input

The department must manage groundwater extraction to extraction limits defined in water sharing plans.

There are two methods available to reduce access if extraction by all water users exceeds the limit. These methods can be used separately or in combination.

We seek your comment on the method or combination of methods that best suits your area.

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Presentation content

Presentation 1: Understanding extraction limits

Presentation 2e: Extraction patterns in the Upper Namoi Zone 3 groundwater source

Presentation 3e: Exploring options in the Upper Namoi Zone 3 groundwater source

- **Current approach**
- **Future approach**
- **Options**
- **Where to from here…….**

Current approach

Aim	How	How quickly
• If extraction limits are exceeded then return average annual groundwater extraction to the limits	• Reduce the **volume going into accounts** by announcing an available water determination less than 1ML/share	• Year 1 – return extraction back to compliance trigger • Year 2 - return extraction back to extraction limit • Year 3 – only if year 1 required available water determination less than 0.5 ML/unit share, only reduce to 0.5 ML/unit share in year 1 and extend time to return extractions back to limits to 3 years.

Note: For the Upper Namoi Zone 3: Extraction limit volume = 17,499 ML/yr and Compliance trigger volume = 17,499 + 5% = 18,374 ML/yr

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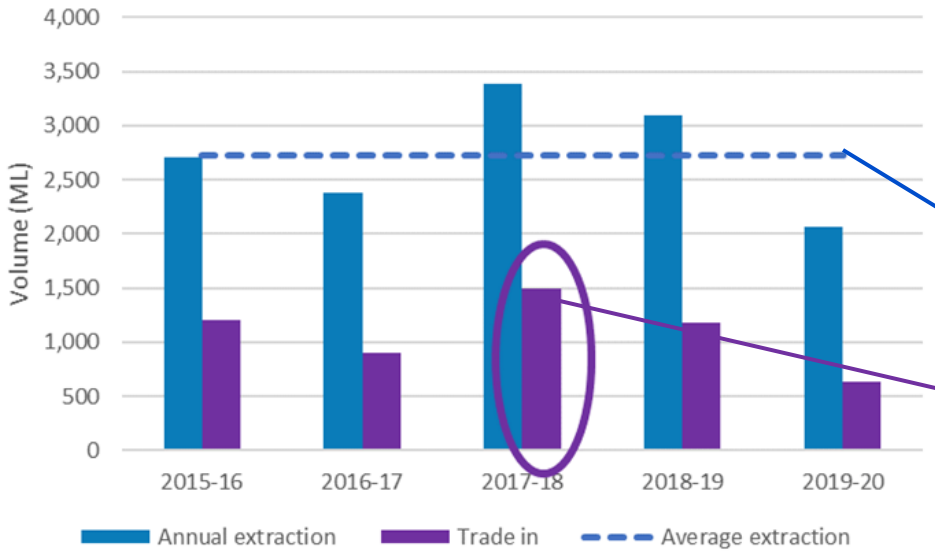

For each licence we assume:

- Likely extraction = average extraction over previous 5 years
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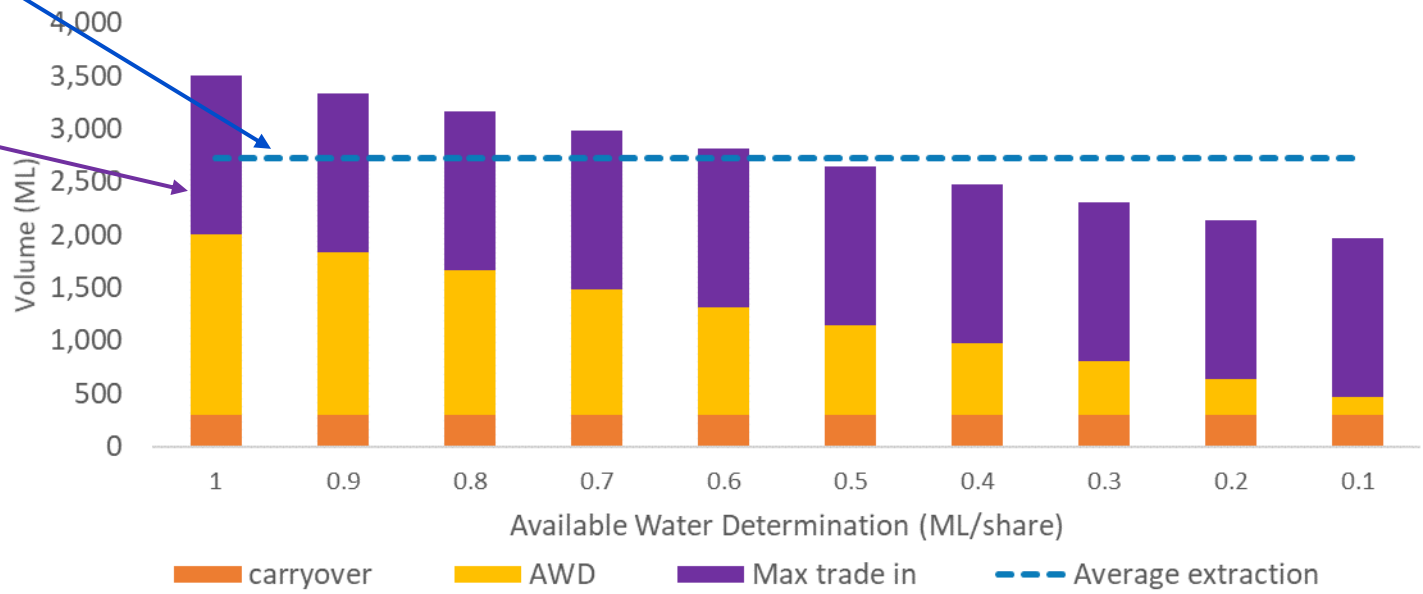

Example:
Access licence with 1,702 shares
Average usage = 2,750 ML/yr
Maximum trade in = 1,500 ML

We use the result for each licence to then run scenarios to determine what available water determination will control extractions to the limit.

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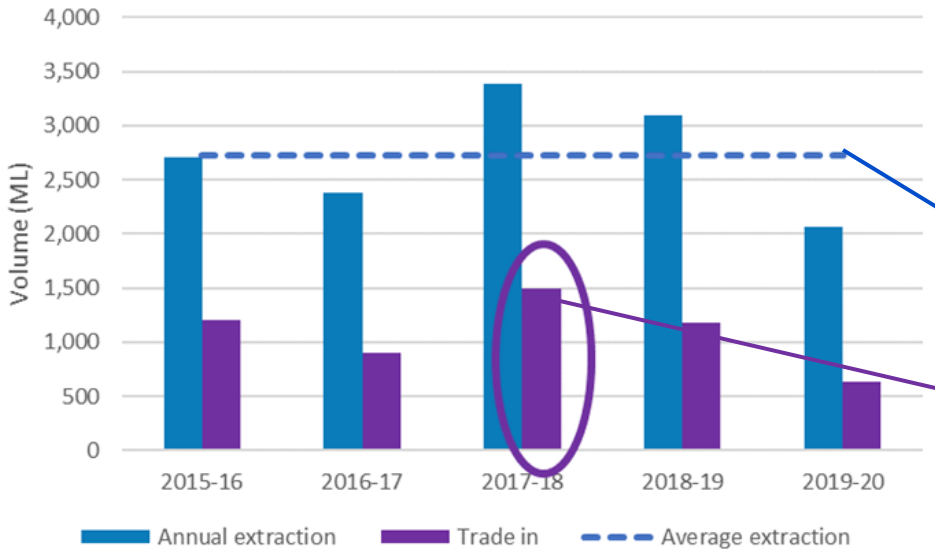

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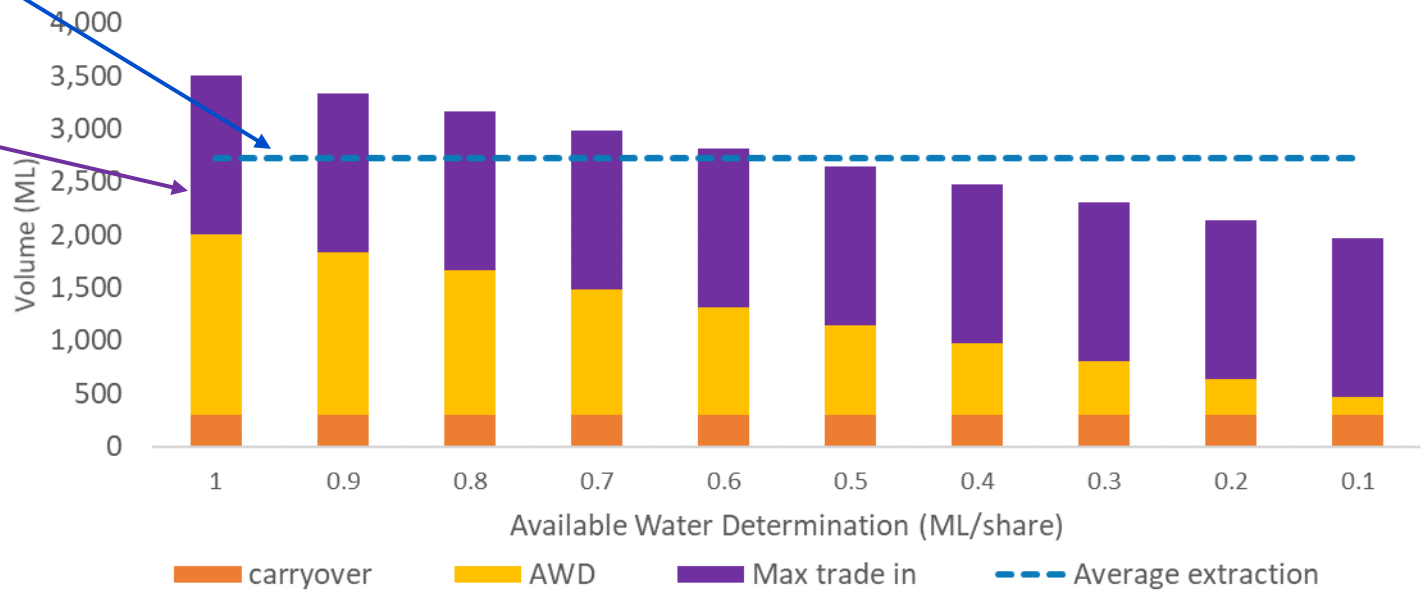

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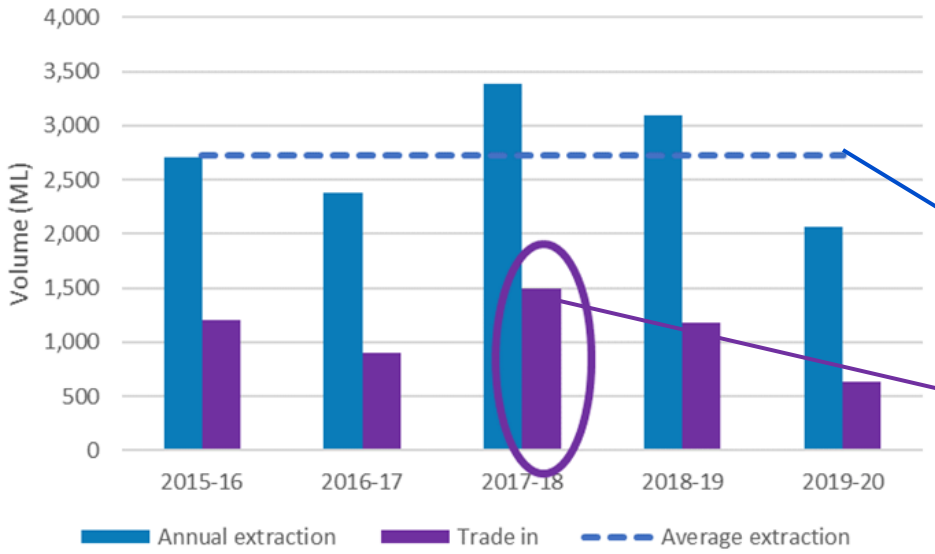

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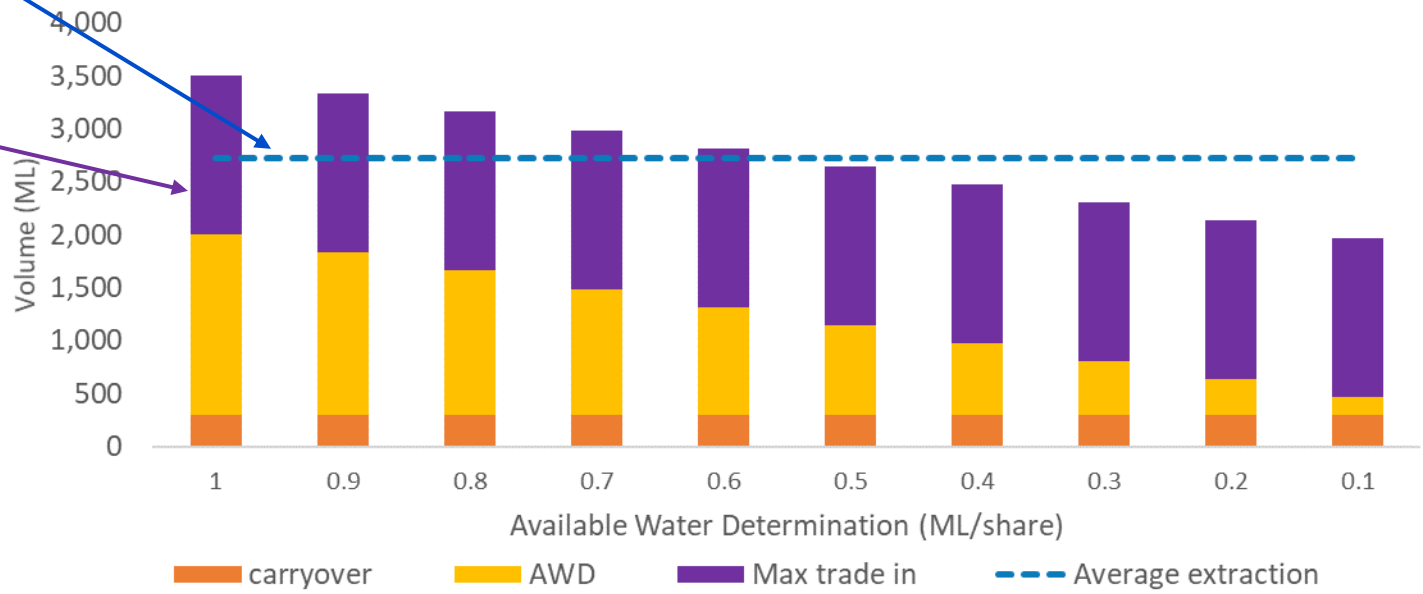

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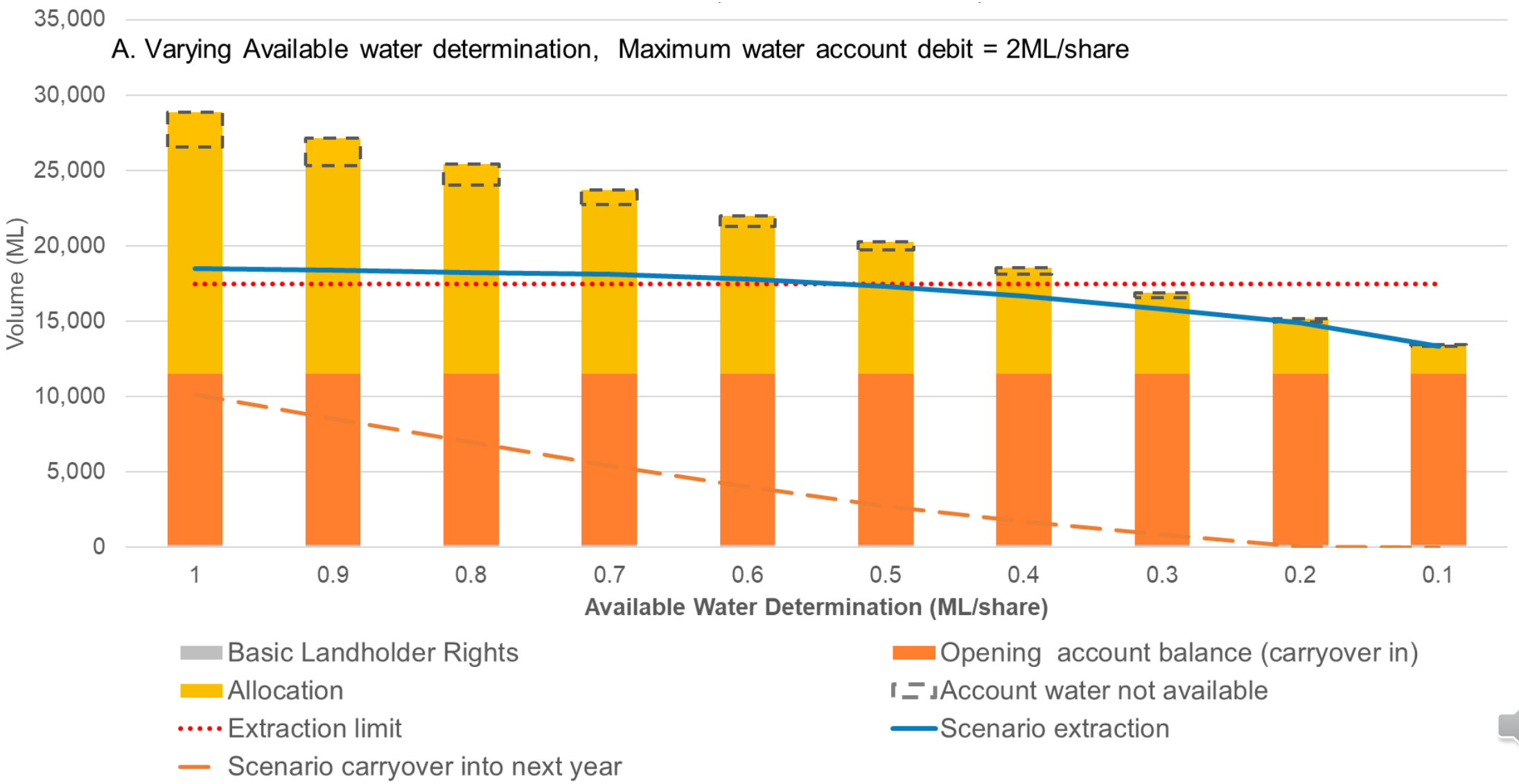

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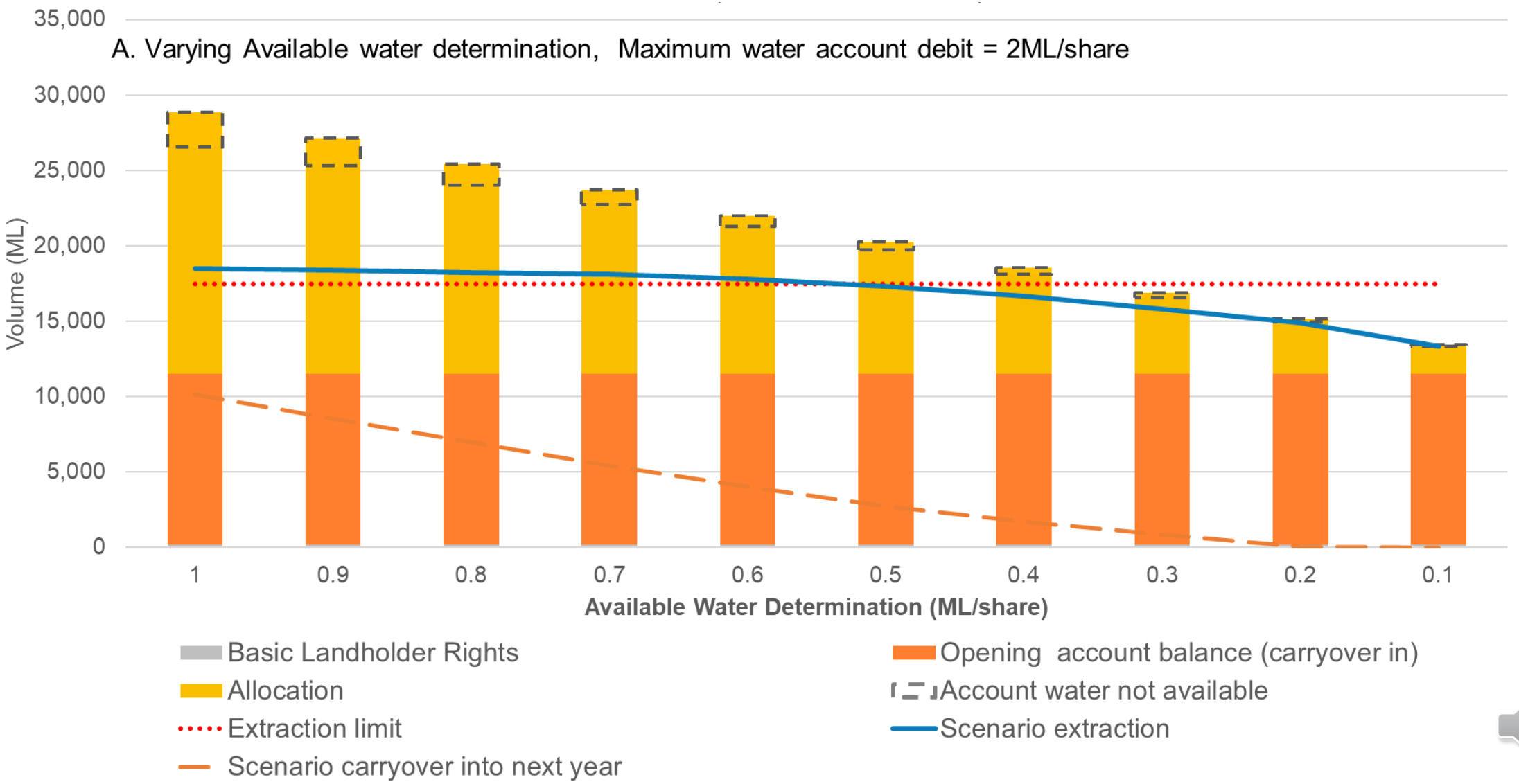

Current approach

2016/17 to 2019/2020 years:

- Available water determinations were not reduced as the assessment of metering data available at the time of making an available water determination announcement on 1 July in 2017, 2018 and 2019 indicated that there was a low risk that average extraction would exceed compliance triggers.
- In addition in 2016 the department initiated a review of the intent and appropriateness of rules for assessing compliance with the limits for inland groundwater sources. Compliance triggers were set to detect any growth in extraction but permit short term seasonal variations. This review was completed in June 2020 and changes were made to rules for some groundwater sources including the Upper Namoi Groundwater Sources. For example extraction is now averaged over 5 years instead of 3 years.

2020/21 year:

- An available water determination of 0.88 ML/share was announced, which is the level that is modelled to result in the desired reduction in extraction to bring it back within limits.

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Future approach

Aim

- If extraction limits are exceeded then return average annual groundwater extraction to the limits

How

- Reduce **volume going into accounts** by announcing an available water determination of less than 1 ML/unit share

  AND/OR

- Reduce **volume debited from accounts** by reducing the maximum water account debit

How quickly

- Full return in Year 1

  OR

- Over maximum 3 years

e.g. In Year 1 – reduce to compliance trigger and then in Year 2 reduce to the extraction limit OR have criteria for maximum step in Year 1 with full return no later than year 3.

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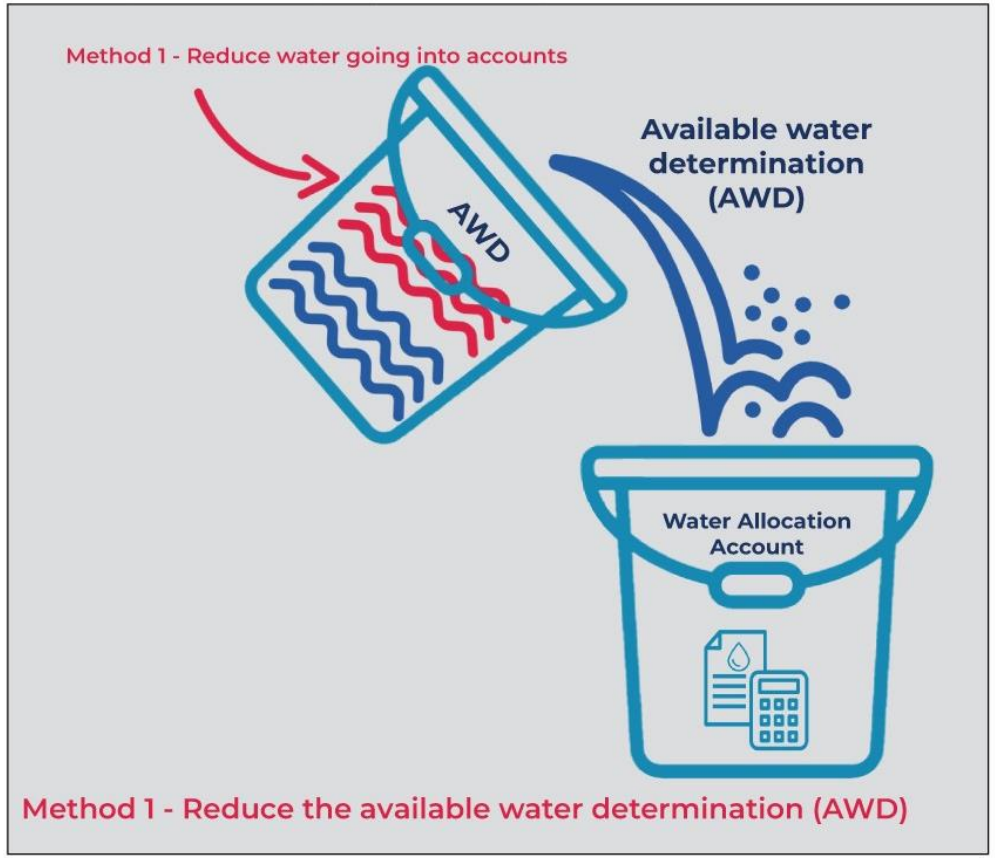
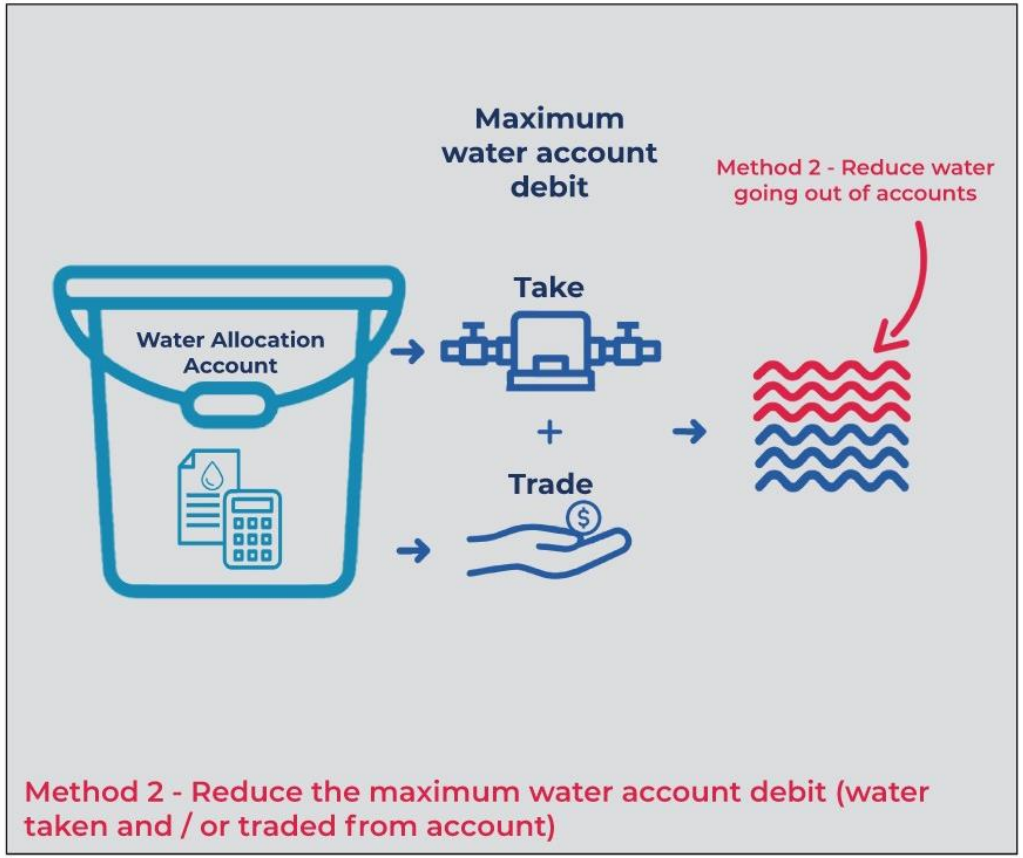
Future approach – the methods



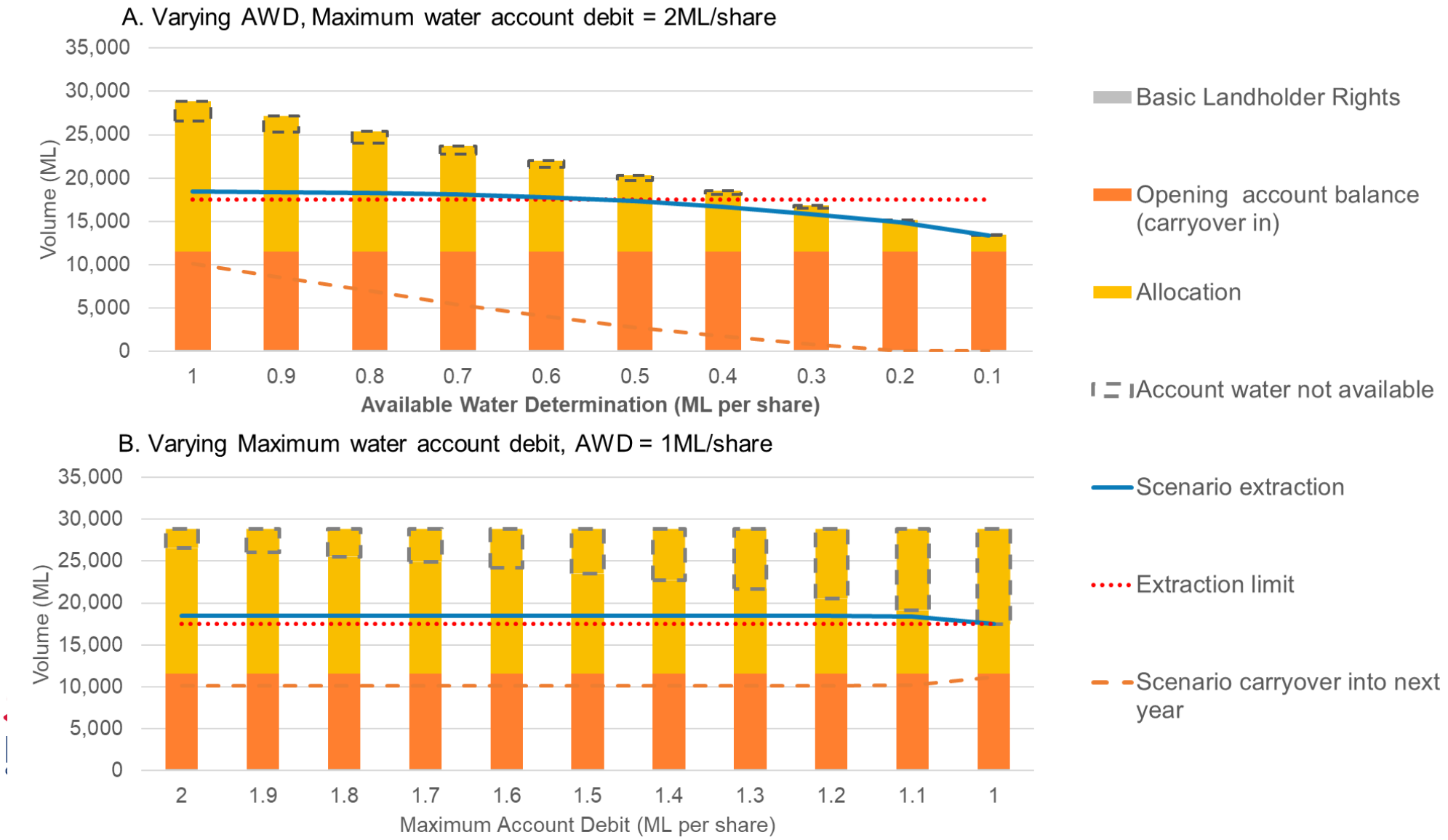


The **maximum water account debit** in the Upper Namoi Zone 3 groundwater source is 2ML/share plus any water allocations assigned (71T) to the account or recredited to the account in that water year.

Future approach - options

	Option A Reduce water into accounts only	Option B Reduce water out of accounts only	Option C Combination of A and B	Option D Set total water to be taken at extraction limit
Available Water Determination	Reduce	Do not reduce	Reduce – based on set of principles or formulas	Reduce - so allocate the difference between the limit and carryover
Maximum water account debit	No change	Reduce	Reduce – based on set of principles or formulas	No change - unless carryover exceeds limit then reduce to extent necessary
Assumptions	Individual licence holders extraction = past 5 year average Individual licence holders trade in = maximum in past 5 years			No assumptions on individual extraction or trade

Options A and B



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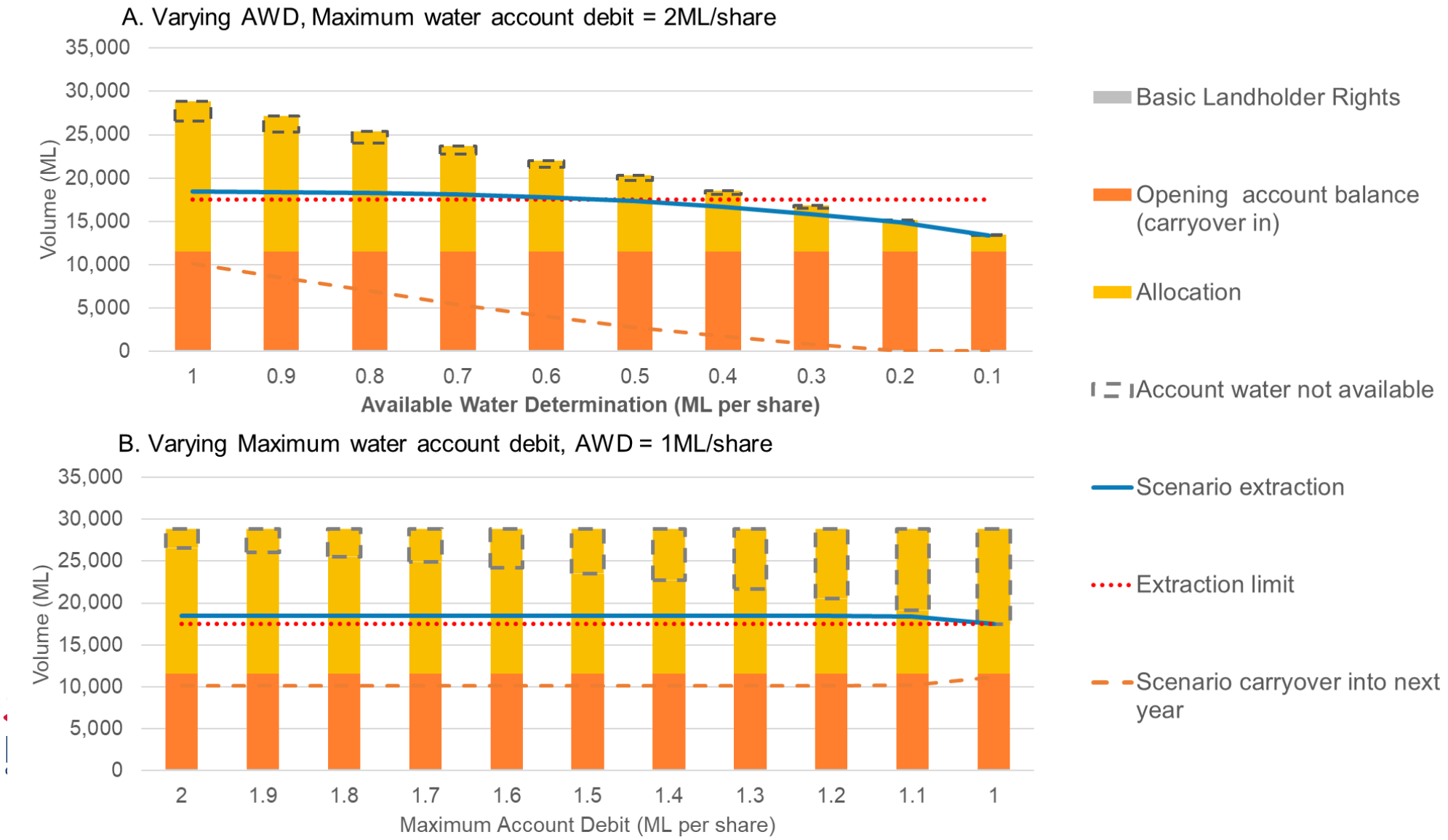

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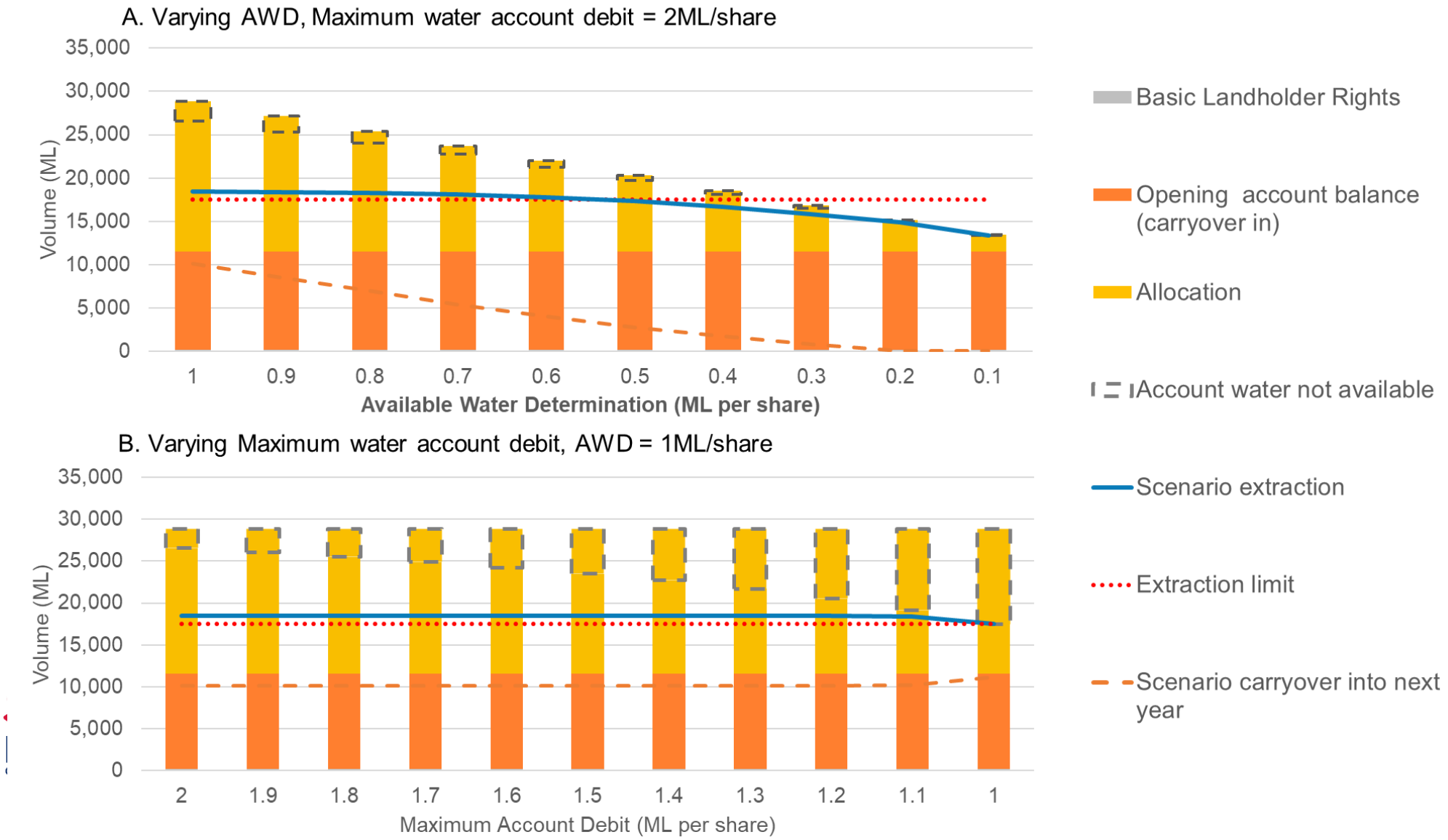

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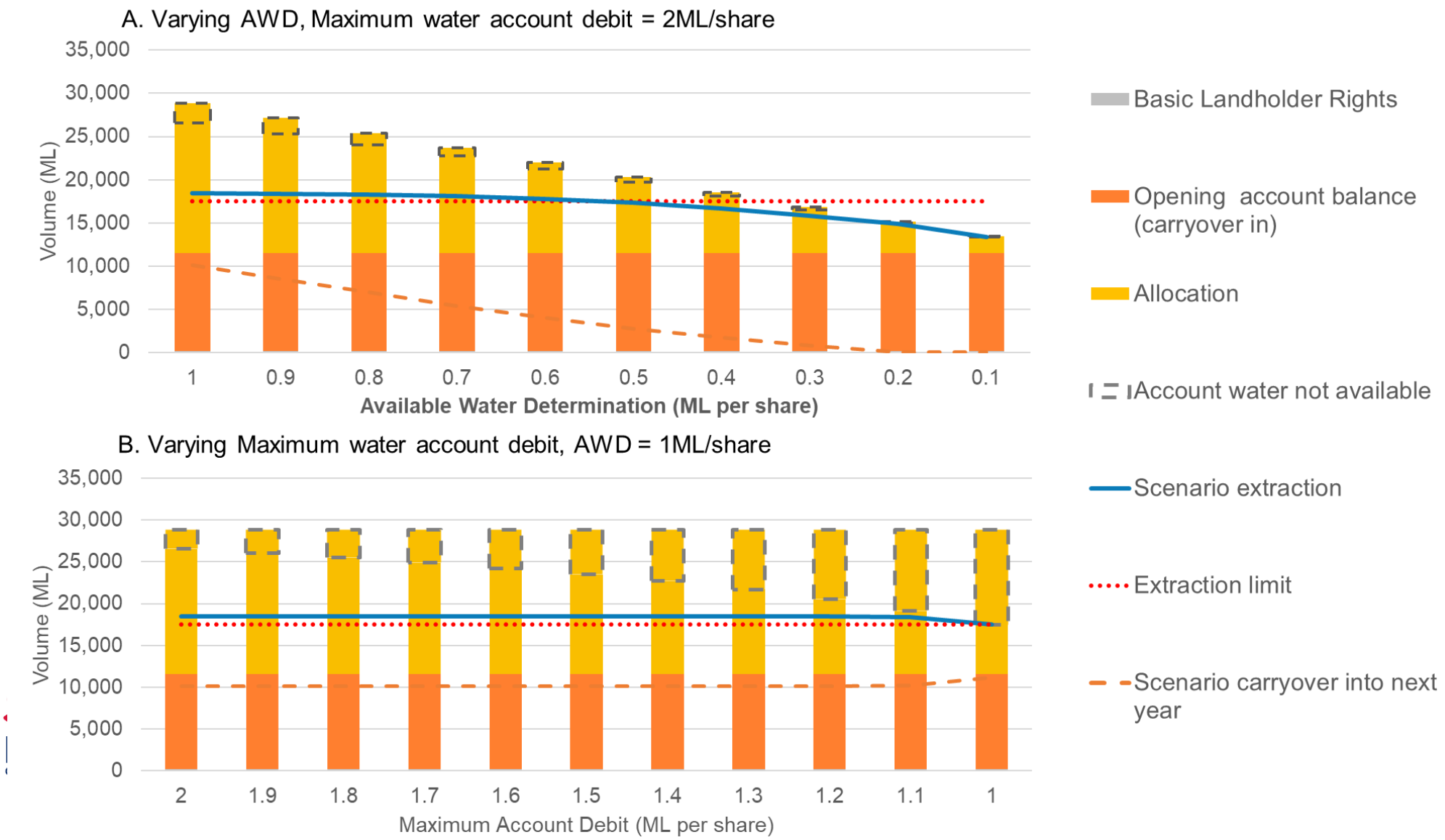

Option C – combination of methods

Estimated extraction as % of plan extraction limit

Maximum water account debit	Available Water Determination									
	1	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
2	106%	105%	104%	103%	102%	99%	95%	90%	85%	76%
1.9	106%	105%	104%	103%	102%	99%	95%	90%	85%	76%
1.8	106%	105%	104%	103%	102%	99%	95%	90%	84%	75%
1.7	106%	105%	104%	103%	102%	99%	95%	90%	83%	74%
1.6	106%	105%	104%	103%	102%	99%	95%	90%	82%	74%
1.5	106%	105%	104%	103%	102%	99%	95%	89%	81%	73%
1.4	106%	105%	104%	103%	102%	99%	93%	86%	79%	71%
1.3	106%	105%	104%	103%	102%	97%	90%	83%	76%	69%
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Option C – principles

C1	C2	C3
Reduce AWD to share of extraction limit (i.e. LTAAEL/entitlements) and then, if necessary reduce maximum water account debit EXAMPLE: For Upper Namoi Zone 3 this would be an AWD of 1ML/share.	Reduce maximum water account debit to share of extraction limit (i.e. LTAAEL/entitlements) and then, if necessary, reduce available water determination EXAMPLE: For Upper Namoi Zone 3 this would be a maximum water account debit of 1ML/share.	Set a specific criteria EXAMPLE: Reduce AWD to no less than 0.5ML/unit share (or other value) in Year 1, and Reduce Maximum water account debit to no less than 0.5 ML/unit share (or other value) in Year 1
Principle: Each licence receives a minimum allocation equal to: extraction limit/entitlements	Principle: Each licence can extract or trade out at least: extraction limit/entitlements.	Principle: Dependent on criteria set

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Option D

- Makes no assumptions about likely use or trade by individuals and instead sets total water that can be taken from accounts at the extraction limit
- First, reduces available water determinations so total volume in accounts does not exceed extraction limit (carryover + allocation + BLR = limit).
- Then, only reduces the maximum water account debit if volume of exceeds the extraction limit (carryover > limit).
- No potential to exceed limit in following year

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Comparing options

	Option A Reduce water into accounts by reducing the available water determination	Option B Reduce water out of accounts by reducing the maximum water account debit	Option C Reduce available water determination and the maximum water account debit	Option D Set total water that can be taken from accounts at extraction limit
Assumptions	Need to make assumptions (currently individual licence holders extraction = average past 5 years and individual licence holders trade in = maximum past 5 years) but could use different assumptions.			Makes no assumptions on extraction or trade by individuals
To note	Expected reduction in total extraction can be achieved as the AWD is reduced.	Expected reduction in total extraction is not achieved until a large reduction in MWAD. It then increases quickly with small increments of further reduction.	Expected reduction depends on the relative mix of approach.	Expected reduction in total extraction is rapidly achieved back to limits in one step.
Effects at groundwater source scale	**Reduces volume into accounts:** ➢ Less carryover to next water year compared to Options B and C ➢ Less likelihood/degree of exceeding limits in following years.	**Reduces volume out of accounts** ➢ More carryover to next water year than other options ➢ More likelihood/degree of exceeding limits in following years.	**Reduces volume into and out of accounts**: ➢ Effects depend on relative mix of approach.	**Reduces volume in accounts** ➢ Less carryover at end of year compared to other options ➢ Less likelihood of exceeding limits in the following years.
Effects at individual scale	**Licence holders will need to trade in if:** • **they have insufficient water in their account to meet their needs** • **they need more water than the maximum water account debit allows, even if there is water in their account**			
Actual impact will depend on individual's extraction patterns; level of carryover and success in the market	• Carryover influences size of impact on individual users (more carryover, less impact). • More active accounts likely to be impacted first (have less water available than their average use).	• No impact on accounts that are less than the announced maximum water account debit (except for potential loss in trade out). • Most impact on more active accounts using more than the announced maximum water account debit.	• Effect depends on relative mix of approaches.	• Carryover influences size of impact on individual users (more carryover, less impact). • More active accounts likely to be impacted first (have less water available than their average use). • More accounts impacted compared to other options.

Note: These are modelled, not actual results. They are provided for comparative purpose only.

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Effects at groundwater source scale	**Reduces volume into accounts:** ➢ Less carryover to next water year compared to Options B and C ➢ Less likelihood/degree of exceeding limits in following years.	**Reduces volume out of accounts** ➢ More carryover to next water year than other options ➢ More likelihood/degree of exceeding limits in following years.	**Reduces volume into and out of accounts**: ➢ Effects depend on relative mix of approach.	**Reduces volume in accounts** ➢ Less carryover at end of year compared to other options ➢ Less likelihood of exceeding limits in the following years.
Effects at individual scale	**Licence holders will need to trade in if:** • **they have insufficient water in their account to meet their needs** • **they need more water than the maximum water account debit allows, even if there is water in their account**			
Actual impact will depend on individual's extraction patterns; level of carryover and success in the market	• Carryover influences size of impact on individual users (more carryover, less impact). • More active accounts likely to be impacted first (have less water available than their average use).	• No impact on accounts that are less than the announced maximum water account debit (except for potential loss in trade out). • Most impact on more active accounts using more than the announced maximum water account debit.	• Effect depends on relative mix of approaches.	• Carryover influences size of impact on individual users (more carryover, less impact). • More active accounts likely to be impacted first (have less water available than their average use). • More accounts impacted compared to other options.

Note: These are modelled, not actual results. They are provided for comparative purpose only.

Comparing options - example

	Option A Reduce water into accounts by reducing the available water determination	**Option B** Reduce water out of accounts by reducing the maximum water account debit	**Option C** Reduce available water determination and the maximum water account debit	**Option D** Set total water that can be taken from accounts at extraction limit
Comparison example	If we were to return extractions: • to the extraction limit (17,499ML) • within one water year • assuming carryover volumes as at 1 July 2020, and • based the assumptions that individual licence holders: Extract a volume = average past 5 years; Trade in a volume = maximum past 5 years; and all water available for purchase would be offered to the market; then……..			
Action required	**Available water determination -** 0.53ML/share.	**Maximum water account debit -** 1ML/share.	**Available water determination -** 0.70ML/share. **Maximum water account debit -** 1.1 ML/share.	**Available water determination -** 0.36ML/share.
Effects on accounts	• 6 accounts would have limited access compared to their average use and previous trade behaviour. • Carryover influences size of impact on individual users (more carryover, less impact).	• 6 accounts would have limited access compared to their average use. • 21 accounts that trade would have **potential** to be impacted because there is insufficient water available to meet the anticipated demand for trade. **Actual** impact would depend on success in a tight water market.	• 6 accounts would have limited access compared to their average use. • 22 would have **potential** to be impacted because there is insufficient water available to meet the anticipated demand for trade. **Actual** impact would depend on success in a tight water market.	• 13 accounts would have limited access compared to their average use and previous trade behaviour. • Carryover influences size of impact on individual users (more carryover, less impact). Scenario usage estimated at 16,348ML (including BLR)
Modelled Results for water market	Water available for purchase = 6,667ML Trade demand = 3,959ML More supply than demand in water market	Water available for purchase = 2,941ML Trade demand = 3,567ML More demand than supply in water market	Water available for purchase =3,139ML Trade demand = 3,662ML More demand than supply in water market	Water available for purchase =5,880ML Trade demand = 4,733ML More supply than demand in water market

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What is your preference?

Method

A. Available water determination only?

B. Maximum water account debit only?

C. Combination available water determination and maximum water account debit?

D. Set total water to be taken at extraction limit?

Assumptions / Principles

Continue with assumptions to predict future extraction?

Use different or additional assumptions around user and market behaviour to predict future extraction?

Make no assumptions about future use or trade as provided for in option D?

Licence holders allocated their 'share' of the extraction limit into their account?

Licence holders able to extract their 'share' of the extraction limit"?

Available water determinations should not drop below X before adjusting maximum water account debit?

Maximum water account debit should not drop below 1ML/share or other value before adjusting available water determinations?

Timing

Full return in Year 1 OR over maximum 3 years

- Return to the extraction limit in Year 1.
- Allow for adjustment -maximum 3 years to return to extraction limit, e.g.
  - Take action in year 1 to return to compliance trigger and action in year 2 to return to extraction limit
  - Take action over 3 years if available water determination in year 1 would be less than 0.5 ML/unit share

Default method and transition period

Default method

- If procedures not prepared and able to be implemented by 1 July 2021 and water sources exceed the extraction limits - current method of only reducing available water determination will apply.

Transition Period

- Is a transition period required to provide enough time for water users to prepare for the 2021-22 water year?
- E.g. continue current approach of only reducing available water determinations for 2021-22 if limits are exceeded, commence new procedures from 1 July 2022.

Where to from here

Consultation

Dec 2020 - Feb 2021

- Mail out to access licence holders
- Webpage
- Face to face sessions with recorded presentations and live Q & A

All feedback due

5 March 2021

Department develop implementation procedures

Implementation

July 2021

- Announcements

NSW GOVERNMENT

Have your say

Your input can be provided by:

- Complete the feedback form on our webpage at www.dpie.nsw.gov.au/managing-access-to-groundwater
- Download the feedback form from our webpage and email it to us at water.relations@dpie.nsw.gov.au
- Post your feedback to Groundwater Consult, Suite 5/620 Macauley St, Albury NSW 2640.
- Provide feedback during a face-to-face information session in your local area.

Your feedback will need to be submitted by 5 March 2021.

Information sessions

Wednesday 10 February 2021

10.30am-1.00pm

Gunnedah Ex Services and Bowling Club

313 Conadilly St, Gunnedah NSW

NSW GOVERNMENT

Presentation content

Presentation 1: Understanding extraction limits

Presentation 2e: Extraction patterns in the Upper Namoi Zone 3 groundwater source

Presentation 3e: Exploring options in the Upper Namoi Zone 3 groundwater source

- **Current approach**
- **Future approach**
- **Options**
- **Where to from here…….**

The End

For more information go to

https://www/dpie.nsw.gov.au/managing-access-to-groundwater

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